SEA RANCHING AND ASPECTS OF THE COMMON LAW
A PROPOSAL FOR A LEGISLATIVE FRAMEWORK

by

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Abstract

The growth of world aquaculture has encouraged increased attention to methods that may be used to continue that growth and expansion. One such method is sea ranching. Most discussions of sea ranching recognise the difficulty of undertaking that activity unless there is certainty about sea ranchers’ legal rights. There are also a number of environmental and ecological considerations.

This thesis considers briefly the initial adoption by the English common law of the Roman law principles applicable to the proprietorship of animals. It explores the development of those principles from the time of their possible adoption by Bracton in 1250 to the modern day. It then seeks to draw on the more modern decisions to refashion the commonly presented test as to which animals may be the subject of absolute property interests. It asserts that the distinction is not species based, but population based. A further assertion is that a population may be those animals that have had a long association with humans, or those that are exploited by humans in a recognised manner, other than by hunting.

This thesis then applies those principles to five populations of teleost fish (Atlantic salmon, rainbow trout, common carp, channel catfish and snapper). It concludes that Atlantic salmon and rainbow trout are likely to be regarded as the subject of absolute property in a number of the communities considered and that channel catfish is likely to be similarly regarded in a number of the states of the United States.

The thesis considers the right of the sea rancher to use the sea at common law. It asserts that, subject to legislative restraint, the sea rancher is entitled to use the territorial sea and the waters beyond that for sea ranching, either on the basis that there is no title in the Crown to the soil of the sea within territorial waters and definitely not outside of that, or to the extent that there may be title in the Crown the passage of fish through those waters does not infringe the rights of the Crown. A number of the environmental, economic and social interests may be adversely affected by sea ranching are discussed. These include fish health, spread of disease, impact on the natural gene pool, carrying capacity of the sea and the difficulties likely to be encountered in the management of such populations. Finally, some of the advantages of sea ranching are highlighted.

The thesis concludes by providing a legislative framework for sea ranching. It does so by requiring potential sea ranchers to be licensed by the state, licensing that is only to occur when the state is satisfied, using the precautionary approach recommended by FAO, that such licences should be issued. The framework recognises the rights of sea ranchers to their released fish, their right to recapture them to the exclusion of other commercial interests and to use the sea. It, however, permits those fish to be taken by recreational fishers.
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Preface

This thesis proposes a legislative framework for sea ranching in the form of drafting instructions for a statute, or statutes and regulations. The framework is provided after a lengthy discussion about the nature and extent of proprietorship in animals and the proprietorship that may exist in lost fish. Few legal regimes currently recognise such interests.

The thesis is divided into five chapters and nineteen sections. Whilst chapter one introduces the issue it also provides an explanation of a number of the concepts. Chapter two is the core of the discussion about the development of the law of the proprietorship of animals. The application of those principles to teleost fish is considered in chapter three. Chapter four then considers the law applicable to sea ranching and some of the environmental, ecological and social issues involved. The final chapter concludes with a legislative framework for sea ranching.

The preparation of this thesis has presented a number of challenges. On the one hand, this thesis seeks to examine in detail the development of the common law. Having done that, it then applies the principles developed to a number of fish and considers the recent literature on the advances in the culture of many of those fish populations. The challenge has been to use as much consistency as possible in dealing with two very different areas of human endeavour. The references to Acts and cases has adopted a simplified style, readily recognisable by Australian and United Kingdom lawyers. Many of the cases and statutes are drawn from the period of 1250 to 1865. The thesis follows the abbreviations for law reports found in Osborn’s Concise Law Dictionary (Osborn 1964). Where the report is also included in the English Reports, that reference has also been included.

The method of citation for all texts, periodicals, journals and services, including those of a legal nature, is the author and date citation method found in The Chicago manual of style (14th ed.) commonly used in the scientific community. The approach is quite different from that usually found in legal works. This method of citation has been adopted even for well-known legal reference books, both as a matter of consistency and to recognise the possible different audiences. However, references to the Digest of Justinian (Justinian 553a) use the usual legal style of referencing that work.

Footnotes and endnotes have not been used in the thesis. The thesis also includes more extensive quotes than others would have done. In particular, quotes from Justinian, Bracton and Blackstone are more extensive than might be included in a purely legal work. Also, some quotes from cases may be more extensive. This approach has both recognised the mixed audience and the fact that many of the volumes are not available outside law libraries. Many of the decisions referred to between 1293 and 1809 are collected in volume two of Joseph Chitty’s work A treatise on the game laws, and on fisheries; with an appendix, containing all the statutes and cases on the subject (1812). Whilst this volume by itself was very useful, it was even more important as it contained translations from law French of many decisions made before that language ceased to be used in the sixteenth century.
A glossary has been included to deal with a number of the technical terms. In most cases, the terms included have the usual meaning. In a few cases, they have been modified to accord with the context of this thesis. In other cases, the glossary may include an explanation or description of the concept.

Finally, there is also a series of appendices to this thesis. The first expands on some rights and remedies that highlight the nature of the property interests in animals. Swans, pigeons, bees and rabbits are animals that are or have been on the fringe of either domitae naturae or ferae naturae for most of the period under consideration. They provide some important insights into the development of the common law. A more detailed examination of their legal classification in appendix two helps to both elucidate and highlight many of the differences and issues considered in this thesis. Appendix five considers the operation of the Alaska Private Non Profit Hatchery programme which provides a number of important insights into the difficulties likely to be encountered in a sea ranching programme.
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Chapter One

Introduction, Sea Ranching and Aquaculture

1. Introduction and Context

1.1. The Proposition

"[T]he world's aquaculture, while showing steady and rapid growth in production, needs institutional and legal frameworks to fulfil its potential in ways which are compatible with sustainable development", Preface to Kyoto Conference outcome (FAO 1995a). This thesis puts forward a legal framework for sea ranching, a form of aquaculture, to address perceived needs and to provide a degree of certainty for all stakeholders. In doing so, this thesis considers the current status of the proprietorship of fish and, to a more limited extent, the right to use the sea for sea ranching.

It will also be demonstrated that, in some of the more important aspects, substantive arguments can now be made out for the subsistence of absolute property rights in some fish populations in the English common law, including fish of those populations released as part of a sea ranching operation. The information available suggests that in the case of some populations of fish in some communities they are now much like cattle, sheep and pigs. Those populations are, in the nomenclature of this thesis, to be regarded as domitae naturae (i.e. domesticated animals, the subject of absolute property).

Notwithstanding that, most fish remain ferae naturae (i.e. non domesticated animals the subject of a qualified property right) under the English common law tests enunciated in this thesis. Many of those populations are unlikely, having regard to those tests, to be regarded as domitae naturae in the foreseeable future. This thesis will further assert that there is limited but sufficient authority that a qualified interest in ferae naturae may be retained not only where there is animus revertendi (an intention to return), but, more controversially, by the use of brands and marks.

These distinctions will be seen by an entrepreneur proposing to engage in sea ranching as artificial and arbitrary. These concepts are clothed in legal history, as will be demonstrated, and are so anachronistic and uncertain as to discourage most entrepreneurs.
Without adequate property rights, a prospective sea rancher will clearly have considerable difficulty convincing financiers to lend money for such a venture and to obtain other investors, unless supported by the state, as has occurred in Alaska (see appendix four) in the place of enhancement by the state (e.g. supplementing wild stocks as described in section 1.2). These problems are not new, and have been recognised by other commentators on aquaculture. Two examples suffice. The first is the comments of Professor B. Wildsmith (1982, 93):

*The single most important legal issue confronting an aquaculturist concerns the nature and extent of his property rights. Every industry (I can think of no legal exception) is premised upon property rights which are on the whole clear and well defined. Financing is dependent upon the security of these rights. Aquaculture is unique in that it depends almost exclusively upon property rights, both real and personal, which are either structured against the aquaculturist or are equivocal as to his position.... [H]e is operating in Canada in a realm where, with only one exception, he must rely upon common-law rights.*

The other comments are those of Professor G. Bowden (1981, 239-40):

*Another basic institutional obstacle impeding the maturation of coastal aquaculture is the status of marine property law. We have seen many examples of how grudgingly property has been created in the sea. This reluctance to extend property rights into coastal waters is eminently wise. Property should never be created by a society unless its members stand to benefit from the transfer of wealth that always accompanies the creation of new property rights. But it seems probable that unless property rights are created in the sea and the domesticated products growing in it, marine aquaculture will never become a significant industry. Investors are unlikely to provide the capital needed to begin an enterprise if members of the public are free to help themselves to the crop. Yet this is precisely the effect of our common property tradition. In many ways this concept of marine property is related to the previous discussion of fish and game laws... The difference is that the product of aquaculture is something which for millennia has only been obtainable in the wild. Aquaculture, therefore, cuts across the oldest regulatory category of all – hunting and fishing.*

The right to use the sea for the purpose of sea ranching is also uncertain, as will also be described. Again, many of the issues are clothed in obscurity including the historical distinction between inland waters, territorial waters and extraterritorial waters. This is another facet that needs appropriate clarification and to be addressed by a suitable legislative framework. Further confusion is caused by the current inadequate or inappropriate legislative restrictions and regimes applicable in most jurisdictions to aquaculture. Provisions are sometimes inserted into fish and game laws to deal with the growth of net, pen and cage aquaculture, but they are misplaced outside a framework of aquaculture development. These issues need to be addressed.
On the other hand, some groups may be surprised and alarmed that the common law could accommodate absolute ownership of fish, let alone fish in a sea ranching situation. Some commercial fishers would be disturbed to know that they may be restrained by the law from taking at sea the fish of a sea rancher, and that they may commit both conversion and theft if they use those fish. Clearly fishers are encountering fish that have escaped net, pen and cage operations, generally with no apparent claim being made to their ownership: they appear to have been abandoned by their owners (British Columbia Salmon Aquaculture Review Committee 1997).

There are also many concerns about the impact of such escapees, and in particular the effect they will have on the environment, let alone extensive private programmed releases as part of sea ranching. Many influential groups are opposed to these activities; they constitute a threat to the current order. In many of these jurisdictions government authorities are already undertaking or encouraging enhancement activities. These governments have assessed the risks and they do not appear to share the concerns that have been raised, or else they have sought to address them in some other manner, or they have bowed to the pressure of the fishers. Yet many of the arguments raised to resist sea ranching are the same or very similar to those that may be raised in relation to enhancement of natural stocks. This thesis will assert that if enhancement can be justified in ecological terms, then sea ranching can also be justified.

Many jurisdictions have developed an aquaculture policy. Few have reflected that in a substantive independent legislative form. Most continue to regulate all forms of aquaculture as part of capture fisheries regulation and management. Most legislation does not even contemplate sea ranching; the legislation focuses on land-based culture systems and net, pen and cage farming. The legislation usually prohibits the release of such animals and penalises those permitting escapes.

If sea ranching is not considered a desirable and appropriate adjunct to a comprehensive aquaculture regime, then it should be clearly and unambiguously outlawed in all significant aspects. This thesis assumes the latter is not to be the case. This thesis concludes with a set of drafting instructions (i.e. instructions for the preparation of legislation) for a broad legislative framework for the management of sea ranching with a particular emphasis on its relationship with and impact on natural fisheries in the context of the continuing rapid growth of aquaculture.

1.2. The Reason

The preliminary figures for 1999 of total global production of fish and shellfish from capture fisheries and aquaculture, as reported by the Food and Agricultural Organisation of the United Nations (FAO 2000a), reached 125 million tonnes (live weight). The production increase of 20 million tonnes over the last decade came mainly from aquaculture. In most fisheries there remains little opportunity
for increased catches, most areas having plateaued for some years. In other areas, quantities are maintained by fishing previously unfished and sometimes less desirable species. At the same time fishing capacity has continued to expand. Many fisheries are still significantly overcapitalised, with considerable potential to decimate the underlying resources. In some jurisdictions these problems are being addressed by further restricting access and in some cases by providing for the allocation of individual transferable quotas. The plateauing catch and rising prices have contributed to the growth of aquaculture, which now accounts for 32.9 million tonnes (26.2 per cent) of the total production (FAO 2000a).

Aquaculture is neither without its critics nor issues. Aquaculture is also being used to supply some of the more desired species, those that would otherwise be in short supply. In some cases it is converting the fish protein of the less desired species into species that are more highly sought after and priced (e.g. pilchards to tuna or anchovies to salmon), at a considerable cost in fisheries resource terms. These plateauing catches and the increased aquaculture of marine and anadromous species is likely to create further demand for fishmeal and consequentially place further pressure on industrial fisheries, though ultimately if the demand is too high the price will make fish meal too expensive for aquaculture. Further, a wide range of adverse environmental impacts of aquaculture has been suggested (see recent discussion in Naylor et al. 2000). Whilst aquaculturists continue to endeavour to address those issues, some attention has again turned to programmes to enhance the seas and sea ranching.

At the same time, quota holders and limited area licence holders, suffering declining catches and greater management responsibility, are also turning their attention to enhancement techniques. They are faced, in many cases, with little likely growth in their catches, if not complete closure, in the foreseeable future. They remember much larger catches in the past and perceive the use of enhancement or sea ranching as the alternative to drastically reduced access or closure (see Snow 1991). The hunter-gatherer has become or is to become a rancher. The holders of limited entry licences and individual transferable quotas have now achieved a recognised property interest. They will now benefit directly from enhancement and its management. The utilisation of a resource, the fisheries of the sea, is being allocated to commercial fishers.

In most cases governments have undertaken enhancement programmes to supplement the common fisheries. Generally, no attempt has been made to preserve any proprietary rights in the fish released, with the possible exception of a de facto interest achieved by practices adopted in Alaska and Japan and more recently proposed in New Zealand for molluscs and in Victoria, Australia for abalone. This de facto interest is created in favour of the fishers by reason of the limited entry or individual transferable quota applicable to the fishery. In 1998 the FAO (1998b) reported hatchery production statistics for the first time, revealing total reported production for 1996 of 58 billion fry and fingerlings worldwide. Of these, 99 per cent were finfish and the majority were reported to be for release into the wild.
The possibility of ranching fish and in particular salmon has been recognised for some time and many of the difficulties have been much discussed. The possibility of branding fish has also been raised. Some aspects of branding are described in an article in 1982 entitled “Salmon ranching: can fish be branded at birth?” (Johnson 1982), though the actual possibility of branding the fish is not discussed nor the concept of genetic branding prior to spawning.

In some jurisdictions, private enterprises have been releasing juvenile salmonids and relying on their natural propensity to return to their release site, without claiming any proprietary interest in the released fish. They expected to achieve a profit from that undertaking, but they have had little success (Committee on Assessment of Technology and Opportunities for Marine Aquaculture in the United States 1992). More recently, the release of juvenile fish conditioned to respond to acoustic emissions and feeding inducements to return to a particular marine site has been revisited, but this time in Europe (Institute of Aquaculture 1998) where it is described as free fish farming. The use of acoustically induced returns has been described by a number of authors (Foscarini 1988; Ivanov 1988).

In the common law, fish have been regarded as ferae naturae. In most contexts there is little doubt of the appropriateness of this classification. Most commentators deal with the issue simply and succinctly in that way. Few have acknowledged there may be exceptions. One such acknowledgment, expressed with appropriate reservations, is found in the following quote from Wildsmith (1982, 101):

*In conclusion, there is very little at common law to protect the aquaculturist’s property rights in his stock once they are out of his immediate control. His stock seem to be considered in law as ferae naturae, which means an aquaculturist only has a qualified property right in them. Once they escape his possession, his property right is lost. An argument can be made, however, that anadromous fish possess animus revertendi, which would mean that a sea rancher’s position, and so his qualified property right, would continue while the fish were at large in the ocean. Unfortunately, there appears to be no precedent that fully supports this view. Similarly, the commercial nature of the aquaculturist’s venture, where his stock are identifiable from natural stock in the wild, arguably justifies protection from the evolving common law.*

Bowden (1981) provides a quite different analysis of the dilemma. He focuses on mariculture and sea ranching, and on the broad policy level. His starting premise is that fish in contemporary America are public property until they are legally caught. The principal issue is whether to confer property rights on the sea rancher as a matter of public policy. After considering that premise, there is limited discussion of the applicability of the current private property principles to the fish of a sea rancher.

Notwithstanding that general view, the literature contains an occasional suggestion that proprietary rights are retained in fish released as part of a private
enhancement programme in a common law jurisdiction and consequently a sea ranching programme (Utermohle 1991). Hanson et al (1974) recognised that domestication may be achieved for the purposes of the law, and with it an absolute proprietary interest, but they do so with inadequate resort to authority and they appear to confuse a number of the underlying legal concepts. Accordingly, the legal status of fish, and especially fish at sea, must be considered.

So this thesis considers at length the general development of the law relating to the ownership of animals. It develops a proposition to test the status of a population of animals and applies the proposition to fish. If the result of that formulation and application is correct and proprietary interests exist in fish released into tidal waters, as suggested in this thesis, many of the English common law jurisdictions are likely to consider regulating such property rights. Otherwise, there is the potential for conflict with other users of the sea and possible adverse environmental and ecological impacts. Fishers seeking to undertake enhancement will regard aquaculturists as encroaching on their domain. The wild fish will be threatened by competition or other deleterious interaction with the released fish.

The recognition of such rights will not occur without difficulty and uncertainty. If this uncertainty is to be minimised and sea ranching by private enterprises is to be encouraged, then adequate proprietary rights must be recognised by statute without awaiting judicial confirmation and clarification. Equally, if those rights do not exist or are inadequate, then statutory intervention will be required. At the same time it will be necessary to ensure an adequate balance between those rights and the other rights and interests that are likely to be affected by the exercise of the new rights.

Further the absence of conventional property rights or weak property rights ( Arnason 1998) has been highlighted as contributing to unprofitable sea ranching (Anderson & Wilen 1986), principally because of the inability to manage fish stocks (Anderson 1985). Anderson (1985) also highlights the possible extinction of the natural stock and significant management issues associated with the interaction of sea ranchers and persons exploiting the open access fishery without those rights.

In much of the foregoing, sea ranching has been regarded as an aquaculture system in which juvenile fish are released to grow on natural foods, unprotected, in marine waters from which they are harvested at a marketable size (Kirk 1987; Thorpe 1980) as part of the common property fisheries. Enhancement and sea ranching, defined in this way, are the same thing. Such a definition however does not constitute aquaculture as defined by the FAO (1997) (see Van Houtte et al. 1989 and Nash 1995 for discussions of the history and purpose of the definition):
The farming of aquatic organisms including crocodiles, alligators, amphibians, finfish, molluscs, crustaceans and plants where farming refers to their rearing up to their juvenile and/or adult phase under captive conditions. Aquaculture also encompasses individual, corporate or state ownership of the organism being reared and harvested in contrast to capture fisheries in which aquatic organisms are exploited as a common property source, irrespective of whether harvest is undertaken with or without exploitation rights.

The above definition encompasses three components:
- the cultured organism,
- the practice, and
- ownership of product.

All three components must be fulfilled for an activity to be classified as aquaculture.

Sea ranching will in this thesis be considered to be an aquaculture system in which juvenile fish are released to grow in tidal waters on natural foods either solely or supplemented by non-natural feeding regimes, generally unprotected, in which the party releasing the juvenile fish retains some form of proprietary interest. Defined in this manner, with the retention of a property right, sea ranching constitutes aquaculture under the foregoing FAO definition.

Whilst the discussion will occur in the context of the English common law, many of the issues to be considered will be equally applicable in any legal system that seeks to regulate sea ranching, whether it is regulating existing rights or creating new rights. Similar developments are currently occurring in non-common law jurisdictions (e.g. Norway).

1.3 The Framework

The remaining portion of this chapter introduces the history of sea ranching, enhancement and aquaculture. It describes the growth of aquaculture and demonstrates that sea ranching has had little role in that growth. This description provides a background to much of the later discussion about the advantages and disadvantages of sea ranching. The chapter then provides a description of the interaction between enhancement and common property fisheries and between aquaculture and sea ranching. It examines a number of different methods for marking fish. The chapter concludes by addressing the need for property rights both from a commercial perspective and from a resource management perspective, recognising that fisheries have usually been managed as a common property resource. An absolute or qualified property interest in fish in the sea introduces a new limitation on fisheries and further qualifies the common law right to fish.

Chapter two is the core of the consideration of the proprietary interests in animals and underpins much of the remaining discussion. It introduces a number of the
concepts to be used for determining the nature of the rights or interests in animals. The chapter then briefly examines Roman law and its adoption by the common law.

The common law concept of *domitae naturae* altered as more animals became sub-servient to humans. Not only were new animals introduced, but animals formerly kept ceased to be kept or used to the same extent or manner (see Williams 1939 and discussion in chapter two). The chapter demonstrates that the views of anthropologists, biologists and zoologists as to what constitutes domestication has little to do with the legal classification *domitae naturae*. The common law has in its development of the proprietorship of animals, as will also be demonstrated, adapted to deal with the needs of the community from time to time, an adaptability that is well recognised (see Holmes 1881; Philbrick 1938).

A major portion of chapter two is then devoted to a determination of the principles of the classification of animals in the common law for the purpose of determining the nature and extent of proprietary interests in them. The discussion centres on the division between *domitae naturae* and *ferae naturae* and the resultant property rights. That is followed by a consideration of the role of brands and marks on fish for the purposes of preserving or protecting property rights. It concludes with a formulation of a test to determine whether a population is *domitae naturae* or by implication *ferae naturae*.

This distinction, in the context of sea ranching, will determine whether the proprietorship of an animal will subsist, even when it is at large in the sea, and whether it is absolute. If the population is *ferae naturae* then a proprietary interest may subsist only so long as one of the limited criteria to be described is satisfied. It is the uncertainty that follows classification of *ferae naturae* in particular that prompts the suggestion that legislation is required to adequately protect property rights.

The object of chapter three is to consider and apply the principles developed in chapter two explicitly to fish. Initially, specific developments and differences in the law in respect of fish and fisheries are considered. Then the nature and extent of the use and domestication of a number of populations of fish in a number of countries are considered against the background of the current status and prospects of world fisheries, current knowledge and advances in fisheries and aquaculture. The principles derived in chapter two are then applied in the context of the exploitation by humans of the chosen fish populations. This challenges the usual assumption that the common law (statutory intervention or prohibition aside) does not recognise absolute proprietorship of fish outside the pond, stew or cage.
In chapter four the rights of sea ranchers to use the sea are briefly considered. The right to use the sea as a common is important to both sea ranchers and fishers. Historically the community had the right to navigate and fish in tidal waters. So, is it permissible to release and recapture fish, fish in which property is retained, without infringing the rights of the Crown and others? Can others be prevented from taking the released fish? A discussion as to the scope and extent of those rights, the likely restrictions arising from fisheries laws and aspects of the interaction with fishers will briefly occur. There are many other possible incidents or consequences of utilising the sea as a common resource; only some are considered.

The recent practice of enhancement has highlighted many of these concerns. Intensive aquaculture has also raised many other concerns. Both raise varying environmental and ecological issues. Whilst sea ranching solves some of the more significant problems with cage based intensive aquaculture, it suffers from a number of the same problems as enhancement programmes. There is no particular answer to these issues; the answer involves identifying the problems and possible solutions and achieving a suitable balance between them in the particular situation. So what aquaculture concerns does sea ranching avoid? What enhancement problems does it raise? What advantages over conventional aquaculture does it offer? The legal, economic and environmental dimensions of sea ranching are discussed and some of its advantages are highlighted.

Finally chapter five, by way of summary and drawing on the discussion in the preceding chapters, describes the nature and scope of a legislative regime for sea ranching and sets out drafting instructions (i.e. instructions for the preparation of legislation) to facilitate and administer sea ranching. Essentially a framework for an administrative process, it highlights the more significant issues that must be addressed. Aspects of the scheme that have not already been discussed are then further briefly described by way of comments on the drafting instructions.

There are many limitations and constraints on this consideration of sea ranching, domestication and proprietorship of teleost fish. Some of the more important ones are:

- The extent of local legislative intervention and its effect on the common law is usually but not always ignored.
- Whilst the framework is the English common law, which is applied with many similarities and differences in each of the jurisdictions mentioned, in some cases there may be nuances and differences not apparent on the face of the decision mentioned and therefore not adequately recognised or brought out in this thesis.
- Some species being sea ranched may range outside the territorial waters of the jurisdiction in which they are released, raising both public international law issues and issues of conflict of law. No attempt will be made to consider such issues.
• Whilst aspects of the relationship between ownership and the law relating to liability for wrongs committed by animals are regularly mentioned, this thesis does not seek to discuss liability.
• Sea ranching is considered in the context of industrial societies that perceive aquaculture as an extension and continuation of the ongoing industrialisation process.
• Any legislative framework must be considered with regard to existing rights and restrictions and to the socio-economic environment in which it is to be implemented.

1.4. Glossary and Terms

A glossary of terms is included with this thesis. Accordingly, there is little in the body of the thesis that explains the meaning of a term, unless it is as part of a particular discussion and required by that discussion.

In this thesis the terms *ferae naturae* and *domitae naturae* have been reserved solely for use in describing the groupings of populations of animals for property purposes. Those animals *domitae naturae* are the subject of an absolute proprietary interest. All animals that are not *domitae naturae* are regarded as *ferae naturae*. The manner in which those expressions are sometimes used may not always be grammatically correct. They are however used rather than “domesticated”, “domestic” or a number of other possible expressions to minimise preconceived notions. The term *mansuetae naturae* is used sparingly in this thesis. It is a term regularly used in discussions in the liability context (see Williams 1939).

The expressions “domestic animal” or “domesticated animal” will also be used sparingly; commentators and judges regularly use those terms to describe the class of animals the subject of absolute property rights. Rarely are the attributes of such animals described in any detail. The terms may be used to describe an animal or group of animals that are regarded as tame but are from a wild population. It is a domestic animal but not *domitae naturae*. Zoologists and anthropologists attribute different meanings to them. Even amongst zoologists and anthropologists, it appears that there are different views. When used in this thesis, those expressions will usually be used in the sense that the species has been the subject of artificial selection or has some other relationship with humans that is beneficial to the animals or persons in question or both. The expressions appear to have yet different meanings in other contexts. Some of these meanings and relationships are explored in considering the meaning to be attributed to those expressions (see section five).

In many situations, commentators and judges use the expressions “tame” and “domestic” interchangeably. In this thesis, the expression tame is reserved for an individual animal who is generally well-disposed towards humans. It may be either *ferae naturae* or *domitae naturae*, but the significant aspect is its
disposition towards individual humans. The use of the word tame in this way does not imply any form of right or liability in connection with the animal (see section five).

The use of the word “species” is avoided where possible. The word has many different meanings in many different contexts. It can be the source of considerable confusion. Where possible, the discussion will be about a population of animals, whether *ferae naturae* or *domitae naturae*. In some cases, the term a population may equate in ecological terms to a genus, species, sub-species, variety or breed of animals. The reference is to a group of animals identifiable as a population that may be recognised by a community as either *domitae naturae* or *ferae naturae* (see section 8.5).

2.  
Sea Ranching and Aquaculture

2.1. Preliminary

This thesis will review the history and development of the English common law principles applicable to the ownership of animals from the time of Bracton to the modern day. It will then draw on the modern decisions to put forward new tests and criteria for determining which animals may be the subject of absolute property interests. It will emphasise that the tests are no longer based on whether the animal is good for food or draught. The tests may be applied to any animal, terrestrial or aquatic. The tests are then applied to five populations of teleost fish in four communities. The thesis concludes that a number of populations of fish may be the subject of absolute property interests.

The thesis then turns to consider the right of the sea rancher to use the sea at common law. It will describe and discuss a number of the environmental, economic and social interests that may be adversely impacted by sea ranching and some of its advantages. The thesis will conclude with a legislative framework for sea ranching drawing on the consideration of those matters.

2.2. Introduction

Sea ranching is only one form of aquaculture, and, using the definition adopted in this thesis, has constituted a very small part of aquaculture and the growth of aquaculture so far. The history that follows after a brief introduction to aquaculture is of enhancement.

The history of enhancement programmes provides a context and background for the discussion of sea ranching. This is particularly so of salmon, the species most often targeted by enhancement programmes. These programmes also highlight many of the difficulties likely to be encountered in sea ranching.
Aquaculture activities may be characterised in a number of ways. They are usually characterised by the medium used, the culture method adopted or the species cultured. Sea ranching emphasises a culture method. It may be undertaken in different mediums using different species, though it is usually undertaken in the sea.

2.3. Aquaculture and World Fisheries

Aquaculture in a freshwater environment has a very long history, going back at least 2000 years, and possibly 5000 years in China, with the first treatise on the culture of common carp being written by Fan Lai in 475 BC (Avault 1996).

Over the centuries, the Chinese knowledge of aquaculture has been disseminated throughout South-East Asia and the Indo-Pacific region, particularly through the migration of the Chinese into those areas. Also during the same period the culture of new species began, including milkfish (*Chanos chanos*), the siluroid fishes and tilapia, to name a few. In Taiwan in 1990, there were approximately 50 different species cultured, in India approximately 75 (Avault 1996) and worldwide considerably in excess of 300 (Rana 1997).

The history of aquaculture in Western Europe can be traced to at least Roman times (Higginbotham 1997). The evidence from Roman times suggests the farming of both freshwater and marine species. The history of the extent of the culture and the systems is still quite sparse. Lagoon or marsh culture systems have been utilised in Western Europe for many centuries, but they are not usually regarded as aquaculture sites. Some occurrences in Central Europe of carp and other cultures are reported from the tenth century onwards (Balon 1995a, 1995b). Clearly, in England, ponds and stews were maintained from an early time to provide fresh fish and eels (Dyer 1988) but the true extent of aquaculture in England during most of this period is unknown.

Awareness of the possibility of the production of fish through aquaculture in the later part of the last 1800s in Europe and North America was heightened by early attempts at stocking of public waters (e.g. with trout, salmon and cod) and subsequently by the successful fertilisation and early culture of cod (Kirk 1987). At the same time advances in fishing technology (e.g. the introduction of steam in vessels and the mechanisation of nets) were starting to have a noticeable impact on capture fisheries. This led to realisations that not only were fish resources finite but that something must be done to limit fishing effort. Supplementation or enhancement was regarded as one means of preserving a dwindling fish population (Kirk 1987).

Most attempts to enhance natural fisheries were undertaken by governments. In some jurisdictions, legislative requirements imposed obligations on processors and others to establish hatcheries and release young fish (Snow 1991). The generally accepted view is that most of these attempts were failures (as will be
briefly described in the next section). Most were wound up by World War I (Kirk 1987) or shortly thereafter. Declining catches in the late 1960s again led to the revival of enhancement programmes in a number of fisheries (e.g. salmon fisheries in Alaska and Canada).

Many of these programmes and other post-World War II programmes improved hatchery and fish breeding technologies, particularly for marine species. These advances aided the growth of aquaculture.

Associated with this growth has been a fresh interest by individuals and corporations in pursuing private fisheries enhancement. Whilst prohibited in some jurisdictions, in most jurisdictions and in respect of most species, as already observed, there is considerable uncertainty as to the rights of a sea rancher to the fish released. Notwithstanding this problem, attempts have been made by corporations to ranch salmon in Oregon, apparently unsuccessfully, without attempting to claim property rights (Committee on Assessment of Technology and Opportunities for Marine Aquaculture in the United States 1992).

Preliminary figures for world capture fisheries and aquaculture for 1999 indicate a slight increase in capture fisheries and continuing dramatic aquaculture production growth (FAO 2000b), a trend highlighted in figure 1.

![Figure 1. World Capture Fisheries and Aquaculture 1970-1999
Derived from FAO (2000b).](image)

Legend: ■ Capture □ Aquaculture. 1999 figures use preliminary data.
Table 2 lists the growth by weight of the top twenty species (between 1991 and 1998) and highlights the variety and emphasis on a few products. The top twenty account for 75 to 80 per cent of the total aquaculture production.

Table 1
World Aquaculture Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight (Tonnes)</th>
<th>Growth (%)</th>
<th>Value (USD)</th>
<th>Growth (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>10,154</td>
<td></td>
<td>11,927</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>11,385</td>
<td>112</td>
<td>13,504</td>
<td>113</td>
</tr>
<tr>
<td>1986</td>
<td>12,685</td>
<td>125</td>
<td>16,886</td>
<td>142</td>
</tr>
<tr>
<td>1987</td>
<td>13,997</td>
<td>138</td>
<td>21,014</td>
<td>176</td>
</tr>
<tr>
<td>1988</td>
<td>15,543</td>
<td>153</td>
<td>24,409</td>
<td>205</td>
</tr>
<tr>
<td>1989</td>
<td>16,490</td>
<td>162</td>
<td>25,616</td>
<td>215</td>
</tr>
<tr>
<td>1990</td>
<td>16,835</td>
<td>166</td>
<td>27,600</td>
<td>231</td>
</tr>
<tr>
<td>1991</td>
<td>18,287</td>
<td>180</td>
<td>29,944</td>
<td>251</td>
</tr>
<tr>
<td>1992</td>
<td>21,253</td>
<td>209</td>
<td>33,168</td>
<td>278</td>
</tr>
<tr>
<td>1993</td>
<td>24,547</td>
<td>242</td>
<td>36,477</td>
<td>306</td>
</tr>
<tr>
<td>1994</td>
<td>27,754</td>
<td>273</td>
<td>41,280</td>
<td>346</td>
</tr>
<tr>
<td>1995</td>
<td>31,340</td>
<td>309</td>
<td>45,091</td>
<td>378</td>
</tr>
<tr>
<td>1996</td>
<td>33,992</td>
<td>335</td>
<td>48,002</td>
<td>402</td>
</tr>
<tr>
<td>1997</td>
<td>36,031</td>
<td>355</td>
<td>50,704</td>
<td>425</td>
</tr>
<tr>
<td>1998</td>
<td>39,431</td>
<td>388</td>
<td>52,458</td>
<td>440</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Notes: The growth is expressed as a per cent increase over the base year 1984. The weight is expressed in thousands of tonnes and the value in millions of USD.

Table 3 shows the production of the top twenty species by value between 1991 and 1998. As can be seen from tables two and three the spread of aquaculture products by value is more diverse and the most valuable products are prawns, seaweed, carps, anadromous fish and some molluscs. The foregoing top twenty accounted for 70 to 78 per cent of total aquaculture production during the period 1991 to 1998.

Much of the growth in aquaculture by volume in European countries and North America has been in the freshwater species (e.g. catfish and trout). The other emphasis has been on the anadromous species, which have continued to grow significantly, particularly with the advent of cage culture in the 1950s.

In Japan however there was an early growth in the development of marine finfish species, which has been taken up in European countries in the 1980s. The increasing cultivation of shrimp has caused a growth in brackish water culture.
There is also growth in finfish species that have a brackish water requirement in some part of their life cycle (e.g. barramundi).

Table 2
Top Aquaculture Products by Weight

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese kelp</td>
<td>2,635</td>
<td>3,496</td>
<td>4,059</td>
<td>3,925</td>
<td>3,909</td>
<td>4,452</td>
<td>4,402</td>
<td>4,393</td>
</tr>
<tr>
<td>Silver carp</td>
<td>1,472</td>
<td>1,635</td>
<td>1,904</td>
<td>2,219</td>
<td>2,553</td>
<td>2,878</td>
<td>3,228</td>
<td>3,308</td>
</tr>
<tr>
<td>Pacific oyster cup</td>
<td>1,192</td>
<td>1,438</td>
<td>1,749</td>
<td>2,537</td>
<td>2,925</td>
<td>2,926</td>
<td>2,974</td>
<td>3,439</td>
</tr>
<tr>
<td>Grass carp</td>
<td>1,067</td>
<td>1,252</td>
<td>1,497</td>
<td>1,818</td>
<td>2,103</td>
<td>2,438</td>
<td>2,711</td>
<td>2,894</td>
</tr>
<tr>
<td>Common carp</td>
<td>1,026</td>
<td>1,144</td>
<td>1,322</td>
<td>1,535</td>
<td>1,818</td>
<td>2,039</td>
<td>2,230</td>
<td>2,465</td>
</tr>
<tr>
<td>Freshwater fishes</td>
<td>946</td>
<td>1,023</td>
<td>1,075</td>
<td>1,283</td>
<td>1,595</td>
<td>1,594</td>
<td>1,432</td>
<td>1,557</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>706</td>
<td>794</td>
<td>924</td>
<td>1,076</td>
<td>1,257</td>
<td>1,418</td>
<td>1,552</td>
<td>1,584</td>
</tr>
<tr>
<td>Laver (nori)</td>
<td>682</td>
<td>725</td>
<td>811</td>
<td>1,058</td>
<td>919</td>
<td>857</td>
<td>861</td>
<td>960</td>
</tr>
<tr>
<td>Sea mussels nei</td>
<td>498</td>
<td>540</td>
<td>511</td>
<td>416</td>
<td>416</td>
<td>367</td>
<td>399</td>
<td>541</td>
</tr>
<tr>
<td>Wakame</td>
<td>441</td>
<td>559</td>
<td>537</td>
<td>531</td>
<td>434</td>
<td>535</td>
<td>343</td>
<td></td>
</tr>
<tr>
<td>Milkfish</td>
<td>417</td>
<td>343</td>
<td>359</td>
<td>381</td>
<td>365</td>
<td>371</td>
<td>367</td>
<td>369</td>
</tr>
<tr>
<td>Yesso scallop</td>
<td>378</td>
<td>546</td>
<td>970</td>
<td>1,026</td>
<td>1,144</td>
<td>1,265</td>
<td>1,257</td>
<td>856</td>
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<tr>
<td>Japanese carpet shell</td>
<td>377</td>
<td>633</td>
<td>928</td>
<td>1,129</td>
<td>1,088</td>
<td>1,116</td>
<td>1,275</td>
<td>1,427</td>
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<tr>
<td>Giant tiger prawn</td>
<td>375</td>
<td>439</td>
<td>515</td>
<td>576</td>
<td>596</td>
<td>576</td>
<td>531</td>
<td>578</td>
</tr>
<tr>
<td>Blue mussel</td>
<td>346</td>
<td>313</td>
<td>262</td>
<td>329</td>
<td>358</td>
<td>408</td>
<td>401</td>
<td>500</td>
</tr>
<tr>
<td>Roho labo</td>
<td>316</td>
<td>356</td>
<td>411</td>
<td>432</td>
<td>476</td>
<td>564</td>
<td>693</td>
<td>755</td>
</tr>
<tr>
<td>Aquatic plants nei</td>
<td>297</td>
<td>441</td>
<td>617</td>
<td>682</td>
<td>642</td>
<td>479</td>
<td>472</td>
<td>1,953</td>
</tr>
<tr>
<td>Catla</td>
<td>291</td>
<td>301</td>
<td>342</td>
<td>353</td>
<td>397</td>
<td>477</td>
<td>578</td>
<td>629</td>
</tr>
<tr>
<td>Rainbow trout</td>
<td>283</td>
<td>299</td>
<td>317</td>
<td>334</td>
<td>366</td>
<td>385</td>
<td>427</td>
<td>438</td>
</tr>
<tr>
<td>Marine molluscs nei</td>
<td>269</td>
<td>249</td>
<td>300</td>
<td>354</td>
<td>1,240</td>
<td>1,284</td>
<td>1,135</td>
<td>1,110</td>
</tr>
</tbody>
</table>

**TOTAL** 16,005 18,518 21,403 24,012 26,693 28,324 29,457 32,097

**Source:** FAO (2000b)

**Notes:** Weight is shown in thousands of metric tonnes.

The expression "nei" indicates that item is not included in any other class.

Little information is available on aquaculture production by method. Fishstats (FAO 2000b) does not provide details of the production method. An indication of such a division is available for 1985 in table 4.

Table 4 highlights that in 1985 sea ranching was not a significant culture method in its own right, and that is likely to remain the situation.
Table 3
Top Aquaculture Products by Value

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Giant tiger prawn</td>
<td>2,362</td>
<td>2,721</td>
<td>3,340</td>
<td>4,028</td>
<td>4,158</td>
<td>4,090</td>
<td>3,809</td>
<td>3,859</td>
</tr>
<tr>
<td>Japanese kelp</td>
<td>2,109</td>
<td>2,559</td>
<td>2,881</td>
<td>2,711</td>
<td>2,694</td>
<td>2,875</td>
<td>2,874</td>
<td>2,872</td>
</tr>
<tr>
<td>Common carp</td>
<td>1,713</td>
<td>1,869</td>
<td>1,947</td>
<td>2,031</td>
<td>2,302</td>
<td>2,572</td>
<td>2,694</td>
<td>2,828</td>
</tr>
<tr>
<td>Silver carp</td>
<td>1,647</td>
<td>1,808</td>
<td>1,993</td>
<td>2,197</td>
<td>2,365</td>
<td>2,784</td>
<td>3,005</td>
<td>3,086</td>
</tr>
<tr>
<td>Pacific oyster cup</td>
<td>1,558</td>
<td>1,699</td>
<td>2,130</td>
<td>2,929</td>
<td>3,235</td>
<td>3,225</td>
<td>3,177</td>
<td>3,269</td>
</tr>
<tr>
<td>Fleshy prawn</td>
<td>1,547</td>
<td>1,461</td>
<td>662</td>
<td>519</td>
<td>595</td>
<td>628</td>
<td>743</td>
<td>996</td>
</tr>
<tr>
<td>Grass carp</td>
<td>1,327</td>
<td>1,427</td>
<td>1,542</td>
<td>1,679</td>
<td>1,844</td>
<td>2,232</td>
<td>2,494</td>
<td>2,655</td>
</tr>
<tr>
<td>Atlantic salmon</td>
<td>1,221</td>
<td>1,273</td>
<td>1,373</td>
<td>1,616</td>
<td>1,782</td>
<td>1,858</td>
<td>2,142</td>
<td>2,203</td>
</tr>
<tr>
<td>Laver (nori)</td>
<td>1,205</td>
<td>1,137</td>
<td>1,290</td>
<td>1,774</td>
<td>1,469</td>
<td>1,277</td>
<td>1,335</td>
<td>1,241</td>
</tr>
<tr>
<td>Freshwater fishes</td>
<td>1,156</td>
<td>1,206</td>
<td>1,289</td>
<td>1,547</td>
<td>1,944</td>
<td>1,975</td>
<td>1,655</td>
<td>1,712</td>
</tr>
<tr>
<td>Japanese amberjack</td>
<td>1,050</td>
<td>1,037</td>
<td>1,239</td>
<td>1,241</td>
<td>1,271</td>
<td>1,247</td>
<td>1,194</td>
<td>1,083</td>
</tr>
<tr>
<td>Rainbow trout</td>
<td>972</td>
<td>1,048</td>
<td>1,058</td>
<td>1,084</td>
<td>1,223</td>
<td>1,267</td>
<td>1,349</td>
<td>1,364</td>
</tr>
<tr>
<td>Japanese eel</td>
<td>951</td>
<td>1,102</td>
<td>1,140</td>
<td>1,290</td>
<td>1,293</td>
<td>1,174</td>
<td>1,021</td>
<td>823</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>749</td>
<td>822</td>
<td>908</td>
<td>998</td>
<td>1,099</td>
<td>1,305</td>
<td>1,422</td>
<td>1,449</td>
</tr>
<tr>
<td>Milkfish</td>
<td>608</td>
<td>604</td>
<td>608</td>
<td>699</td>
<td>714</td>
<td>748</td>
<td>661</td>
<td>551</td>
</tr>
<tr>
<td>Whiteleg shrimp</td>
<td>607</td>
<td>744</td>
<td>667</td>
<td>725</td>
<td>845</td>
<td>840</td>
<td>915</td>
<td>1,028</td>
</tr>
<tr>
<td>Yesso scallop</td>
<td>606</td>
<td>847</td>
<td>1,431</td>
<td>1,530</td>
<td>1,599</td>
<td>1,628</td>
<td>1,704</td>
<td>1,180</td>
</tr>
<tr>
<td>Japanese carpet shell</td>
<td>542</td>
<td>895</td>
<td>1,261</td>
<td>1,474</td>
<td>1,485</td>
<td>1,518</td>
<td>1,670</td>
<td>1,860</td>
</tr>
<tr>
<td>Silver seabream</td>
<td>520</td>
<td>529</td>
<td>595</td>
<td>773</td>
<td>811</td>
<td>710</td>
<td>619</td>
<td>503</td>
</tr>
<tr>
<td>Roho labeo</td>
<td>496</td>
<td>633</td>
<td>800</td>
<td>988</td>
<td>1,008</td>
<td>1,100</td>
<td>1,485</td>
<td>1,945</td>
</tr>
</tbody>
</table>

**TOTAL** 24,940 27,416 30,150 33,830 35,734 37,052 37,968 38,508

**Source:** FAO (2000b)

**Notes:** Values are shown in millions of United States dollars.
The expression “nei” indicates that item is not included in any other class.

Table 4
Aquaculture Production Methods 1985

<table>
<thead>
<tr>
<th>Method</th>
<th>Percentage of total production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ponds &amp; tanks</td>
<td>41</td>
</tr>
<tr>
<td>Enclosures &amp; pens</td>
<td>3</td>
</tr>
<tr>
<td>Cages</td>
<td>less than 1</td>
</tr>
<tr>
<td>Raceways &amp; silos</td>
<td>1</td>
</tr>
<tr>
<td>Barrages</td>
<td>less than 1</td>
</tr>
<tr>
<td>Other methods</td>
<td>less than 1</td>
</tr>
<tr>
<td>Molluscs on bottom</td>
<td>18</td>
</tr>
<tr>
<td>Molluscs off bottom</td>
<td>7</td>
</tr>
<tr>
<td>Unspecified</td>
<td>29</td>
</tr>
</tbody>
</table>

**Source:** Derived from Avault (1996) as taken from Nash (1988).
2.4. Some Enhancement History and Controversy

Stock enhancement programmes have been undertaken in a number of countries starting in the late 1800s. These programmes usually were publicly funded hatcheries established to release juveniles into the streams and sea and were undertaken in various countries including Norway, Great Britain, France, the United States of America and Canada.

This 'hatchery boom', as described by Kirk (1987), was driven by two things. Firstly, the realisation of the detrimental effect on fishing stocks of the increasing capability of the European fishing fleet and secondly the realisation that, with certain species of fish, fry could be reared through at least to their first few days from eggs. These factors led to the notion that the liberation of millions of fry of many species could aid in increasing fish stocks (Kirk 1987).

There were many strong supporters of the release programmes. In 1905, two marine biologists P. Fabre-Domergue and F. Bietrix claimed that they could produce and rear sole fry to the point where the young would be perfectly able to survive after their release (Kirk 1987).

There were also those who doubted the effectiveness of enhancement. In Norway, in the early 1900s, K. Dahl and J. Hjort called the cod release programme into question. They asserted that the increased landing of cod after their experimental release was merely an artefact of a natural cycle. In particular they noted that catches had increased in other countries at the same time as the increases occurred in the Norwegian catch, which was being attributed to the enhancement programme (Landau 1992; Kirk 1987). Hilborn (1998a; Hilborn & Eggers 2000) has described the Alaska salmon enhancement programme in much the same way. Landau (1992) notes that K. Dahl and J. Hjort undertook a further joint study from 1903 to 1906 and that the results were inconclusive but spurred on further studies.

There were other early attempts at demonstrating the value of mass rearing and release of flatfish but apparently they were no more convincing than those of cod. In retrospect, various aspects of the methods used can be questioned.

Most notable in the enhancement programmes is the large number of salmon ranching attempts that have been tried over the last one hundred and thirty years. The first experimental releases of young salmon were carried out in 1866 in Scotland and Canada. With the rapidly growing salmon fisheries on the Pacific coast the United States government introduced a hastily drawn measure requiring canneries to operate salmon hatcheries. Subsequently tax incentives were offered to canneries on the basis that ten fry should be produced for every adult landed. Thousands of millions of fry were released (Kirk 1987).

Most hatcheries in Europe and Northern America lost support during the years around World War I when the promise of large scale propagation supporting
increased fisheries was not realised (Landau 1992; Kirk 1987). Some of these hatcheries were converted into research stations and others were closed (Landau 1992).

Notwithstanding these early experiences, since the 1960s many governments have adopted enhancement practices, are encouraging others to do so or considering the application of those practices to other fisheries (Hilborn 1998b). Two examples are to be found in Alaska and Canada.

With concerns in Alaska in the mid 1970s about the impact of fishing on the salmon stock a major stock enhancement programme commenced and by 1979 there were no less than 18 private hatcheries set up or planned for establishment and by 1998 forty-one permits for hatcheries under this programme had been issued (Kirk 1987; Hilborn 1998a, 1998b; Hilborn & Eggers 2000; also see appendix four).

One goal of many government programmes has been to improve or reinstate particular local populations which for whatever reason are no longer able to support themselves without intervention. This aim has been followed with persistence in Canada since 1977.

Many reviews of the salmonid enhancement programme on Canada’s Pacific Coast have been undertaken. In 1994, an assessment of the programme concluded that, whilst significant funds had been applied, the benefits in the form of increased catches fell significantly short of the expenditure (Pearse 1994). This programme is ongoing.

Salmon stock enhancement activities have also occurred in the Canadian Maritime Provinces, a few north eastern states of the United States, Sweden, Finland, Iceland and the former USSR (Kirk 1987).

2.5. Some Potential Sea Ranching Methods

2.5.1. Natural Homing Instinct

Most of the sea ranching literature emphasises the natural homing instinct of salmon populations. It seeks to rely on this as the basis for the establishment of an industry; this propensity is not fully understood but has been relied on extensively in all salmon enhancement programmes. Most of these programmes have relied on practices that seek to imprint the source stream on the juvenile at a very early stage (see articles collected in Thorpe 1980).

This practice should, in many cases, based on the views expressed in this thesis, give rise to a proprietary interest where there has been sufficient art and industry
to justify the retention of a proprietary interest in *ferae naturae*, where the population does not satisfy the test for *domitae naturae*.

2.5.2. Acoustically Induced Returns

A number of articles describe practices that involve the conditioning of juvenile fish to return in response to sound waves and feed inducement conditioning. In one example, fish are released into an area that is enclosed by nets. The fish are fed from automatic feeding machines three times a day while an underwater speaker emits sound waves of a particular frequency. Once the fish are trained to respond to the sound waves as a signal to begin feeding, the enclosure nets can be removed. The fish remain in the area where the feeding machines and the speaker are located. It has been suggested that Snapper (*Pagrus auratus*) can be trained within two months or less using these methods (Foscarini 1988; Noriyuki & Michio 1996).

Others have also described similar processes (in the former Soviet Union, Ivanov 1988) and much more recently it was the subject of a conference organised by the Institute of Aquaculture of Stirling University on behalf of a committee of the European Union and this time described as free fish farming (Institute of Aquaculture 1998).

A more recent study has raised doubts as to the effectiveness of the practice and suggests that the key component of the response is the increased pressure from the sound waves and that, with the maturity of the fish and development of the lateral line (the sensory system used for hearing and detecting pressure changes in the surrounding water), the fish would be attracted to any intermittent sound (Anraku & Matsuda 1997).

2.6. Species Currently Ranched

Few species (if any) are currently sea ranched anywhere in the world, as that expression is defined in this thesis. Enhancement programmes have been numerous as already mentioned.

As described in appendix four, large numbers of Pacific salmon are released in Alaska as part of the private non-profit hatchery programme and, whilst the issue of proprietorship has been questioned (Utermohle 1991), the predominant view appears to be that proprietorship is lost on release.

Sea ranching of Atlantic salmon has also occurred in the Scandinavian countries and in particular in Iceland. Sea ranching in Japan appears to be carried out at the prefecture level. It may be possible to assert that, as these sea ranching activities can only be undertaken by local small-scale fishers’ cooperatives, it creates a form of de facto property (see section 3.5.3) in the released fish (Ruddle 1992).
2.7. Branding and Tagging of Fish

Branding and marking of personal property has long been used in many communities to facilitate the claims of ownership to such items. This is discussed later in this thesis, particularly in the context of animals (section ten). It is therefore appropriate to provide a brief introduction to the methods that are available to mark or brand fish.

Many methods have been developed for the marking and tagging of fish, primarily for the purpose of population and ecology studies. Many can be adapted for commercial purposes. The methods may be divided into various groupings. Two broad groups are external marks and internal marks. Other divisions are:

- tags and brands;
- chemical marking;
- genetic marking; and
- other biological marks.

The tags and brands may include a wide variety of attachments including: ribbons, threads, wires, plates, discs, barbs, danglers, carapace tags, rings, bands, straps and vinyl tubing (McFarlane et al. 1990). Other external marks include the use of dyes and stains, brands and mutilation (McFarlane et al. 1990). External branding itself varies from freeze branding, cold branding, tattoo-ink marking and fluorescent marking (Parker et al. 1990). The difficulties with most of the external marking methods, and even some of the methods not externally discernible but relying on an adipose fin clip or other external mark to identify an internal mark, are the stress to the animals and the effort and cost required to effect the mark.

The internal methods are also as varied. They include implanted wire tags, coded wire tags, otolith marking, magnetic tags, electronic tags, genetic marking (which includes a variety of methods) and inorganic chemical marks (Parker et al. 1990). Of the non-external marking, the otolith and genetic marking methods appear to be the most commercially viable. Otolith marking is a system that allows one hundred per cent of the fish in a hatchery to be marked by subjecting the fish to a sequence of planned temperature drops to induce marks in their otolith microstructures. A rapid temperature drop disrupts the process of normal otolith growth and produces a dark ring in the otolith. The rings can be recovered from adult fish by slightly grinding the otolith and viewing its centre using conventional microscopy. By varying the number and spacing of the induced rings, unique patterns to distinguish between similarly treated hatchery fish can be created (Hagen et al. 1995).

This method has been successfully used to similarly mark millions of fish. It has been demonstrated that the cost, based on the expense of heating the water, was
less than three cents per thousand fish. A further cost is involved in identifying the adult fish that have been marked in this manner. This is the more expensive and limiting aspect of this method. It requires the head of the fish to be split and the removal, cleaning, mounting and grinding of the otolith, and examination to complete the process of identification (Hagen et al. 1995).

Genetic tagging marks the individuals using specific identifiable genetic material. The genetic tag may be electrophoretic – based protein – coded genes (Shaklee 1983; Utter & Seeb 1990) or DNA – based (Utter & Seeb 1990). One example is the use of a combination of mitochondrial DNA restriction enzymes on a stock of fish to give a distinctive fragmentation pattern. By then breeding from a restricted number of maternally related female fish, the mitochondrial DNA brand is spread throughout the population in one generation. The mitochondrial DNA is a very stable molecule and the chance of the population losing it is regarded as very slight (Carragher 1993). There are many considerations in the undertaking of such a programme (Gharrett & Seeb 1990; Utter & Seeb 1990). Naevdal (1994) has highlighted its use in sea ranching and more recently others have highlighted its use in stock enhancement activities (Bert et al. 2001).

Many of these methods are becoming simpler to effect as a batch and are therefore likely to become more prevalent (Hagen et al. 1995; Carragher 1993; Gharrett & Seeb 1990; Utter & Seeb 1990) and more readily available at a commercial level. Most however suffer from a legal perspective, in the context of this thesis, from the disadvantage that a person taking the fish cannot readily identify that fact nor that the fish is the subject of a property claim.

Whilst much of the discussion in this thesis will centre on the identifying marks or brands being externally discernible, a concept well known to the law, that does not mean those less readily discernible marks or brands cannot be effectively used. As a matter of evidence otolith and genetic marking will be effective, subject to any inherent substantive evidentiary problems created by their lack of external indicia (see for example the discussions in Jasanoff 1995). Coded wire tag marking is also effective as evidence, again subject to a like issue; it is simply more tangible when extracted.

For the time being, the problems with non-external branding methods can be avoided if they are accompanied by adipose fin clips or other external marks to visually indicate an internally marked fish (Hagen et al. 1995). This assumes of course that the public is on notice of the meaning of an adipose fin clipped fish or the other external mark. But the need to do this considerably increases the cost of the marking process and the stress to the animals.

This concept is no longer purely hypothetical; in at least one statutory regime, the adipose fin clip is given a statutory significance. In the Federal British Columbia Sport Fishing Regulations 1996 a distinction is drawn between salmon and trout that are hatchery animals and those that are wild on the basis of the adipose fin
removal marks. The regulations provide for bag limits by reference to such marked fish. This gives legal effect to the use of distinguishing marks added to fish, albeit in a statutory regime.

3. Proprietorship

3.1. Introduction

At the outset, it is necessary to distinguish between two different aspects of proprietorship of animals. The first, which will be considered here, is proprietorship from a philosophical, economic, ecological and commercial perspective, with some emphasis on the needs of a sea rancher. In section five, there is a discussion of the nature and reasons for proprietorship in a more legalistic sense and having regard to the concepts and decisions of the common law in respect of animals.

In most aquaculture situations, there is no issue as to the proprietorship of the animals being raised. They are usually kept in ponds, tanks, cages, nets or pens. In many cases, the ponds or tanks are maintained on private property. In other cases, the ponds tanks, cages, nets or pens are maintained in areas leased or held under license from the state, conferring a right to exclusive occupation. The animals raised are contained and therefore a person's property, whether the animals are *domitae naturae* or *ferae naturae*. Two issues may arise when the animals escape. One will be identification (unless distinctively marked, branded or an alien animal) and the second issue is one of classification. Practically, it is only when they can be identified that an issue as to proprietorship may arise and even then, if they are *ferae naturae* and identifiable, that may itself be insufficient (see chapter two).

3.2. Introduction to the need for Proprietorship

The basis and need for property or "property rights" has long been a matter of discussion and debate amongst philosophers, jurists and natural lawyers. Aristotle, Locke, Hobbes, Puffendorf and Blackstone are a few who have considered this matter (also see further discussion in section 5.5.3).

Aristotle recognised several thousand years ago that "which is common to the greatest number has the least care bestowed upon it" (McCay & Acheson 1987, 2). Puffendorf (1672, 541) discussed the views of many of the earlier writers, including Aristotle:

> But the introduction of property does away with such quarrels and every man takes greater interest in his own portion...

A little later Puffendorf (1672, 551) provided an explanation as to why further items became subject to private property:
But as mankind multiplied and living conveniences were increased by industry, the necessity of preserving a social life led to the introduction of dominions, yet so that not all things passed into proprietorship at one time, but successively, according as considerations of concord seemed to require.

Blackstone (1765-1770, 2:3-4) also took up this concept:

Thus the ground was in common, and no part was the permanent property of any man in particular ... But when mankind increased in number, it became necessary to entertain conceptions of more permanent dominion, and to appropriate to individuals not the immediate use only, but the very substance of the thing to be used.

Finally, one further quotation from Puffendorf (1672, 561-66) highlights that areas once considered as never likely to require the application of private property concepts do, with time, fall under the same progression that he had previously recognised some pages earlier. His comment is most telling in connection with the sea:

The moral reason why ownership is not suitable to the sea is... that its use is inexhaustible and therefore sufficient for the general service of all, so that it is idle to wish to assign parts of it to individuals.... Not a single one of these reasons which led to the introduction of proprietorship in things can be applied to the open ocean. It needs no labor and industry of man, so far as concerns its open stretches.

Much of the recent debate, whilst taking up a similar cry, centres on the problems of common property aspects of resource use, including in the case of fisheries. This debate is beginning to favour the allocation of these common resources to a few, as part of the progression referred to by Puffendorf (1672). It is a perspective that has been given a particular appellation in this context, "the tragedy of the commons". In more recent times Hardin (1968, 1244) has refashioned this view in the following terms:

The rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another ... But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein lies the tragedy. Each man is locked into a system that compels him to increase his herd without limit – in the world that is limited ... Freedom in a commons brings ruin for all.

This formulation has been adopted and pursued in more recent times by economists, ecologists, sociologists and many others and applied in many countries to various natural resources, including their respective fishing industries. It has been the justification for the introduction of licensing systems, improved licensing systems and more recently quota systems in everything from fisheries to the right to pollute. In the case of fisheries the introduction of quotas occurred after the recognition that licensing, and a number of associated practices were ineffective in preventing overfishing and led to overcapitalisation and a
waste of resources (see Munro & Neher 1995). These systems usually create tradeable rights and in economic terms create private property in the resource. The validity of the tragedy of the commons argument has been questioned by a number of studies, including of fisheries.

Another issue that is relevant to this thesis is the effect of the increased proprietorship of the sea that is being granted to a group. Whilst the desired consequence of the quota system is an increase in the involvement of the property holders in the management of the resource, there appears to be some disadvantages or difficulties. One difficulty is that in time the fishers, who now have the exclusive right to take the commercial catch and a management role, find that there are few ways in which to increase their catch. They are generally faced with declining catches (either voluntary or enforced), closure or enhancement. This has already occurred in the Alaska salmon fishery, the Victorian abalone fishery and the New Zealand scallop fishery. In each of those fisheries enhancement is undertaken or is proposed under the control of the fishers. The common aspect is that the enhancement is to be for the benefit of the common property fishery. The effect of this process is to create in economic terms property rights in favour of the licensed fishers in both the wild and enhanced stocks. In the case of Alaska, appendix four describes aspects of that development.

In the context of sea ranching, the question can be put, should a person undertaking sea ranching be granted property rights in respect of the sea-ranched fish, if they do not already exist? As several of the foregoing quotations indicate, and much of the subsequent analysis will demonstrate, the grant of property rights or the acknowledgment of their existence may be considered from two very different perspectives, one from that of the state or community and the other from that of the individual (with most of the discussion focusing on the individual aspect). In the case of the former, the allocation of property is considered significant, on the one hand, in avoiding social disturbances that may otherwise occur if there are inadequate or ill-defined rules for determining such matters. The granting of those rights also encourages the pursuit of activities that are regarded as beneficial to the community. The grant of property rights may facilitate the management by the community of the utilisation of those resources. It is by providing these rights that the community secures for itself a greater supply of products and an efficient organisation and application of resources, and the community encourages the necessary investment in such activities to be undertaken (see the submissions of the United States In the Proceedings of the Tribunal of Arbitration, Convened at Paris in 1893 for the Determination of Questions between the United States of America and Great Britain Concerning the Jurisdictional Rights of The United States in the Waters of Bering Sea, (the Fur Seal Arbitration 1893) (see section 9.2.3.2.4 for a description of the arbitration and issues)). In the case of individuals, the justification focuses on rewarding a person for the work or outlay of the person (which may be represented in many different ways) or by giving the person an interest incidental
to the ownership of some other form of property. Ultimately, an interest is recognised by the community on the basis of social utility (Philbrick 1938).

3.3. Some Resource Management and Economic Considerations

The ability to manage natural mixed stock fisheries has presented considerable challenges in a wild mixed salmon stock situation (see Pinkerton 1987). It appears to be accentuated when an unowned sea-ranched population is added.

In an economic analysis of the interaction between sea ranching and a common property fishery (considering both the presence and absence of a natural commercial fishery) for salmon, Anderson (1985) reached a number of conclusions that demonstrate the need for the recognition of property rights. He did so by formulating an economic model to examine the interaction between sea-ranched salmon and wild populations, in a number of differing situations (Anderson 1983, 1985). One of his conclusions was that, without adequate property rights, situations will arise where natural populations could theoretically be driven to extinction. A number of situations were considered, but only three are mentioned in this thesis.

In the first of the situations, a common property environment in the absence of a natural or commercial fishery, Anderson (1985) demonstrated that competitive sea ranching would result in inefficient resource use, from overstocking the sea with sea-ranched fish.

The second situation was a common property environment in the presence of a commercial fishery. Anderson (1985) demonstrated that the latter had an inhibitory effect on the entry of sea ranchers because the sea-ranched fish are subject to additional fishing pressure. This is said to result from the lower smolt to adult mortality expected in such fish and therefore their ability to withstand greater fishing pressure. Once that is overcome, there is a range of prices at which both stocks can co-exist in equilibrium, but at some price natural stocks can be driven to extinction. The added sea ranch stock results in fishing at a level that can eliminate the natural stock. If a large price range is desired where the two stocks can co-exist, then some management or regulatory measures are required. They could include restrictions on fishers catching sea-ranched stock, imposition of fishing effort constraints or a limitation on releases by the sea rancher.

None of these measures, however, are likely to achieve an optimal co-operative solution. The first still does not avoid the common property situation and consequent inefficiencies. In the case of the second the constraint must be constantly adjusted to take account of current prices and discount rates with no intermixing of the sea-ranched stock and assuming the salmon ranchers act as a single firm. Limits on releases introduce inefficiencies.

Finally, the case of a profit-maximising single sea-rancher faced with competition from an open access commercial fishery was postulated. In this, Anderson (1985)
found that the entry price for the sea rancher is higher and the extinction price of
the natural fish stock is higher. There is still a risk of inefficient resource
allocation, however. Some of these inefficiencies can be reduced by co-operation
between the two, but not eliminated.

One of Anderson’s (1983, 1985) fundamental conclusions was that, if property
rights exist or are established for the sea-ranching stock, then these inefficiencies
and difficulties will be eliminated (or though more likely reduced), and the sea-
ranching stock more effectively managed.

Generally, it is anticipated that each of those situations will be aggravated in the
case of highly fecund marine species. In their case, even greater numbers can be
produced from a small number of brood stock without loss of brood stock that
occurs with the Pacific salmon used in the model considered by Anderson (1983,
1985). The wild stocks can be more readily overwhelmed and driven to extinction
with their genetic diversity even more quickly destroyed.

3.4. Commercial Considerations

In commercial terms, the lack of proprietorship may be reflected in the risk
assessment of the entrepreneur undertaking the particular activity. This may be
acceptable in the case of a population that returns, where a suitable assessment
can be made of the likelihood of that occurring. But even reliance on that appears
to have had its difficulties. Clearly some enterprises, at one time, considered sea
ranching of Pacific salmon viable. Those enterprises proceeded on the basis of
the salmon returning to the home nursery site and being recaptured. Apparently,
they did not achieve the required profitability, at least not up until 1992
(Committee on Assessment of Technology and Opportunities for Marine

However, if sea ranching is to be taken further, it is likely that those persons
undertaking sea ranching will require an assurance that their interests will be
recognised, if the law does not already adequately recognise their interest. It is
only when such rights are recognised that the sea rancher will bestow that level of
investment required to ensure that those activities are effective (Puffendorf 1672).

Many commercial enterprises will also wish to account for their interest in the fish
released. If they do not have a proprietary interest or the interest is uncertain, on
top of the uncertainty of recovery, it is probable that they will be forced to treat all
costs as an expense rather than an asset. They will not be permitted to record in
their accounts their expectations of recapture, at least until the levels of returns are
established. This alone will have an adverse financial effect on potential entrants,
particularly entities listed on stock exchanges.
The Australian Statement of Accounting Concepts SAC4 (CCH n.d.) highlights this issue in its requirements for financial statements. That statement defines assets as future economic benefits controlled by an entity as a result of past transactions or other past events. It further describes the control of assets as meaning the capacity of the entity to benefit from the assets in the pursuit of the entity's objective and to deny or regulate the access of others to that benefit.

The concept 'asset' involves three essential characteristics. Firstly, there must be a future economic benefit. Secondly, the entity must have control over the future economic benefit; the entity must be able to enjoy the benefits and deny or regulate the access of others to the benefits. Thirdly, the transaction or other event giving rise to the entity's control over the future economic benefit must have occurred. A further requirement is that it is probable that the future economic benefits embodied in the asset will eventuate.

The sea rancher is therefore faced with a number of issues under that Statement of Accounting Concepts as to whether they can recognise fish released into the sea as an asset. This thesis will only focus on one: the ability to deny or regulate the access of others to that benefit. The commentary accompanying the Statement of Accounting Concepts recognises that the ability of an entity to exercise control often stems from the existence of legally enforceable rights. It also recognises, however, that there may be rights that are not legally enforceable, but that adequately ensure control. At the same time there are other rights, such as a retention of title clause, where the person with the benefit of that clause is not in control of the future economic benefit from the goods (the vendor has the property and the purchaser possession but no title pending payment), and therefore not entitled to include them as an asset in their accounts.

There are some analogies between the retention of title example and fish at sea, in that the person retaining title is not in possession. These cases, however, appear to be distinguishable if the sea rancher has property rights. It will be the sea rancher who is entitled to have the future economic benefit, notwithstanding that others may wrongfully interfere with those rights, where the sea rancher retains a proprietary interest in the fish.

However, if the sea rancher has no proprietary interests in the fish and must merely rely on the ability to recapture them when they return to a site, then the sea rancher cannot deny or regulate the access of others to that benefit. Again, this highlights the need for the recognition of property rights. If there is a history of returns to a particular site, it may be possible for an enterprise to assert that it will control a given percentage, based on experience on their return. However, this appears to be stretching the provisions.

Where it is necessary to secure borrowings, property rights will be more important. Without property rights it can be anticipated that conservative bankers
will have little regard to recapture rates of fish in the open sea when considering finance applications. Even with property rights, until bankers have been educated only nominal weighting is likely to be given to that asset in their assessment of realisable assets, as a security for borrowing purposes.

3.5. The Nature of the Form of Proprietorship

3.5.1. Absolute

As already mentioned, the proprietor of *domitae naturae* has an absolute property interest in the animals. In respect of personal property, this is the highest or most significant interest recognised by the common law. It is absolute to the extent that the item remains the person's property, even if it is out of the person's possession and lost. The interest is only lost when the owner has absolutely disposed of the item or abandoned it.

In the common law, the remedies available to an absolute owner of personal property are limited. In effect, the owner may be entitled to recover nothing more than the market value of goods of which the owner has been wrongfully deprived. A dispossessed owner usually does not have an absolute right to recover the dispossessed goods (see the law relating to detinue). In most cases, the person depriving the owner of those goods commits both a civil wrong and a criminal offence.

3.5.2. Limited or Qualified

In the context of this thesis a limited interest or qualified interest is a lesser interest arising out of the nature of the asset. It is a lesser interest or a limited interest because it may be defeated. In this case it may be defeated by the action of the animal itself, by it leaving. It is the interest that may subsist in *ferae naturae*.

As will be described, the quality of the interest may be differentiated in a number of situations. Until defeated, in most cases, the interest is indistinguishable from an absolute interest. Once defeated by the actions of the animal, the interest is at an end; it is lost completely.

3.5.3. Communal

The English common law does not know a concept of communal property. It has a concept of common ownership and at one time there were four different types of common ownership (e.g. joint tenancy, tenancy in common, tenancy in entireties and co-parceners; the latter two appear to have been limited to land and have long been abolished in most jurisdictions). In each case the common owners have or had a specific interest in the item of property, even if it was not specifically distinguishable.
The concept of communal ownership usually means that a group or members of a community are entitled to the use or benefit of the property as a group, without having any individual interest or entitlement to a specific share, part or proportion of the property (see discussion in Bowden 1981). It has existed in many forms in many different societies (Philbrick 1938).

In this context, communal ownership will be used to refer to both common ownership and communal ownership as it is usually understood. In the case of access to a fishery, it refers to the interest that a licence holder may have in a limited entry licence area. The concept may refer to an interest that the holder of an individual transferable quota has to take a quantity or percentage of an annual catch from a fishery. A fishery may be defined by reference to one or more aspects including a type of fish, an area and a fishing method. In this case, the particular fishers have no interest in the fishery; the fishers have an interest in a licence or quota. It is a right to participate in a fishery, limited to a few, a class or body who are licensed, in an economic sense it is a de facto property interest in the fish, as no one else is entitled to take them. The licence gives no proprietary right in the fishery at law; it is a separate species of property, a licence or right to participate, a chose in action.

3.5.4. Royalty Rights

Again, the common law does not know of a general concept of a royalty, as a property concept. The common law recognises a right to the periodical payment of a sum of money (independently of any lease or mortgage) and it is sometimes secured on land (it then constitutes a form of real property) (Megarry & Wade 1975).

A royalty in this context is a periodical payment usually made by a person to another under a licence or arrangement whereby the second is permitted to exploit some interest in the property of the payee. A right to a royalty is usually not secured. It may be a periodical payment made by a publisher to a copyright owner to publish a work, it may be a payment made by a person for permission to exploit patents, trade marks, copyright or other forms of intellectual property. The right to the payment is a chose in action and as such is an item of property. It arises out of the bargain to pay the royalty or a statute creating the right and liability.

In this context, it has been considered as an alternative right that may be afforded to a sea rancher: a payment to be made by fishers or fish processors for the right to take or exploit the fish released by the sea rancher. It is recompense for the efforts, industry and interest of the sea rancher in the fish. It may be provided by statute as part of a regulatory regime in respect of the operation and management of sea ranching or it may arise contractually where the sea rancher has a recognised property right.
This thesis does not explore further the royalty concept. Various aspects of such a system are more fully described in appendix three, including methods and mechanisms for the recovery of a royalty. It is further considered in appendix four, where the possibility of obtaining a satisfactory return using such a method is considered in the context of the Alaska Private Non-Profit Hatchery Programme. As can be seen from appendix four, there are only a few occasions when a satisfactory royalty rate will be achieved without requiring an appropriation of all of the returning fish to the sea rancher (i.e. the whole of the value). The basis of that analysis is more fully described in appendix four. Based on those results, it is not considered practical and, accordingly, is not discussed further in this thesis.
Chapter Two

The Law Relating to the Proprietorship of Animals

4. Introduction

4.1. Early Development

This introduction provides a brief explanation of the issues to be considered in this chapter. It introduces the concepts to be discussed and provides an exposition as to what the common law appears to be in broad and general terms. This introduction will ignore many of the finer points and the qualifications and limitations to be explored later in this chapter. It will then introduce the historical developments and explanation for them.

The law relating to the ownership of animals arose long before the development of most legal systems. It is likely to have been one of those concepts established very early in most primitive societies, once humans kept animals. At an early stage the community would have distinguished between those animals that may be hunted by all and those identified as allocated or belonging to individual members of the community (see Philbrick 1938 and other commentators mentioned by him). For these purposes, the Roman law in respect of animals is the starting point.

During the thousand-year history of the Roman law from its first recognised formulation in the Twelve Tables (the earliest code of the laws of Rome, adopted in 451-450 B.C.) to the adoption of the Digest and Institutes of Justinian (553a, 553b) it altered to reflect the changes and needs of that society. Much of Justinian’s (553a) formulation in respect of animals was adopted by the common law early in its development. Like the Roman law, the common law principles have continued to evolve and change in response to the needs of society. The common law principles were introduced into a feudal, agrarian society. In this society land was the most important form of property and cattle the most important form of personal property.

At the outset, it is necessary to remember that this is a discussion of the law relating to animals in the common law. The approach adopted in the civil law, the law that follows the Roman law and is used in much of Europe, is different. The English common law is the general rules common to the whole of England, developed and administered by the royal courts (Walker 1980). Unlike the civil law, it does not have codes covering large areas of the law and setting down the rights and duties of persons in general terms, basing judgements on abstract
principles. The common law looks heavily to a system of precedent. It moves empirically from case to case, from one real-life situation to another. The common law has not placed great reliance on academic lawyers who systematise, criticise and develop the law in their books and writings (Walker 1980; Van Caenegem 1988), though this may be changing. The common law took this distinct course in the twelfth century (Van Caenegem 1988). Occasionally the term civil law is used in this thesis in another manner, a division of the common law, a reference to the private rights of the subject as distinct from the public law or the criminal law in the common law system.

4.2. Divisions

The common law has two basic divisions of animals, following the Roman law: domitae naturae and ferae naturae.

Domitae naturae consist of a number of populations of animals (e.g. cattle, sheep, pigs, horses, dogs, cats, etc). As a class domitae naturae are generally tame and capable of living about humans. They are populations recognised and recognisable by the community and in the common law not in any scientific sense (whether taxonomical, biological or zoological), but based on acceptance and identification in the community. They are populations of animals useful to humans, they are identifiable as a population, and they are populations over which humans effect a level of subjugation or control. The law gives effect to this community recognition, stamping on the community the concept that an animal of that class belongs to somebody and you appropriate it at your peril. The division is no longer limited to animals required for food and draught; it encompasses those animals as a class that provide the items that humans’ covet. The law provides remedies for the owner of the animal who is dispossessed. The owner may seek civil remedies in trespass, conversion or detinue. The person dispossessing the possessor may be guilty of a breach of the criminal law.

There are two subdivisions of domitae naturae. The first, avers, embraces animals of agricultural or economic significance. Domitae naturae were originally animals useful for food or draught. To take them was larceny and the penalties were severe. They were required for a person’s subsistence and sustenance. However, if they did stray they remained the person’s property. The animal initially and then the possessor became liable for the wrongs committed by the animal. The neighbours’ crops and herbage were of value, and the deprivation of the crops or herbage was to be compensated and so the animal could be taken as security for that payment. If the owner could not be found, then the Crown or its grantee would more usually be entitled to the animal, but only in strict compliance with a prescribed process.

The other division of domitae naturae were those animals regarded as having a base nature, of no value or kept for pleasure. Those animals included dogs and
cats, animals that in an agrarian society attract little recognition. The law did not regard the taking of them as larceny. The other remedies protecting property, however, gradually changed to encompass those animals formerly regarded as of a base nature, of no value or kept for pleasure. It occurred slowly; firstly trespass and then trover and detinue became available.

Cattle, long regarded as animals of value, were now joined by animals of a base nature or kept for pleasure, as animals with a value, an interest requiring protection. The latter attracted a lesser interest; they could be the subjects of property, they would support an action in trespass, trover or detinue but larceny could not be committed of them. Also, liability for the actions of these animals did not follow the property. The animals could go where they pleased, they had a recognised licence to roam, and it was only if their actions had a significant impact on another person or the property of a person that the former right to take appropriate action arose. The action had to be appropriate and not too severe, the animal had value and could not be injured other than in acceptable circumstances. It was reminiscent of the early concept of noxal liability, at least in respect of those animals of a base nature.

By the middle ages, most of the animals within the class domitae naturae, other than dogs and cats, were identified (see section eleven). Only one, and possibly three, populations of animals have, in the decisions in England since the late middle ages, crossed into the class domitae naturae (ignoring dogs and cats). The criteria have more recently altered, as the community recognises the subjugation and control of further populations of animals for the benefit of the community.

The division ferae naturae encompasses all other animals, with a possible exception for those without the power of locomotion. This division has a number of subdivisions in the law, according to the circumstances under which they are possessed.

The first of those subdivisions is those animals per industriam, the subject of the art and industry of humans. In recognition of the efforts of humans, predominantly in an agricultural context, the proprietors of animals in this situation had a property interest nearly as large as that afforded to the proprietors of domitae naturae. The proprietors of these animals also became liable for some of the acts of their animals. The law provided remedies for the owner of these animals when they were dispossessed. The owner could seek civil remedies in trespass, trover or detinue. The person dispossessing the proprietor could be guilty of larceny. Larceny again distinguished between those animals fit for food and draught and the others.

The second subdivision is those animals that are the subject of certain royal franchises known as the forest, the chase, the park and the warren. The Normans
after the conquest initially benefited from extending these franchised areas but this was soon restrained, so the Crown then sought to dispose of these areas with the franchises attached to the land, or grant them in favour of others over Crown land, or create new franchises over the land of a landowner. The Crown and the grantees of the Crown now have the benefit of these franchised areas, but at the cost of protecting and preserving the franchise. These royal franchises could be sold, severed or reserved. This cost was soon regarded as a form of effort or investment. The animals were in possession of those guarding and maintaining the franchise for the benefit of the holder of the franchise. They were the property of the holder of the franchise whilst in the franchise and even outside, whilst being pursued by the keepers. Otherwise, outside the franchise, anybody could take them and the holder of the franchise was not responsible for them. So rabbits from a free warren, though property of the free warrener in the warren, were the property of nobody outside of the warren. The free warrener had no responsibility for the rabbits outside the free warren.

The holders of those franchises obtained a lesser property interest, an interest when the animal was in the franchise. The common law recognised a lesser outlay or involvement by the holder of the franchise. It may have been concerned with avoiding an extension of liability for animals, that could less adequately be controlled. The law also provided remedies for the owner of these animals when dispossessed while the animal was in the franchise. The owner could seek civil remedies in trespass. The person dispossessing the possessor could be guilty of larceny if the animal was taken in the franchise and good for food or draught, but otherwise no felony was committed.

The third subdivision recognised an interest in the animal because of the ownership of the soil, an interest that was to prevail over the rights of others to take the animal. The general right to take the animal was subordinate to the more specific right of a landowner to do so, arising out of the right to exclude others, or a legislative prohibition from doing so. At this point, the law became confused; it vacillated and altered from time to time, at least in respect of animals with the power of locomotion. It was not sure whether the interest in the animal was to be regarded as appurtenant to the real property or to be characterised as personal property.

The law appeared to have no such difficulty with the young or impotent of the ferae naturae, those ratione impotentiae. They belonged to the landowner for so long as they could not leave the land. Larceny could be committed of those good for food or draught. The landowner could sue in trespass, trover or detinue for their taking.

In all other ferae naturae with the power of locomotion about land and not the subject of art, industry or captivity, the landowner only had a sufficient interest to exclude others from taking them. This status creates the confusion. A right to
exclude was regarded as sufficient to create a property interest in some cases. In others, the animals were regarded as appurtenant to the land; there was a desire to ensure that a trespasser could not benefit from his wrong. Nevertheless, there was no possession, and notional possession has so far not embraced this interest.

A notional possession of a dead animal on one’s land does appear to be accepted, but the landowner does not have possession before the death. Another person entering the land and taking the animal will be liable in trespass, but not of larceny. The killing of the animal reduces it into the possession of the landowner, for the civil remedies but not the criminal law. The criminal law regards the killing and taking as one continuous act; there is no intervening reduction into possession of the landowner for the purposes of the criminal law.

There can be no civil liability in respect of *ferae naturae*, once they leave a person’s land and do damage on the land of another. The later landowner may kill them or otherwise deal with them absolutely. The law provided limited remedies for the landowner where a trespasser entered the land and deprived the landowner of the opportunity to take those animals. The owner’s civil redress was limited to trespass for entering the land. The person entering the land could commit a criminal act of trespass, but could not commit larceny of the animal; the landowner did not have possession of the animal.

The status of those animals that are immobile (other than the young and impotent) is uncertain, particularly when they are attached to the land, they do not partake of the soil and they have no power of locomotion. There may be a sufficient notional possession to support both a civil action and larceny (if they are fit for food).

The foregoing are the principal divisions in the common law and their incidents. There are other lesser divisions and classifications. The common law regarded vermin as creatures requiring destruction for the common good, a view that may no longer prevail in most common law countries. It developed new rules in connection with the liability of animals. Many of these rules were directed at protecting the interest of those persons who through industry and effort made these animals serve the needs of humans and thus the community, but at the same time they balanced other community interests.

4.3. Development

In historical terms, this discussion can be conveniently divided into three periods. The Roman period is regarded as the first. From the time of the departure of the Romans in Britain (about 453 AD) to the time of Bracton (about 1250) is a further period. Little information is available about that period. The third period commences with the publication by Bracton of the *Laws and customs of England*
(1250), a treatise that describes the principles applicable to the proprietorship and acquisition of animals and that, in doing so, adopts many aspects of the Roman law.

The Roman law classification is discussed in the *Digests and Institutes* (Justinian 553a, 553b) and by the commentators under the concept of occupancy, the ability to make an original acquisition, by acquiring possession and hence a level of ownership, by seizing an animal. There are two classes, *domitae naturae* and *ferae naturae*, with the latter class subdivided into those animals with *animus revertendi* and those without. The Roman law also had other divisions. Some animals were regarded as *res mancipi* and were the subject of a formal process of sale, a process and division that fell into disuse and was abolished by Justinian. The Twelve Tables also distinguished between some classes of animals for the purposes of liability. This was altered and extended over time.

Under both the Roman law and the common law, the groups *domitae naturae* and *ferae naturae* are mutually exclusive. In the case of *ferae naturae*, as mentioned, a number of subgroups exist. These differ between the two systems. It is also possible that in the early Roman period there were no subgroups at all, but simply two distinct groups. The attributes or requirements that distinguished members of one class from the other underwent development, under both systems. A discussion of these possible changes under the Roman law will be undertaken briefly.

The Roman law divisions were not based on a distinction between those populations to be found wandering at large and those not wandering at large (Blackstone 1765-1770). Many of the animals the Romans regarded as *domitae naturae* had wild cousins. This was also the case in England and may still be true in a few cases.

Bracton (1250) stated the law applicable in England in respect of animals following the Roman law. It is impossible to say at this time whether Bracton's statement on animals in the *Laws and customs of England* reflected the English law of his time or was the adoption by him of Roman law principles to fill a void; it most likely involved elements of both (Bracton 1250; Scrutton 1884). This thesis assumes that the *Laws and customs of England* accurately reflects the law of the time. The period following the publication by Bracton of his treatise also saw the further development of the system of precedent and the availability of reported decisions, a development that facilitates a review of the history of the law relating to animals. Much of the early legislation limiting the right to hunt was introduced in this period. The period between Bracton and Blackstone was one when the laws relating to the franchises developed and waned.

Whilst this third stage could be further divided at the point of the publication of Blackstone's *Commentaries* (1765-1770), this has not been adopted. There is
little doubt that Blackstone's influence has been significant, and he was writing
during a time of important change, involving both the agrarian and industrial
revolutions (Hall & Clutton-Brock 1989). Notwithstanding that, the discussion
will examine aspects of the two divisions over the whole period, the changing
relationship between humans and a number of populations of animals, and the use
of brands or marks, and conclude by summarising the classification of a number
of the populations and comparing their status in both ecological and legal terms.

Some more modern common law texts and commentators (Ingham 1900;
Wildsmith 1982) and impliedly in the approach in the Royal Commissioners on
the Criminal Code (1879)) and cases (Campbell v Hedley, (1917) 39 O.L.R. 528;
Ebers v MacEachern, [1932] 3 D.L.R. 415; Reeve v Wardle, Ex parte Reeve,
[1960] Q.L.R. 143) deal with the concepts of the proprietorship of animals by
looking to Blackstone's Commentaries (Blackstone 1765-1770, 2:391-92). In
particular, the following quote from those Commentaries provides the criteria
used by many for distinguishing between the classes of animals and determining
the nature of the property interest:

> Our law apprehends the most obvious distinction to be, between such
> animals as we generally see tame, and are therefore seldom, if ever, found
> wandering at large, which it calls domitae naturae: and such creatures as
> are usually found at liberty, which are therefore supposed to be more
> emphatically ferae naturae, though it may happen that the latter shall be
> sometimes tamed and confined by the art and industry of man.

Many appear to accept the proposition, few have questioned it and occasionally
some have suggested that it may need to be qualified or limited. Blackstone
(1765-1770) provided minimal authority for this proposition and for many of the
related propositions that he put forward. The distinction is one Blackstone
regarded as existing not only in the common law: it is part of the law of nature
and of all civilised people. Of course, Blackstone (1765-1770) went on to
describe the further divisions and broad property incidents of those classified as
ferae naturae.

This thesis, whilst recognising the simplicity and ease with which the test
proposed by Blackstone can be applied, questions the basis of the distinction both
as a matter of law and practice, but does not fully reject it. Many of the rules
developed before Blackstone's formulation were based on agrarian concepts.
Some of those rules remain pertinent today, and clearly others do not. It is only
by an examination of those rules and their development that it can be
demonstrated that the formulation put forward by Blackstone, whilst providing a
useful shorthand test, can be misleading and unhelpful in many aspects.

The development of the law after Blackstone in respect of some animals
highlights the development of many of the principles and the difficulties in the
delineation adopted by Blackstone. The advances in taxonomy, zoology and
many other fields further suggest that even the use of apparently simple terminology needs to be undertaken with care. Many of the expressions that are used in the decisions and the commentaries do not adequately describe the situation or are used in a manner that creates confusion.

The existence of feral populations of what would otherwise be regarded as domitae naturae, which may not be adequately accommodated by the delineation described by Blackstone but may have been accommodated by the earlier delineation, needs to be considered. The need for an exception only arises if the whole species (in a scientific sense) is to be regarded as one group or another. The problem of recognising hybrids as another group, is a more recent issue, notwithstanding the existence and recognition of mules for most of the period under discussion.

4.4. Refashioned Test

Finally, it will be demonstrated that the common law has in any event moved on, at least outside of England, where the introduction of new animals and new practices without the benefit of the device of the franchises required the modernisation of the rules. In England, other than for subsisting franchises, the concept has been abolished.

This refashioning having occurred, this chapter puts forward the proposition that the rules may now be described in the following terms (without adequately allowing for the concept of alien animals):

Domitae naturae are:

- a group of animals;
- made up of a number of populations of animals (which in some cases may be regarded as a colony);
- each population being recognised in the particular community or society:
  ◦ as tame, based on the attributes of the population; and
  ◦ as having been accustomed for a significant time to associate with that community or society; or
  ◦ having been subjected to significant or consistent exploitation by people in a manner recognised in that community or society, other than by hunting or gathering;
- the individual members of the population have a subsisting power of locomotion at the relevant time; and
- the members of the population are capable of being identified as members of that population.

Ferae naturae are those individual animals with subsisting powers of locomotion that are not domitae naturae.
The foregoing description adequately encompasses animals identifiable and significantly exploited such as swans in earlier times (see appendix two), silver foxes more recently and even more recently a large number of populations of fish, when distinguishable. It emphasises that recognition of an interest is afforded on the basis of social utility in the wider context (Philbrick 1938). Whilst no mention is made of what is required as consistent exploitation and how that may be identified, it clearly includes a combination of some of the following:

- The animal has been bred in the jurisdiction for many years.
- The animal is now commonly bred on farms in the jurisdiction.
- The raising of the animal occurs in much of the jurisdiction.
- There are a significant number of farms in the jurisdiction raising them.
- There are significant numbers raised on those farms.
- They are as much a part of husbandry as cattle, sheep and pigs.
- The animals are shown at shows and exhibitions held regularly and commonly each year in the jurisdiction and other parts of the country where it is a federation.
- A registration and pedigree system is maintained and kept in respect of the animals.
- The animals are valuable.
- The animals have developed social behaviour and habits.
- The animals are tame.
- There are established and recognised methods of raising, housing and keeping of the animals.
- Collectively they represent in the jurisdiction a significant value to the community.
- Their habits have considerably changed under the influence of humans.
- They are regarded in the jurisdiction as domestic animals or semi-domesticated.
- They are recognised in legislation as part of domestic livestock.
- They are afforded legislative protection and sanction.
- There is a licensing system for those engaged in their raising.
- They have become subservient to humans.
- There is significant written material on the raising and husbandry of the animal which is essentially practical.
- They are an introduced animal in the jurisdiction.
- They are in the jurisdiction distinguishable from native populations of animals.
- They cannot survive in the wild in the jurisdiction.
- They were developed by humans on the basis of selective breeding.
- They cannot reproduce in the wild.
- They are mass produced by humans.

The law emphasises the population rather than the species. Even if the expression "species" is retained, the following discussion will suggest that the expression "species" in the common law means a population of animals recognised by the
community as having certain recognised or distinguishing attributes in that
community. It does not mean one designated as such by modern scientific or
taxonomical classification, notwithstanding some recent attempts to do so.

In this way the test recognises the existence of feral populations and hybrid
populations and regards them as separate and distinct populations,
notwithstanding that the feral or hybrid population may be the same species as
members of another population in biological or taxonomical terms. Until the feral
or hybrid populations are distinguishable as a population there is and will be
difficulties of discerning their classification.

Domitae naturae are the subject of absolute ownership. Ferae naturae may be the
subject of qualified ownership, depending on the extent of the investment, so:

- Those in captivity are the subject of a possessory interest, a qualified property
  interest.
- Those the subject of labour, art or investment are the subject of a qualified
  property interest nearly as large as that applicable to domitae naturae so long
  as they remain in possession, have animus revertendi, or possibly if marked.
- Those ratione impotentiae are the subject of a qualified interest nearly as
  large as that applicable to domitae naturae.
- Those the subject of a franchise are the subject of a qualified interest nearly
  as large as that applicable to domitae naturae as long as they remain within
  the franchise or are being pursued by the holder of the franchise or the agents
  or servants of the franchise holder.
- Those ratione soli are the subject of a very limited interest, namely the right
to take the animals to the exclusion of others.

Distinguishable brands or marks may preserve an interest in ferae naturae. There
is little direct authority one way or another apart from The Case of Swans, (1592)
7 Co. 15b, 77 E.R. 435 and even that may be equivocal, depending on the view
you take as to the nature of swans at the time. Based on the view of Blackstone
(1765-1770), the interest only subsisted so long as the animal was in the
neighbourhood. But even then the nature of the property interest and the extent of
the remedies available varied, depending on yet further historical classifications as
to whether the animals were once good for food, produced food or were useful for
draught. On the other hand, anecdotal comments and some comments in some
decisions support the effectiveness of brands and marks.

In summary, the common law clearly adopted in its formative stages aspects of
the Roman law; it soon overlaid those principles with a complex layer of other
classifications, rules and exceptions. These were fashioned by the needs of the
times and were apparently based on a number of fundamental principles. Table 5
highlights this layering effect and the overlapping aspects in a cascading manner,
but with a number of simplifications and ignoring a number of exceptions. Table
5 also highlights that the classifications or divisions are not symmetrical in all
aspects.
Table 5
Overlapping Legal Treatment of Animals

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Some Populations</th>
<th>Balance of the Populations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roman law</td>
<td><em>domitae naturae</em></td>
<td><em>ferae naturae</em></td>
</tr>
<tr>
<td>Common law</td>
<td><em>domitae naturae</em></td>
<td>some <em>ferae naturae</em></td>
</tr>
<tr>
<td>Attributes</td>
<td>domesticated</td>
<td>domestic and/or tame</td>
</tr>
<tr>
<td>Property rights</td>
<td>absolute</td>
<td>qualified/limited</td>
</tr>
<tr>
<td>Distinguishing</td>
<td>domesticated</td>
<td>industry/soil/franchise</td>
</tr>
<tr>
<td>basis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underlying</td>
<td>food/draught/effort</td>
<td>base/pleasure/no value</td>
</tr>
<tr>
<td>reason</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Legal redress</td>
<td>larceny/trespass/trover/detinue</td>
<td>trespass/trover/detinue</td>
</tr>
<tr>
<td>How identified</td>
<td>population</td>
<td>individual/swarm</td>
</tr>
<tr>
<td>Interest</td>
<td></td>
<td>return/soil/franchise/</td>
</tr>
<tr>
<td>identification</td>
<td></td>
<td>mark</td>
</tr>
<tr>
<td>Cattle trespass</td>
<td>yes</td>
<td>most unlikely</td>
</tr>
<tr>
<td>Brands and marks</td>
<td>identification</td>
<td>most likely</td>
</tr>
<tr>
<td>Scienter</td>
<td></td>
<td>no</td>
</tr>
</tbody>
</table>

5. Some Concepts Relevant to the Existence of Property Rights in Animals

5.1. Introduction

This section seeks to describe some concepts that are relevant to the later discussion of property rights in animals. It considers what an animal is in the eyes of the law. It then discusses the meaning of several expressions commonly encountered, both in the decisions and in the scientific literature relating to domestication. It helps to highlight the overlapping nature of many of the terms and the confusion that is created by reason of that. The discussion emphasises that, at least in the legal context as to the nature of the proprietary interest, the terms are not interchangeable: a domestic animal is not a *domitae naturae* for property purposes, notwithstanding a number of suggestions to that effect. This discussion further emphasises that, from a biological perspective, domestication has significant impact on many attributes of a population of animals, and it does with time create a distinguishable population. This concept that is taken up later in this thesis and emphasised as a basis in law of the distinction between populations that are to be regarded as *domitae naturae* and *ferae naturae*. It emphasises the ability of the community to identify that a population of animals is the subject of absolute property.
The section then turns to what is property in the law. It highlights both the convenience and vagueness of that term and that in the common law possession (both actual and notional) has been more important. It then describes why, in considering many decisions over the centuries as to property interests in animals, symmetry is not always found. It helps to explain why in the earlier decisions there were constraints on extending the concept of property beyond those animals the subject of larceny or unless there was a liability for their wrongs. It helps to explain the relationship between those concepts and the progression that has occurred more recently when property concepts were freed from criminal concepts.

5.2. What are Animals

The law appears never to have defined an animal. The expression “an animal” is usually said to include all creatures of the animal world excluding humans (Halsbury 1991). It has been variously defined in statutes (see Strouds judicial dictionary (James 1971) for some examples) and construed narrowly in some contexts (Burnside and Marrakai Ltd v F.C.T., (1957) 31 A.L.J.R. 553, where “animals” in the context of the statute was construed to mean domestic and tame beasts). In Stormer v Ingram, [1978] 21 S.A.S.R. 93, 97, Legoe J. acknowledged that the meaning of the word animal has never been defined. He adopts the view of North (1972), that it includes “birds, reptiles and insects but not bacteria”.

Williams (1939, 257) discussed the question of bacteria and expresses the view that,

although disease germs are not classed by English legal writers as animals ferae naturae, and although, biologically, they are not animals at all, there seems to be no sound juristic reason for keeping them distinct. Certainly no one commits any tort by appropriating them, whether voluntarily or involuntarily, while they are in a wild state.

As to why it should not extend to all forms of bacteria (not simply “disease germs”) and other life forms with power of locomotion is not altogether clear, even if they only move very small distances relative to the distance that a human or other animals may move. There appears little reason why the principles should not extend to zooplankton and other like microbes. Though, as some have noted, so far the courts have rarely been called on to consider the status of microbes (Favre & Loring 1986).

In the case of molluscs, the situation appears to be more difficult. They are for many purposes regarded as fish and in that wider context ferae naturae (Foster v Urban Council of Warblington, [1906] 1 K.B. 648). On the other hand, there is a plain distinction in the common law between those animals that have the power of locomotion and may depart at will and those that have a practically fixed habitat
(McKee v Gratz, 260 U.S. 127 (1922). But even in their case a distinction needs to be made between those that take up a fixed habitat, those that do not and possibly between molluscs in their larval and free swimming form and when they become affixed. So far the courts have not been called on to decide the matter.

In People v Morrison, 194 N.Y. 175, 86 N.E. 1120 (1909), a firm had been in possession for twenty years of a plat of land beneath Jamaica Bay. They cleaned the ground and then transplanted upon it clams and oysters which they had procured from other waters. The plat was staked out and marked according to the local custom and the stakes replaced when shifted by ice or otherwise. The defendant was alleged to have taken shellfish from that plat. The court said, People v Morrison, 194 N.Y. 175, 177, 86 N.E. 1120, 1121 (1909):

> When clams or oysters are reclaimed from nature and transplanted to a bed where none grew naturally, and the bed is so marked out by stakes as to show that they are in the possession of a private owner, they are personal property and may become the subject of larceny. Although in the nature of ferae naturae, to which a qualified title may be acquired by possession, when reclaimed and transplanted, they need not be confined, for as they cannot move about, they cannot get away, even when placed in the water, as they must be in order to live. They and their produce thus cease to be common property and belong exclusively to the one who transplanted them.

In the United States decision of Coos Bay Oyster Cooperative v State Highway Commission, 219 Ore. 588, 348 P. 2d 39, 42 (1959), oysters were described in the following terms;

> In 22 Am. Jur., Shellfish 670, @ 5, it is said: “The difference between the locomotive powers of swimming fish and shellfish, such as oysters and clams, justifies the law in making a distinction as to their ownership. In their natural state, clams and oysters are classified as ferae naturae, and their ownership is vested in the state in its sovereign capacity, but where planted where they do not naturally grow, in locations marked by posts or otherwise, they partake rather of the nature of domitae and are the subjects of private ownership, although their owner has no greater actual possession than is evidenced by their planting and staking. In the latter case, they may be the subject of larceny; and if one injures or converts such shellfish, he is liable to respond in damages.

The question is not whether molluscs are animals, it is whether animals without the power of locomotion are within the legal rules relating to animals. They are no different from any other inanimate chattel and the reason for the rules relating to animals is wholly inapplicable to their nature. They cannot dispossess the owner of the owner's interest; they cannot leave of their own accord. If they are to remain within the classification of animals, either for completeness, then those that are ferae naturae should be characterised as domitae naturae (Myler v Commissioner of Land Tax, (Unreported, Shepherd J. Supreme Court of New
South Wales, 12 October 1978) or within another category of *ferae naturae* similar to those *ratione impotentiae*. This latter approach appears more appropriate. After all, they are animals and when occurring naturally may be the subject of fishing (see section twelve).

Whilst the more usual controversy may be whether or not a particular animal is within the class of animals designated by the legislature (Favre & Loring 1986), the issue remains what is an animal for the purposes of the common law. As is not uncommon in the law, it will depend on the context in which the expression is used. In the context of property, ownership and possession, for the purpose of distinguishing between absolute property and a qualified property, a power of locomotion appears imperative (see Justinian 553a; Bracton 1250; Blackstone 1765-1770). This is not to imply that there may not be some form of property in every living creature, other than a human or all irrational beings. It simply means those descriptions are not significant for determining their property classifications.

These groupings are simply expressed diagrammatically in figure 2. All animals may be encompassed by the concepts under consideration; they may all be the subject of property. Some, such as molluscs and possibly others without the power of locomotion, are outside the classes *domitae naturae* and *ferae naturae*. All others were once *ferae naturae* and all populations *ferae naturae* may become *domitae naturae*. As to whether a population *domitae naturae* can, in the common law, once again become *ferae naturae* is open to much more doubt, as will be discussed (see section 8.6).

![Figure 2. A Grouping of Animals](image-url)
5.3. Tameness

At the core of much of the discussion that follows there are two terms that are repeatedly used, namely “tameness” and “domestication”. Both are used frequently in decisions. Both are terms in everyday use. Neither term appears to have a considered legal definition. Notwithstanding that, they may still be terms of art, in the law. They clearly have different meanings in different spheres and contexts.

Tame is defined in the *Shorter Oxford English dictionary* (1970) in the following terms:

1. Of animals (rarely of men): Reclaimed from the wild state; brought under the control and care of man; domestic; domesticated... 3. Having the disposition or character of a domesticated animal; accustomed to man; not showing natural shyness, fear of, or fierceness to man; also of persons, their disposition, etc: made tractable, docile, or pliant OE.

Fox (1978, 3) describes taming and by inference tameness:

*...taming is the process whereby an animal’s tendency to flee from man is gradually eliminated.*

Another description to a similar effect comes from Shackleton (1988, 32):

*Tameness is a behavioural trait of animals. Specifically, tameness refers to the animal’s response to human beings. Animals usually have to learn how to be tame.*

“Wild” may be used to distinguish those animals that are not tame or domesticated (either on a population basis or in respect of individual animals). Generally speaking, all Australian native animals are “wild” in this sense. The odd tame wombat, kookaburra or kangaroo is said to be quite exceptional (*Johnson M v Casey CC*, Unreported Appeal No. 1998/60147, Victorian Civil and Administrative Appeals Tribunal).

Zoologists usually describe tameness in terms of fear reactions and individual flight distance (Shackleton 1988) or flight response aspects (Grandin & Deesing 1998). Genetics influence tameness, as does environment and training. For example, domesticated animals usually have attenuated flight responses due to years of selective breeding (Grandin & Deesing 1998).

Whilst tameness may conceptually have a simple common meaning, it also needs to be considered in the context of different classes or populations of animals. Even animals of the same breed in different contexts may exhibit different reactions. Therefore, in the law, tameness, at least as between populations of animals, will involve different attributes (*Fur Seal Arbitration* 1893). What may
be accepted as tame in one population may be insufficient in another population. Even within a population or breed there will be a broad range of reactions. A breed of European cattle may exhibit different handling reactions when raised in close association with humans than those raised on ranches and stations encountering humans only several times a year (Grandin & Deesing 1998).

The law does not appear to have concerned itself, in most of the cases, with any difference in the source of the tameness, whether genetic and environmental, at least at a superficial level, in domitae naturae. A contrary view is that there is implicit recognition of tameness, as a population attribute, in the class domitae naturae. The law recognises tameness selected for by humans (both conscious and unconscious) over many generations arising from a long association with humans, even if the law has not expressly recognised the genetic source of this effect.

Tameness is regarded in many legal contexts as the attribute of a particular animal rather than that of a class. Clearly, an element of tameness is required of domitae naturae, as a class. This tameness however does not on the cases, appear to be affected by the existence of individual domitae naturae that may not be tame (e.g. the wild bull). The same level of tameness does not appear to be required across the whole range of domitae naturae, so that expected of sheep is different from that expected of cattle.

Whatever may be the definition and the attributes distinguishing tameness, it is abundantly clear from most decisions that it is an important attribute in classifying both domitae naturae and ferae naturae. The term is used in connection with both ferae naturae and domitae naturae and not always clearly distinguished. This is one of the sources of difficulties in considering the use of tameness as a criterion by itself. Tameness is an attribute of both domitae naturae and some ferae naturae, an attribute of domestic and domesticated animals. It may also be an attribute of some non-domesticated animals, such as ones with an attenuated flight response.

What is significant is that tameness is deemed by the law to be an attribute of domitae naturae without anything more; it is deemed to be a population attribute. The law is not concerned with the state of the individual animal, once it is shown to be a member of a population domitae naturae. It is not usually necessary to show that the population is tame as one of the class attributes or that the individual animal is indeed tame. The law is concerned, in some cases, to determine whether an individual animal ferae naturae (captivity aside) is tame, when faced with a claim for a property interest. Tameness in an individual animal ferae naturae may demonstrate a property right, as it usually reflects the art and industry of a person.
In some cases, it is not clear in the discussions concerning tameness whether the court is making a finding that an animal is tame and domestic or that the population is tame and domestic (i.e. domitae naturae). In many of those cases, the court does not specifically determine whether the animal belongs to a population that as a whole is domitae naturae or is still a member of a population ferae naturae. The court finds it sufficient to find a property right and does not make any further findings.

That this distinction is not always brought out, is highlighted in the following quote from the Corpus Juris Secundum (1936, 474):

*Domestic animals include those which are tame by nature, or from time immemorial have been accustomed to the association of man, or by his industry have been subjected to his will, and have no disposition to escape his dominion.*

*Wild animals comprehend those wild by nature, which, because of habit, mode of life, or natural instinct, are incapable of being completely domesticated, and require the exercise of art, force, or skill to keep them in subjection.*

The decision in *Andrew v Kilgour*, (1910) 13 West. L.R. 608 provides an example (leaving aside the liability issue involved). In that case a pet raccoon was usually chained up by the owner’s son, who had control of it, for much of its time. The owner was the proprietor of a hotel. The raccoon frequently entered the hotel. The raccoon was regarded as tame and did not fear humans. On the particular occasion it walked around the bar and sniffed the boots of the patrons. The animal had no disposition to flee. But when confronted it stood its ground. The fact that it was dispatched with a meat cleaver does not detract from the analysis. The behaviour was no different in many respects from a dog. It had bitten occasionally, but generally when provoked. There is little doubt that a property interest subsisted. The raccoon was tame by nature; it was subjected to the will of humans; it had no disposition to flee; it was possessed and it had been purchased.

Applying the foregoing test from the Corpus Juris Secundum (1936) to the raccoon suggests it is a domestic animal. The quote only mentions tameness in the context of domestic animals (i.e. domitae naturae). It does not emphasise that the population is to be tame. The quote does state that the animal is to be “tame by nature”. Is that the nature of the animal or the nature of the population? If it is the latter, then it is adopting a population test, otherwise it is an inadequate description. On the approach of Blackstone (1765-1770), the raccoon would be regarded as ferae naturae. There are raccoons wandering at large in Canada, and it is a view that appears to accord with that of the Canadian communities.

Tameness of an individual animal that is a member of a population ferae naturae, does not convert that population to a class domitae naturae. On one construction
of the decisions, it appears that for a population of animals to be regarded as *domitae naturae* they need to be found as a population to be tame. Tameness appears more important in the earlier decisions (and in those situations where the division between *domitae naturae* and *ferae naturae* is more clearly not species-based, in the modern taxonomical sense).

In *YB* (1528) 19 Hen. 8, 2 (Chitty 1812, 2:812) peacocks were described as “tame and domestic”. The majority view was that they are commonly of the nature of hens or capons, geese or ducks, and the owner has property in them. They are *domitae naturae*. That they are regarded as *domitae naturae* can also be seen in Hale 1736; Hawkins 1716; East 1803 and also *Commonwealth v Beaman*, 8 Gray (Mass.) 497 (1857).

Brian, J. in *Anon.*, (1498) Keil. 30, 13 Hen. 7, 72 E.R 265 compares the taking of deer outside of a forest with the taking of “tame cattle”, in which property remains. The emphasis here is on “tame cattle” not cattle or domestic cattle. It appears to imply that there are wild cattle. It could be misconstrued as suggesting you look to individuals rather than the class. It may have meant that *domitae naturae* were those animals of a population living among people and tame.

Property was found to subsist in a hound. Though a beast for pleasure and *ferae naturae*, it was tame. The same was said to be the law in respect of hawks, popinjays, thrushes and apes that are tame (*Anon.*, (1521) Bro. Ab. Tit. Trespass, pl 407). Here the animal is characterised as *ferae naturae* and tame. The property is recognised because of the tameness of the animal, notwithstanding it is *ferae naturae*. So when a person by industry and labour makes *ferae naturae* tame, they become the person’s chattels. They are in the person’s possession such as rabbits and fish. It is not lawful for anyone to take them out of that possession (Brook J., *YB* (1521) 12 Hen. 8, 9) and it is a felony to do so (*Anon.*, (1527) Jenk. 204, 18 Hen. 8, 2). So, in *The Case of Swans* (1592) 15 Co. 15b, 17b, 77 E. R. 435, 438, it was said that a person may obtain property in *ferae naturae* by industry. Industry includes capturing and making them “mansueta, i.e. manuei assueta, or domestica, i.e. domui assueta”. In those tamed a person only has a qualified property, an interest so long as they remain tame, tameness in this context clearly meaning something different (e.g., *animus revertendi*). The comment is repeated on many occasions (*The King v Foot*, (1685) 2 Sh. 455, 89 E.R. 1038; *Mallocke v Eastly*, (1685) 3 Lev. 227, 83 E.R. 663; *Davies v Powel* (1737) Will. 47, 125 E.R. 1048).

Tameness had to be proved; it could not be presumed (*The King v Rough*, (1779) 2 East’s P. C. 607). A statement in an indictment for stealing a pheasant that they were “the goods and chattels” of a person was insufficient. The requirements appear to have been relaxed in the next century (*R v Cory*, (1864) C.L.C. 23; *The Queen v Shickle*, (1868) 1 L.R. C.C.R. 158).
Tameness in an individual is in some cases equated with the domestication of that individual, but not of the population. In *Filburn v The People’s Palace and Aquarium Company, Ltd*, (1890) 25 Q.B.D. 258 (a liability decision) it was said that elephants as a class have not been reduced to a state of subjection; they still remain wild and untamed, though individuals are brought to a degree of tameness which amounts to domestication.

Tameness in *ferae naturae* is regularly mentioned in the context of animals with *animus revertendi*. It is not only regarded as a favourable disposition towards a person but also includes a desire to return to the person. So homing pigeons are regarded as tame in *Hamps v Darby*, [1948] 2 K.B. 317. *Animus revertendi* is also sometimes confusingly used in connection with *domitae naturae*, as an attribute of the population, an indication of the tameness of the population and of its desire to be about humans (*YB* (1528) 19 Hen. 8, 2).

Yet some other early decisions indicate that tameness or reclamation by itself may be insufficient for *ferae naturae* to obtain property or for the animal to be the subject of larceny. There appeared to be a requirement for something more, in some cases, usually reclamation, but they appear to be in the minority (*Lyster v Home*, (1640) 15 Cro. Car. 544, 79 E.R. 1069; *The King v Foot*). Decisions to the contrary are *Anon.*, (1498) Keil. 30, 13 Hen. 7; *Anon.*, (1521), Bro. Ab. Tit Trespass, pl 407; *YB* (1521) 12 Hen. 8, 9; *The Case of Swans*; *Mallocke v Eastly*.

It may be that “reclaimed” merely meant not in its wild state, in some form of enclosure or otherwise restrained from its natural liberty. Such a requirement can be quite readily satisfied, if it merely means that the animal is restrained from its natural liberty. The requirement that an animal reclaimed must also be tame however is considerably more difficult to satisfy. A caged lion may be in a state of reclamation but is unlikely to be said to be tame.

Summarising, tameness is irrelevant in the case of individual *domitae naturae*. It is presumed, based on the population. Domestication absolutely implies tameness, so an unbroken domestic animal is regarded as tame, as are cattle raised in outback Australia. The same level of tameness does not appear to be required across the whole range of populations *domitae naturae*. The common law is concerned with state of individual animals *ferae naturae* (captivity aside), when faced with a claim of a property interest in one of them.

5.4. Domestication

5.4.1. The Concept of Domestication

The foregoing has already mentioned the word “domestic” in the context of tameness, tameness being a first step towards domestication in a biological sense. Domestication is also to be distinguished from domestic. In the context of this thesis, the former is the process whereby a population of animals is subjugated by
a community, to the point that the population is regarded by the community and consequently the law as *domitae naturae* rather than *ferae naturae*. The animals of this population are distinguishable from their wild cousins. Whilst domestication is commonly used in the context of a population or class of animals, it is also used to describe the process whereby *ferae naturae* are made tame or domestic. So, an animal from a population classified as *ferae naturae* may be tame, domestic or even undergoing the process of domestication, but, notwithstanding that, it remains a member of a population *ferae naturae*, unless the population as a whole has undergone the domestication process. In the mid-1800s the concept of domestication and the criteria by which it could be identified were discussed in a series of articles in the transactions of the Ethnological Society of London (Galton 1864; Thrupp 1865; some reliance is placed on them by Williams 1939). In the course of those discussions, Galton (1864) provided a set of qualities necessary for the domestication of animals. The animal must be hardy. It must be able to fend for itself and to thrive although it is neglected. It must cling to a human notwithstanding abuse or neglect. It must desire the comfort of a human and prefer that to the rigours of existence in the wild. The animal must be useful to humans, for example as a store of future food. It must be tended easily. It must breed freely under confinement. At the time, these requirements were considered to limit very narrowly the number of populations capable of domestication (Galton 1864). The views of Galton (1864) have more recently been approved and discussed by Clutton-Brock (1981).

The more modern discussions tend to explain the process and its stages. Zeuner (1963) suggests the order in which the populations underwent the process, as part of the evolvement of humans. Those species that underwent the process in humans’ pre-agricultural stage were dogs, reindeer, goats and sheep. During the early agricultural period, the species that underwent the process were the crop robbers, the animals used mainly for food, including cattle, buffalo and pigs. As agriculture developed humans sought transportation and beasts of burden, namely horses and camels. They also sought pest destroyers, cats, ferrets and mongoose. After that humans started to experiment with animals (foxes and gazelles); sought other sources of food both for variety and delicacies (dormice and rabbits); encountered New World species (llama and turkey) and sought pets.

This is a process that is ongoing and at the core of this thesis. Some commentators describe the process; others emphasise or identify the effect and others suggest that there is little literature on how the process occurs and how it might be managed (Gall 1993). Similar distinctions can be seen in the decisions in the common law.

A general description, put forward in the anthropology literature, is that domestication is the exploitation of one group of social animals by another more dominant group which maintains complete mastery over its breeding, organisation of territory and food supply. Under such conditions only certain animals can
flourish. On the other hand, many animals can be tamed if reared close to humans from an early age. Domestication only follows if the social behaviour pattern of the tamed animals is sufficiently well developed to allow successive generations to breed in captivity (Clutton-Brock 1976).

In his conclusion in a recent paper, Price (1998, 55) described the process of domestication in the following terms:

*The process of domestication involves adaptation, usually to a captive environment. Domestication is usually achieved by genetic change occurring over generations, as well as by environmentally induced changes in development that recur during each generation. To the extent that genetic changes are involved, domestication is an evolutionary process. Genetic changes occurring during domestication are a result of both random processes (inbreeding and genetic drift) and changes in selective pressures, both natural and artificial, accompanying the transition from nature to activity. Adaptation to the captive environment may be facilitated by certain recurring environmental events or management practices that influence the development of specific biological traits.*

A yet further description comes from a fisheries biologist, Balon (1995a, 5):

*In a truly domesticated organism, (a) the individual is valued and kept for a specific purpose, (b) its breeding is subject to human control, (c) its behaviour is different from that of the wild ancestor, and (d) its morphology (including size and coloration) exhibits variations never seen in the wild, (e) some of which would not survive without human protection.*

Some anthropologists have emphasised the purpose and economic effect (Jarman & Wilkinson 1972, 83). The following definition from Bokonyi (1969) is representative of a large body of anthropological and zoological opinions:

*I would define the essence of domestication as: the capture and taming by man of animals of a species with particular behavioural characteristics, their removal from their natural living area and breeding community, and their maintenance under controlled breeding conditions for profit.*

As Fox (1978) says, the taming of animals is often incorrectly regarded as domestication. It is the process that may be one of the first steps in the domestication process. Fox 1978 also describes domestication as an evolutionary process; it occurs over generations; it reflects a change in selection pressures on a "species or population" created by a release from one environment and the need to adapt to a new one.

Tameness is a necessary step towards domestication, but a tame animal is not a domesticated animal. A tame animal is one taken from its natural environment that has learned that humans are a source of feed and shelter, rather than a source
of harm. So once selected and thereafter repeatedly bred by humans, for the many factors that make it more suitable for the purposes of the community, the population becomes domesticated. The tameness is now genetically based (Reed 1984) and at some point thereafter the population may be recognised by the law as *domitae naturae*.

Similarly, Balon (1995a) suggests domestication has two phases of varying length: an association with humans causing natural evolutionary changes, and artificial selection, an aspect of human cultural history. It may be described as both an evolutionary process and a developmental phenomenon (Price 1998). Both processes act together and interactively; they are not simply independent and additive (Price 1998).

Another distinction is between domestication and animal husbandry. Husbandry stresses the human behaviour towards the animal. Husbandry emphasises the pattern of exploitation and in which efforts are made to modify the animals’ behaviour to facilitate the extraction of a controlled and dependable economic surplus (Jarman 1976).

The elements of the human-animal relationships that are thought to be characteristic of domestication are often peripheral rather than central to the issue. In this respect tameness, in the view of some, may not be crucial. The maintenance of a selectively bred group isolated from the wild is also unsatisfactory. The features that seem to be important are the economic importance of the species and that there are controlled relationships (see section 4.4). This not only involves humans controlling certain aspects of the animals’ behaviour but that the human exploitation is regulated, so as to ensure a healthy and viable breeding population of animals for the future. In some cases, the level of interdependence can be seen as symbiosis (Jarman 1976).

Humans clearly select both consciously and unconsciously for strains with certain characteristics (Price 1998). Tameness and the ability to be easily handled have been one of the primary criteria (Grandin & Deesing 1998). However this has been sacrificed in some cases in selecting for leanness and rapid growth (Grandin & Deesing 1998). There should not be any suggestion that the animals are less domesticated. Similarly, selection for fur traits rather than behavioural traits does not lessen the likelihood of a population of animals being regarded as *domitae naturae*. Clearly if tameness is the dominant requirement and the method of selection lessens tameness, as it may, it should not alter the animal’s status; it is merely humans exploiting the population of animals in different ways.

There is considerable diversity and flexibility in humans’ exploitation of various categories of resources. Rarely is there any single characteristic or criterion that may be used as the sole basis to readily distinguish wild from domestic (see section 4.4).
So, what are the advantages of domestication for the exploited animals? Individual members of the exploited population receive considerable advantages in the form of protection from predation, some of the natural hazards of disease, food shortages and interspecific competition. At the population level, close association with humans gives a significant selective advantage relative to many of their competitor species in the wild. This has resulted in *domitae naturae* populations consistently rising whilst many other populations in the wild have become locally extinct or rare (Jarman 1976).

A categorisation of the process based on human economic behaviour could be: random predation, controlled predation, herd following, loose herding, close herding and factory farming. Each represents increasing control over and investment of labour in the animals concerned by individuals and the community. This can be applied to a simple pastoralist in Britain in the following terms. Humans may engage in random predation on rabbits, controlled predation on game resources such as pheasant or deer, loose herding of hill sheep, close herding of cattle and factory farming of pigs and chickens (Jarman 1976). It can be applied to the developments in aquaculture (see some aspects in sections thirteen and fourteen).

Domestication itself is an ongoing and changing process. Animals that may have once been domesticated may cease to be domesticated (Wilkinson 1972). Humans may no longer emphasise the association or relationship (see discussion in appendix two). Are they then regarded as *ferae naturae*? Other individuals of the domesticated population may escape the dominion of humans. They may establish their semi-wild colony. They may enter a state of transition. In time, they will develop into a distinct population. There may be a wild population predominantly derived from a domesticated stock, and possibly a continuing domesticated population. This is a concept that the law has rarely faced and will have difficulties addressing, based on the current test and some views of the appropriate test (see section 8.5).

Ultimately the effects of domestication on the population can be summarised as including the following (Clutton-Brock 1981):

- size of body – in the early stages any group of animals undergo a reduction in the size of the body. During the later stages the animals are selected and bred for size;
- outward appearance – the greater variety and variations in actual appearance occurs as humans select and prefer the unusual or those more suitable for the community’s use and environment;
- internal character and definition – there was a general tendency for there to be bands of fat under the skin and in the muscle compared with storage around the organs, it moves to the later. The size of the brain becomes smaller relative to the body size and some organs become reduced, as do the skull and to a lesser extent the skeleton;
• behaviour – many changes in behaviour appear to be a result of the retention of the juvenile submissive behaviour of the young animal; and
• castration has been long used and has a dramatic effect on the behaviour of animals.

5.4.2. The Law and the Domestic and Domesticated Animal

The preceding discussion has emphasised the process of domestication and the nature of a domestic animal. Unfortunately in a number of decisions some confusion is caused by the use of the word “domestic” in connection with animals. It is used in different senses, much like the use of the word “tame”; it does not require that the animal is domitae naturae. A domestic animal encompasses both domitae nature and some ferae naturae. It is used to describe those animals about humans or the dwellings of humans and in some cases those individual ferae naturae that may be domestic, accustomed to humans or being about humans, not that it is a member of the class domitae naturae (YB (1528) 19 Hen. 8, 2).

The plaintiff’s argument in Ireland v Higgins, (1588) Ow. 93, 74 E.R. 925 was that horses, cows and all animals profitable to humans were once ferae naturae, and so were dogs. Since nothing is so domestic as a dog, a dog cannot be ferae naturae. A plea that a dog belongs to a person implies the dog is a domestic animal, the dog is the subject of ownership. The court upheld the plaintiff’s argument. In this case “domestic” appeared to be regarded as the same as domitae naturae, but equally the court may not be concerned with the extent of the proprietary interest, merely that there is one.

In Child v Greenhill, (1639) Cro. Car. 553, 79 E.R. 1077 the court said that a person may not say suas of deer or conies that are not in a park or warren, unless they add that they were domestic. So in this case domestic is applied to ferae naturae, the subject of qualified property. It is a reference to a proprietary interest persisting rather than whether the animal is either domitae naturae or ferae naturae.

Young unacclimatised parrots in a cage freshly arrived in England were held not to be domestic animals. Grove J. did infer that a parrot might become a domesticated animal when acclimatised to the society of human beings (Swan v Saunders, (1881) 50 L.J.M.C. 67). But this merely describes the attributes that the particular animal may acquire, when it becomes accustomed to humans. Linnets used as decoy birds were within the term domestic animals; according to Huddleston B., expressing the opinion that any “pet” bird such as a parrot, canary or linnet was within the expression (Colam v Pagett, (1883) 12 Q.B.D. 66).

A few years later a similar question came before the courts in respect of caged lions. It was held by Cave J., as would be expected, that they were not domestic;
they were wild animals in confinement or captivity (Harper v Marcks, [1894] 2 Q.B. 319). In that decision Wright J., recognised, Harper v Marcks, [1894] 2 Q.B. 319, 323, that this may alter, so “leopards trained to hunt for their master, otters trained to catch fish, and elephants trained to assist in the capture of wild animals might be held to be domestic”. Cave J. went on to indicate that domestic is not the same as domesticated, but an animal ought to be regarded as a domestic animal if it is of a kind ordinarily domesticated (i.e. domitae naturae) or which is itself domesticated (i.e. a tame ferae naturae).

So an animal that belongs to a class of animals that, as a class, are ordinarily kept in a state of confinement or for domestic purposes, is a domestic animal. It is not necessary to prove who owns the particular animal. “Domestic cats”, though somewhat wild, were regarded as domestic cats; they belonged to the class of animals that are ordinarily kept for domestic purposes (Darling J., Nye v Niblett [1918] 1 K.B. 23). But this is a different division. It usually emphasises the domestic nature and is not concerned with whether they are domitae naturae or ferae naturae, a matter some United States decisions appear to confuse when they wrongly equate domestic and domitae naturae (Smith v State Farm Fire & Casualty Co App, 381 So. 2d 913 (1980)).

On the other hand pheasants kept and reared for shooting, and which when sufficiently grown were released from captivity, were not regarded as “domestic animals” or as being kept for use or profit (Viscount Dilhorne, Earl of Normanton v Giles, [1980] 1 All E.R. 106). This was notwithstanding that the birds were raised in captivity, and after being shot sold to local butchers. The correctness of this decision must be questioned.

A more narrow view of what are domestic animals, emphasises their presence in or about human habitation, as expressed by Windeyer J. in Attorney-General (S.A.) v Bray, (1964) 111 C.L.R. 402, 425:

'I agree with the learned Chief Justice of South Australia that the words “homeless, stray and unwanted animals” refer to domestic animals, that is to say, as his Honour expressed it, “to such animals as are commonly kept and cared for in and about human habitations.”

A somewhat similar, but possibly even narrower, view was expressed by the court in Commonwealth v Proctor, 355 Mass. 504, 505, 246 N.E. 2d 454, 455 (1969) when it said “domestic” as applied to animals, ordinarily carries the meaning of “tamed, associated with family life, accustomed to live in or near the habitations of men”. One example in which a United States court held that dogs do not constitute domestic animals was State of Maine v Harriman, 75 Me. 562 (1884), a decision exhibiting confusion of concepts between ferae naturae and domestic animals.
Camels have also come before the common law courts, occasionally. In *Tutin v Mary Chipperfield Promotions Ltd*, (1980) (Unreported, Cantley J., 23 May 1980) Lexis the court had to consider whether camels were domesticated in England in terms of the Animals Act 1971 (United Kingdom). Cantley J. said:

_I have to decide not whether camels are domesticated in the British Islands but whether they are commonly domesticated here._ I do not find any ambiguity in the sentence. In the Shorter Oxford Dictionary there are various definitions of “domestic” and “domesticated”, one is in relation to animals “living in or near the habitations of man; tame, not wild”. “Living in or near the habitations of man” will not do, that would apply to foxes or wild rats”; “tame, not wild” would. “Domesticate” is defined as “to tame or bring under control”.... If, following *McQuaker v Goddard*, it is a matter of which I am to take judicial notice, my answer is that the camel is not commonly domesticated in the British Islands. If I am allowed to inform myself by evidence I am informed in this case that in the whole of the British Islands there are not more than about 100 camels and they are all in zoos, safari parks and circuses. Even though some of them may have become trained to the uses of man and accustomed to association with man it does not seem to me that camels are commonly domesticated in this country.

So in a population or class the fact that some of the animals are trained to the uses and accustomed to humans is not sufficient. It requires something more to be regarded as commonly domesticated in a community, at least for the purposes of the legislation of the community and most likely generally.

Summarising the foregoing, from a legal perspective, “tameness” or “domestic” are terms regularly used to describe and classify an animal, but by themselves neither term defines the property classification to which the animal belongs. They usually emphasise the attribute of the animal or group of animals, so a tame or domestic animal will include domitae naturae (i.e. on a population basis, as put forward in this thesis; it will not include therefore feral animals) and may include a ferae naturae. Occasionally, the expression “domesticated” means nothing more than an animal has been subjected to a process whereby it has become “domestic”, accustomed to be among people. Sometimes it is very much narrower, the term being limited to members of a population that are regarded as domitae naturae; they are members of a population that have undergone the process, not simply an individual. Occasionally it refers to an animal in which a property interest persists, whether domitae naturae or ferae naturae.

5.5. Some Pertinent Property Aspects

5.5.1. Introduction

A number of property concepts and aspects of their interaction with a number of the other divisions of the common law are raised in the discussion in sections
eight to ten, to explain certain developments or to justify certain views. It is therefore convenient at this point to consider those matters.

This thesis has already indicated that the common law divides animals into two classes: domitae naturae and ferae naturae. At various times other divisions have been suggested by commentators and also occasionally in judgements. They are briefly mentioned, both for completeness and to highlight different aspects of the relationship with an animal. They are occasionally mentioned in the later discussion.

Much of the discussion in this chapter focuses on the concept of retaining a proprietary interest in animals in the common law. The expression “a proprietary interest” is used regularly throughout this thesis. It is an expression that is inherently ambiguous and vague, taking on many different meanings in many different contexts. Even more importantly, in the common law it is a concept that is not strongly emphasised; the emphasis was historically on possession. So, unless there is possession either actual or notional, the latter being a construction of the law, there may be no basis for a proprietary interest. However, as will be discussed, in at least one case the common law clearly became confused between extending the nature and scope of rights incidental to the ownership of land and that of notional possession as applied to chattels.

Similar difficulties also arose in extending notional possession concepts to ferae naturae with animus revertendi, notwithstanding Bracton’s (1250) earlier recognition of its acceptance in the common law. It caused a number of problems for the common law and affected its treatment of a number of populations of animals. Early on, the law emphasised clear actual possession. It was also concerned with identification and the ability to distinguish between those animals the subject of property and those at large. Without that ability to distinguish, there were problems of identification. The person taking the animal could commit a crime as well as a tort.

The problem ceased in time to be an issue, as the law began to deal with larceny and torts separately. Aspects of this process as it applied to animal will be described briefly. Finally, this section briefly discusses how the common law has justified recognising and extending proprietary interests in animals. This matter is taken up again in both sections eight and nine.

5.5.2. Description of Some Divisions of Property Interests in Animals

The nature of the proprietary interest in animals in the common law has generally been described in one of two ways. The modern and commonly accepted view is to describe the interest by reference to two classes, namely domitae naturae and ferae naturae. In the former absolute property rights persist, the same rights as
apply to any inanimate object. Within the class *ferae naturae* there are a number of further divisions, further characterising the qualified or limited property rights that are recognised.

Another approach, which is occasionally used, distinguishes between animals that are tame and domestic, those that are tame and those merely in possession. Tameness in this division is an attribute of an individual animal whilst domestic describes a class attribute. In this context “tame and domestic” implies *domitae naturae*. Absolute property rights are obtained over the populations that are domestic and tame (i.e. they are *domitae naturae*); those that are merely tame (i.e. they are some *ferae naturae*) are subject of only a qualified or limited property right and those merely in possession attract nothing more than the proprietorship that arises out of the physical possession. The latter is apparently some lesser right than property, “so a man may have possession but not property in those things which are *ferae naturae*” (*YB* (1521) 12 Hen. 8, 9), a distinction that may no longer be relevant.

Much the same approach, of finding three groups, was suggested in the early 1700s. It was expressed in slightly different terms. An absolute property right is obtained in animals whose nature it is to be tame, a qualified property in those *ferae naturae* that are tame and a possessory property in the remaining *ferae naturae* in possession (*Sutton v Moody*, (1702) 3 Salk. 290, 91 E.R. 831).

At various times this three-category approach is useful, as it may conveniently describe the situation. It is usually simply a matter of nomenclature, describing a flat categorisation rather than a layered one. This simpler categorisation ultimately became irrelevant in the common law, which developed a layered structure (see table 5 and sections eight and nine).

5.5.3. The Concepts of Possession and Property in the English Common Law

The earliest known use of the word “owner” comes from the year 1340 and the word “owner” occurred in an English statute in 1487 (4 Hen. 8, c. 10); the earliest known use of the word “ownership” was in the year 1583 (Holdsworth 1936; Pollock & Maitland 1923). Ownership, as Salmond 1930 warned, “is nothing more than a figurative substitute for the ownership of a particular kind of right in respect of that thing, the usage is one of great convenience; but when we attempt to treat it as anything more than a figure of speech, it becomes a fertile confusion of thought.” (Salmond & Manning 1930, 279; also see discussion in Vaines 1962).

The early Anglo-Saxon law did not trouble itself with complicated theories as to the nature of ownership and possession. It was only concerned to settle disputes between litigants and provide an answer sufficient to do so. It did not, like the Roman law, develop an action like *vindicatio* to protect an abstract idea of *dominium* (Vaines 1962).
So, of the two concepts “property” and “possession”, the common law has long emphasised possession. In the case of personal property, possession is the basis of ownership, as will be discussed shortly. It may be acquired originally, as by the taking of a res nullius or the creating of an item, or acquired derivatively (Walker 1980). The “law frequently protects possession, until or unless another claimant can establish a better title to possess than the possessor has. Thus, the true owner can recover from the mere possessor, the lender from the borrower, and so on” (Walker 1980, 971) (Armory v Delamirie, (1722) 1 Str. 505, 93 E.R. 664). Notwithstanding that, this thesis will first briefly describe aspects of the concept of property before considering the concept of possession more fully.

There are many differing views as to what constitutes property, both in a purely legal sense, a jurisprudential sense and an economic or a philosophical sense (see Cohen 1954; Laski 1967; Friedmann 1972; Pound 1954; Philbrick 1938; Penner 1997; Ross 1957; Williams 1926 and the further articles mentioned in Smith 1994). “It is a set of rights created by society to serve a variety of social functions” (Bowden 1981, 175), a social construct dependant on community recognition and enforcement, the law. “Property and law are born and must die together” (Bentham 1843, 1:309).

Ownership may be used to describe the physical relations with an item, the possession of the item, the metaphysical concept of the ownership of the item, the bundle of rights that exist in respect of the item and sometimes even the title to the item (see discussion in Smith 1994). It may involve a distinction between possession of an item and the right to the item, the latter relying on the courts or self-help procedures to enforce the right. Ultimately, because ownership is a comprehensive term it can be used to describe all or many different kinds of relationships between a person and the subject matter. It is a legally endorsed construction of power over things and resources. It is a striking example of the inherent ambiguity and looseness of legal terminology (Yanner v Eaton, (1999) 201 C.L.R. 351).

In this thesis private property is regarded as a relationship among humans, with the person described as the owner entitled to exclude others from certain activities or to permit others to engage in those activities and entitled to secure the assistance of the law in carrying out that decision (Cohen 1954; also see comments of McHugh J., in Yanner v Eaton). It is the legal relationship between persons in respect of an item rather than between people and things (Smith 1994). It is a right that is indefinite in point of user, unrestricted in description and unlimited as regards time (Austin 1879).

A more limited view is that property is an item belonging to a person exclusive of others that may be the subject of a bargain and sale (Potter v Inland Revenue Commissioners, (1854) 10 Ex. 147, 156 E.R. 392). This is a common view (Pennington v McGovern, (1987) 45 S.A.S.R. 27; Austell Pty Ltd v Commissioner
of State Taxation (W.A.), (1989) 20 A.T.R. 1139). This view overlooks the broad
general concept and focuses on the power to deal with an item, the right to sell an
item, the right to alienate the item and the right to obtain the assistance of the law.
It is determination of what is property by an examination of the legal remedies or
redresses available. This is only an aspect of ownership. The power to dispose of
the item is simply an incident of ownership; it is part of the right to use, abuse,
destroy, consume or assign the item, rather than a complete view of ownership.

Whatever method is used to describe the nature of property, possession is the
underlying basis for property. As Holmes J. said in Missouri v Holland, 252 U.S.
416, 434, 11 A.L.R. 984, 990 (1920): “Wild birds are not in possession of anyone;
and possession is the beginning of ownership”. So the concept of possession and
the ability to take the animals at one’s pleasure is a dominating concept in many
of the decisions, up until very recently. The law focused on the issue of the
physical possession of an animal, and the ease with which the animal could be
(re)taken. It was consistent with the emphasis of the law relating to trespass.
Trespass, the principal remedy for much of the period under discussion, was
concerned with possession.

Conceptually possession is also a relationship among humans with respect to an
object. It is an extension of the person to embrace the object (Savigny 1848; also
see the discussion in the Fur Seal Arbitration 1893). It is only when an issue
arises between persons that it is necessary to examine the nature of the
relationship (Smith 1994). Then it becomes a matter of ascertaining legal rights
as between persons or, as Wright (Pollock & Wright 1888) describes it, a legal
relation of a person to a thing with respect to other persons. When the item is in
the possession of the owner, there is usually no issue as to the difference in
concepts. The owner is entitled to possession; it is one of the incidents of
ownership. Possession raises the presumption of ownership and usually is
evidence of it (Walker 1980) or, as Pollock (Pollock & Wright 1888, 25) states,
“an owner is prima facie entitled to possession, and possession is prima facie
evidence of ownership”.

Possession itself may be further divided into physical and notional possession.
The former means the physical control or detention of an item (e.g. an animal on a
lead is within the physical control of a person). Notional possession is non-
personal physical possession; it is the possession imputed to a person by the law.
It includes the possession of an animal imputed to a person due to the animal
having animus revertendi. A further distinction may exist between custody and
possession. Custody in this context means actual physical control. An animal on
a lead being walked by an employee of the owner is in the custody of the
employee and the notional possession of the owner. Legal possession is different
to custody. It is the possession that is recognised and protected by the law. It
includes physical possession and obviously notional possession (Walker 1980).
The difference between physical and notional possession is highlighted where a person in occupation of land has, as a general proposition, subject to a better title in another, the better right to possess an article about that land, whether aware of it or not. On one view, this may be treated as a rule of law that possession of the land carries with it everything about the land rather than a concept of notional possession. Pollock (Pollock & Wright 1888) suggests that the legal possession in such a situation rests on a real de facto possession based on the occupier’s general power and intent to exclude unauthorised interference. The common law had more regard to the right to exclude from the land than to the particular knowledge of the occupier as to those things about the land.

An example of de facto possession offered by Pollock (Pollock & Wright 1888) is the right to take things washed up on the seashore. The occupier of the land does not have actual possession of them without some further act, but the occupier does have a better right against everyone else not having a better title. Seaweed washed up on the seashore cannot be stolen, trespass for the wrongful taking of goods does not lie, before it is physically appropriated (R v Clinton, (1869) Ir.R. 4 C.L. 6); yet trover did lie for taking it, as the landowner had the immediate right to possession (Brew v Haren, (1877) Ir.R. 11 Ex.Ch. 198; see discussion in section 9.4.2). This distinction is also one that is applied to ferae naturae. Ultimately the difference may be one of terminology. The law protects actual possession and certain situations where there is no actual possession, usually called notional or de facto possession. In most cases it will make no difference in practice (see discussion in Pollock & Wright 1888 as to where it may be possible to further distinguish between them).

Few of these difficulties arise for domitae naturae. They are in the owner’s physical possession or, when at large, the law attributes a notional possession to the owner. The owner may retake them wherever they are found (YB (1521) 12 Hen. 8, 9). Cattle on a range in the United States, which is common pasturage, though actually in the possession of no one, are said to be constructively in possession of their owner (Ingham 1900). This fiction of the law also applied to every inanimate object out of actual physical possession.

The same cannot be said of ferae naturae. The concept of possession and the ability to take ferae naturae at one’s pleasure was a dominating concept in many of the earlier decisions. They effectively equated the test for ownership of such animals with that applicable to those animals living among people, the domitae naturae. Are they readily available and readily easily taken? Are they tame? This should not be wholly unexpected in an agrarian society, when many of these decisions were decided. It is highlighted by a decision of 1374 where trespass was found to lie against a tenant-in-common for breaking into a dovecote and killing some 200 pigeons. There appeared to be no doubt about the liability of the tenant-in-common for the young pigeons. They could be taken at pleasure. It was however questioned in respect of old pigeons; they may have had the ability to
come and go (YB (1374) 47 Edw. 3, 22). Much the same comment was made in connection with fish in a trunk, stew or pond; they could be taken at pleasure (YB (1478) 18 Edw. 4, 18).

The concept of possession does not appear to have been consistently applied; at times, there was a reluctance to extend the concept of notional possession. This is emphasised by the continuing concern with the status of old pigeons. Apparently some judges were of the view that if they could leave the dovecot then during their absence they could not be taken at pleasure. They were not in actual possession (YB (1374) 47 Edw. 3, 22; Dewell v Saunders, (1618) 2 Roll. 3, 81 E.R. 620; see also section 5.5.5 for a further discussion about the ability to identify them). The law was reluctant to extend this form of notional possession. It is an approach inconsistent with the statements of Bracton (1250) and the Roman concepts.

However, this was not the case with all ferae naturae. The principle example is hawks and falcons pursuing quarry in the presence of their owner. Notwithstanding that the hawk is free to go where it pleases, the hawk remains in the possession of its owner. It has the same animus revertendi. It is open however to suggest that hawks, falcons and swans were treated differently in the early common law, and that may be an explanation (Blackstone 1765-1770).

Therefore, the common law, possibly having accepted as far back as Bracton (1250) that animals with animus revertendi were in notional possession, was reluctant for some period to extend it to all animals (Dewell v Saunders; Hamps v Darby). Many authors on this topic after Dewell v Saunders and prior to Hamps v Darby do not draw this distinction. They are not concerned that what is involved is a notional possession, a possession imputed by the law whilst the animals are away (see section 9.2.3.2). As stated by Wright (Pollock & Wright 1888, 231): "An animal once tamed or reclaimed may continue in a man’s possession although it fly or run abroad at its will, if it is in the habit of returning regularly to a place where it is under his complete control."

Animals are and were but one species of personal property. The distinguishing aspect, for the purpose of this thesis, in most cases, was their ability and will to move of their own accord, their power of locomotion. They are accordingly variously distinguished from other chattels, but substantially the rights and remedies in respect of this form of personal property are no different from any other form.

5.5.4. Individuation

In a legal system that does not have a fundamental concept of ownership, the process of individuation further aggravates the determination of the nature of the concepts of property and possession. Individuation explains why the same terms
have a different meaning in different areas of the law, sometimes in closely related aspects of the law (Penner 1997). Care must therefore be taken in the use of many of these concepts in different areas and in particular their application to animals.

An example of the lack of relationship is well demonstrated in the law relating to liability for animals the subject of the scienter rules and those the subject of property, a situation recognised on a number of occasions. In *Filburn v The People's Palace* it was said that whether an animal is *ferae naturae* so far as the rights of property are concerned is not the question. The distinction between tame animals (those *mansuetae naturae*) and wild animals (those *ferae naturae*) is relevant to the law of property and not to the law of scienter. The contrast can be quite stark. In recent decisions, a kangaroo was held to be *mansuetae naturae* (i.e. tame) for liability purposes (*Lake v Taggart*, [1979] 1 S.R. (W.A.) 89) but, as would be expected, *ferae naturae* in property terms (*Campbell v Arnold*, (1982) 13 N.T.R. 7). In the case of some remedies, the relationships remain, though they are the older remedies (e.g. cattle trespass: see *Williams* 1939).

It also explains or helps to explain why it is no longer necessary to have the same regard for the consequences of the impact of a criminal law decision on the civil law and vice versa. Clearly in the past symmetry was important, particularly when both the civil and the criminal consequences were dealt with as a matter of course in the one set of proceedings. The influence of this can clearly be seen in many aspects of the law relating to animals. This however causes its own difficulties in the administration of the law and in community concepts. The modern concept is to expect the state to provide a system of protection for property rights and ultimately sanctions against persons wrongfully interfering with those rights.

One of the instruments by which the state provides that protection is the civil law. The possessor expects to have remedies, to obtain compensation or possibly recover the item where wrongfully dispossessed. Another is the criminal law. It may be suggested that one of the principal purposes of the criminal law is to prevent harm, in this case to property (Smith 1994), or the rights to property. The state has an interest in preventing disturbances that would otherwise arise because there are inadequate criminal sanctions (see the quote from Puffendorf (1672) in section three and the discussion later in this section) and ultimately protecting the wealth of the state.

It can be further expected that the criminal law will protect the property interests recognised by the civil law. The civil law concept of property should be the basis of the criminal law. "The civil law is inevitably implicated in the criminal law’s protection of property, since it identifies the interests to be protected" (Smith 1994, 7) or, as Penner (1997, 37) says, "branches of the law of property are situated in a network of legal rules forming a system". Most would expect those rules to act in concert. If the item is one deserving protection by the state
(avoiding how one characterises property interests) then it could be expected that such protection will be provided by both civil remedies and criminal remedies, as they are now known.

Larceny was the early sanction for the wrongful dispossession of a chattel. This was a simple crime, one designed to meet the needs of a primarily agricultural society (Weinberg & Williams 1977). It was the felonious taking and carrying away of the personal goods in the possession of another (Hale 1736) or, as Lord Coke (1641b, 110) notes, “a felonious taking must be of the possession, and not the property removed from the possession”. It was concerned with the personal goods, so larceny was not committed by the severing of the fruit of a tree, for example (Hall 1935).

The question whether the taking of an animal with felonious intent constituted both a civil as well as a criminal wrong arose on a number of occasions, particularly in respect of dogs, cats and ferrets (animals regarded as of a base nature). In *Hamps v Darby* it was said that the question whether an animal is larcenable is wholly distinct from the question of whether a right to property (property in this context meaning the right arising out of possession) may subsist, for the purpose of maintaining a civil action. This is contrary to the position that prevailed for some period up to the fifteenth century. This is not to suggest that larceny could not be committed of *ferae naturae*, the subject of a qualified property right, those fit for food or produced food. If the person taking them knew they were tame or in captivity and they were fit for food larceny was committed (Philbrick 1938). So fish in a stew, trunk or pond and deer, wild boar, rabbits, cranes, pheasants and partridges, though *ferae naturae* (*Coke 1641b; The Case of Swans*), were such animals. It appears to even have extended to tame emus in Australia, regarded as *ferae naturae*, though the report of the decision is not so clear on the point (*R v Lee*, [1830] N.S.W.S.C. 3).

In the decisions and texts throughout the fifteenth to seventeenth centuries, a number of explanations are offered for the difference in treatment of a number of animals not regarded as fit for food. For example, someone who stole a dog would not be hung (variously justified because of its base nature, a thing of pleasure or not serving as food; *Coke 1641b; Hale 1736; East 1803*). So, larceny could not be committed for taking cats, dogs, monkeys and the like (*Anon.*, Jenk. 204, 18 Hen. 8, 2 (1527)) or a mastiff, hound, spaniel or tamed goshawk, all being kept for pleasure and also peacocks (*YB* (1528) 19 Hen. 8, 2). Again, some animals such as bloodhounds, mastiffs and molluscs were regarded as of such a base nature that nobody should lose his life or limb for them (*The Case of Swans*). Somewhat later, Hawkins (1716) justified this approach on the basis that no matter how much some animals are valued by their owner, they are not so highly regarded by the law. It may be concluded that the courts and the commentators were never quite certain of the justification for the exception, so they offered various justifications. Notwithstanding that, there was a rough symmetry during part of this period. Larceny could not be committed of them, and it was regularly
questioned as to whether even trespass lay because of their status as *ferae naturae* (see *Anon.*, (1527) Jenk. 204, 18 Hen. 8, 2; *Ireland v Higgins*) and it appears it was not available prior to these decisions.

Both the criminal and civil branches continued to have concerns about the identification of members of the populations of animals and the ability to distinguish them from their wild cousins in the case of *ferae naturae*. The common law had formulated certain propositions about the populations and the ease with which they could be identified. Over the centuries, statutes in England also started to have a greater impact (in the case of dogs by 10 Geo. 3, c. 18 and in the case of pigeons by various statutes including 18 Edw. 2, title “Leet”; 2 Edw. 4, c. 14; 8 Eliz. 1, c. 1; 2 Jac. 1, c. 27; 4 & 5 W. & M., c. 23 and 2 Geo. 3, c. 29). So the criminal law in England was freed from some of its concerns and past fetters, as statutes solved some of the dilemmas the common law had created for itself in respect of a few animals. It now had to deal with those populations and new populations in different situations and communities. These statutes did not always solve the problem for the colonies (in the United States dogs were long held to be *ferae naturae*, see Ingham 1900 and *Graham v Smith*, 40 L.R.A 503 (1807)) or the other branches of the common law, still carrying the baggage of past joint concepts (false pretences could not be committed of obtaining two valuable pointers (*R v Robinson*, (1859) Bell, C.C. 34, 169 E.R. 1156), or in respect of some populations of animals (see *R v Searing*, (1818) Russ. & R. 350, 168 E.R. 840)).

In the case of succession to property, under the system prevalent in England prior to the turn of the century, personalty passed to the personal representatives of the deceased whilst realty passed to the heir. This could in some cases raise an issue as to the nature of the interest in certain animals. In an action by an heir against the executors for stealing fish in a pond (e.g. carp, tench and trout), the heir succeeded. This occurred notwithstanding that the deceased had purchased the fish and stocked the pond with them (*Grey v Bartholomew*, (1595) Ow. 20, 74 E.R. 869).

It is possible that there was a period when there was a greater symmetry, involving both civil consequences and criminal consequences. When there was an appeal to larceny and trespass, possibly involving an element both of crime and wrongdoing in the one proceeding, there was a unified remedy, providing both penal and civil consequences (Windeyer 1957).

Such symmetry is not always regarded as a positive goal, as can be seen in the Canadian Constitution Act 1867. This Act vests the legislative competence in respect of criminal matters in the federal legislature (section 91(27)) and legislative competence in respect of property matters in the provincial legislatures (section 92(13)). This was noted and discussed in a claim for a property interest in a silver fox (*Campbell v Hedley*). There may be situations where criminal
sanctions are appropriate, where there is dishonesty and there is no actual proprietary interest (Smith 1994).

Another significant aspect to recall is that from the very beginning the king’s courts did not provide a remedy for every wrong (Maitland 1909). The concept that there was some definitely organised system of tribunals, fully competent to administer the whole law, and provide remedies to all who sought them ignores the reality and developments over many centuries. Justice was not centralised in the royal courts and the King’s court was not intended to alter that (Maitland 1909).

However, with the individuation of the substantive branches of the law there was no longer a unified remedy and conceptual base (Penner 1997). The remedies and concepts changed, as the criminal and civil consequences developed separately. This divergence is clearly discernible in the area of the law of animals. Sometimes a decision has an impact in another area of the law. So recognising property in animals that cannot be readily identified as owned creates problems for the criminal law (e.g. pigeons on the wing, see appendix two). More often than not, this is only a matter to have regard to; it is clearly not decisive.

In the context of this thesis this means that the court should not be constrained to deny property rights in animals merely because there is a possibility that somebody may not be able to clearly identify that the particular animal is the subject of property rights from a criminal law perspective. Further, the law should not be constrained in finding property rights in animals by concerns about whether the animal will cause damage to others or whether there should be a strict liability for the acts or actions of those animals. In each case, those differing consequences are to be addressed by those other divisions of the common law. These are matters that until recently appear to have had a significant impact on the characterisation of property interests in animals.

5.5.5. Matters of Identification

In England under the common law, a person taking a cow wandering at large is assumed to know that the animal belongs to someone. The animal is of that class that the community has long accepted as belonging to somebody. Even if the owner cannot be found, as will be described, there are procedures to ascertain the owner and, if not found, to deal with the animal (see Reeve v Wardle). It may ultimately be taken by the Crown as an estray or by a grantee from the Crown (usually the lord of the manor) (see section nine). It may now be impounded.

If a person appropriates a domitae naturae to his own use, the person does so at his peril both in terms of the criminal and civil law. In both the past and in the present the former is usually the more important. In a bygone period the person
may have been hanged and the person's possessions forfeited to the Crown. The problem is addressed by clearly defining whether an animal is *domitae naturae* or by limiting the sanctions, if this cannot be achieved. The dividing line between *domitae naturae* and *ferae naturae* needed and needs to be clear. A person should not be faced with the risk of prosecution. The former aspect has already been considered.

The decision in *The Queen v Drinkwater*, (1978) 27 S.A.S.R. 396, provides a practical example of this very problem. In this case the defendants were convicted of larceny of feral goats. Are all goats to be assumed to be owned, including feral goats? Of course, separate issues arise if a trespass is involved. The fear of liability for theft can occasionally be seen as a basis for limiting the class of animals called *domitae naturae*. The accepted division in a community between animals *ferae naturae* and *domitae naturae* provides a convenient method of recognising those animals that may be taken freely (*res nullius*) and those that may not. There may be other ethnobiological reasons for the classification (see Brent 1992).

The difficulty of distinguishing *ferae naturae* claimed to be owned from their wild cousins is one issue that has caused various branches of the law considerable difficulties. It also helps to explain a number of the earlier decisions (e.g. *Taylor v Newman*, (1863) 4 B. & S. 89, 122 E.R. 393 and *Commonwealth v Chace*). It provides some support for the view of Blackstone (1765-1770) that *ferae naturae* are distinguishable from *domitae naturae*, as the *ferae naturae* are usually found at large. Two issues should be highlighted. The first is the purpose of identifying a class, population or species as the subject of absolute or qualified ownership. The issue is not simply the need for or entitlement to the property rights. There is a need to identify or to warn the community that an animal is the subject of a property right. This issue turns on the class or population distinction. It facilitates identification and the determination of rights. The animal kingdom (excluding man) may, as Blackstone (1765-1770) asserts, be readily divided between those found in a wild state and those not readily found wandering at large. The significance of the distinction has been diminished in some jurisdictions by the intervention of statute.

This is exemplified by the concern about prosecuting a person for larceny for taking them, when they are not distinguishable from wild pigeons. Pigeons may be regarded as forming a class of their own. Whilst they are about the owner's premises they should be regarded much like any other form of poultry, but the law of larceny should not apply whilst they are away from the owner's premises, because they are indistinguishable from their wild cousins (*Taylor v Newman; Commonwealth v Chace*).

The status of the law and its reform in connection with animals at large was considered in a proposal for a Criminal Code for England in 1879 (Royal
Commissioners on the Criminal Code 1879), an aspect noted in Anon. (1883). It formed a basis for the Criminal Code of Canada (Crankshaw 1894), but was not adopted in England. The report recognised that, conceptually, all animals the subject of property should be the subject of larceny (it adopted aspects of the distinction of Blackstone (1765-1770)). It further suggested (see Anon. 1883, 11):

*If the animal is one which is commonly found in a wild state in this country, it seems reasonable that on its escape it should cease to be property. A person seeing such an animal in a field may have no reasonable grounds for supposing that it had just escaped from captivity. If, however, a man were to fall in with an animal imported as a curiosity at great expense from the interior of Africa he could hardly fail to know that it had escaped from some person to whom it would have a considerable money value. We think that a wild animal should, on escaping from confinement, still be the subject of larceny, unless it be one commonly found wild in this country.*

Whilst unsaid, it would appear that the commissioners formed the view that in respect of larceny of escaped wild animals, and in particular pigeons, it was the ready identification of ownership that was important. As for an animal about one’s land, their view was that it was not the property of anyone, so, whilst it may be reduced into the possession of the owner of the land and the landowner may be entitled to take it from a trespasser killing it, the trespasser did not commit larceny on killing it and taking it away (the commissioners appear to dispense with the requirement that there be one continuous act, *R v Petch*, (1878) 38 L.T. 788; *R v Roe*, (1870) 11 Cox C. C. 554; *R v Townley*, (1871) L. R. 1 C. C. R. 315 and *R v Read*, (1878) 2 Q.B.D. 131).

The community adoption of a class or population distinction in the past enabled a ready identification of whether the animal is likely to be owned. It was and remains a matter of community perception. But other factors have become relevant now. In the case of many animals, there are now statutory restrictions on taking them and the community has come to accept those restrictions. They know that they are limited in most places in what they may hunt and fish. The ability to distinguish is no longer as significant. It should not be used as a basis for limiting the recognition of property interests in animals.

5.5.6. Identifiable as Owned

Whilst the population decision facilitates the presumption of ownership of *domitae naturae*, in the case of *ferae naturae* a clear indication of the existence of a property interest must be known or identifiable for an offence to be committed (*Fines v Spencer*, (1572) 3 Dy. 306, 73 E.R. 692; *Lyster v Home*). In the case of a partridge, hare or rabbit, it must be shown that the thief knew of its status, that it is reclaimed (*Anon.*, (1527) Jenk. 204, 18 Hen. 8, 2).
How it is supposed that a distinction between a tame hare and a captive hare should be distinguished is not altogether clear. Whilst the status of a captive animal does not usually create a problem, there of course may be situations where the level of captivity is marginal (e.g. the provision of dovecots) and where animus revertendi is involved. Tameness, expressed as a lessened flight factor, may in some situations be sufficient (see Andrew v Kilgour as an example of such a situation). It becomes a matter of degree. It is different for different classes of animals.

More recently the Theft Act 1978 in England again had regard to the status of ferae naturae. No special provision was made for domitae naturae. Section 4(4) provides in respect of wild creatures:

Wild creatures, tamed or untamed, shall be regarded as property; but a person cannot steal a wild creature not tamed nor ordinarily kept in captivity, or the carcass of any such creature, unless either [it] has been reduced into possession by or on behalf of another person and possession of it has not since been lost or abandoned, or another person is in the course of reducing it into possession.

Under this provision, for the purposes of theft, a person who has a wild living creature in captivity shall be deemed to have a special property or interest in it whilst in captivity and after it has escaped from captivity provided it has not been lost or abandoned. No definition of a wild living creature is provided. It is a further example of individuation, a prescription of when property exists for the purpose of the criminal law and without following the civil law. A similar approach has been adopted in section 322(5) of the Canadian Criminal Code (R.S. 1985, c-46), though the Canadian provision may have even gone further (a matter not pursued in this discussion). Whilst it only applies to wild creatures, one assumes they are ferae naturae, the emphasis is no longer on populations or on distinguishing between those in the wild.

5.5.7. Justifications for a Proprietary Interest in Animals

Section three has already introduced the concept that the existence of property rights or their acknowledgment may be considered from two very different perspectives, one from that of the state or community and the other from that of the individual (some of the reasons for recognising a property interest in the law are to be found in the arguments of the United States in the Fur Seal Arbitration 1893). In the case of the former, the allocation of property is considered significant in avoiding social disturbances that may occur if there are inadequate or ill-defined rules for determining such matters. The allocation of these rights also encourages the pursuit of activities that are beneficial to the community. These are not the sources of any specific right; they merely provide a justification for the grant of the right fashioned by the law.
In the case of *domitae naturae*, the justification focuses on rewarding the person for his work or outlay (which may be represented in many different ways). The allocation of property rights in respect of *domitae naturae* encourages that labour or industry required for maximising the return for the community from those animals desired and recognised by the community. In much the same manner, those *ferae naturae* tamed *per industriam* become the subject of a qualified property right nearly as large as that applicable to those animals *domitae naturae*, again recognising and rewarding a person for his work or outlay in providing a requirement of or something useful to the community.

This justification applies to the early remedy in trespass. The remedy in many of the situations already discussed was a form of action commenced by a writ calling on the defendant to explain why he had done something to the plaintiff's damage and in breach of the king's peace (Walker 1980), a writ returnable to the Kings Court (Fitz-Herbert 1652). This is recognised in the following extract of the judgement of Brook J. in *YB* (1521) 12 Hen. 8, 9 (Chitty 1812, 2:806):

> but when any one by his industry and labour has made them tame, then they are his chattels, for then they are in his possession as rabbits, fish, and other things.

In *The Case of Swans*, it is recognised that a person may have a right of property in *ferae naturae*, a qualified right attainable by industry, by taking the animal or making them tame or domestic (also see *The King v Rough; R v Head*, (1857) 1 F. & F. 350, 175 E.R. 759 and *R v Cory*).

The extent of the activity required is not static. As discussed in sections 5.5.2 and 9.2, mere captivity may not have given more than a possessory interest in the earlier period. Something more may have been required. With time, this distinction ceased to be significant, as discussed in section 9.2.

The common law also recognised and created lesser rights or rewards for those situations involving lesser effort or arising incidentally out of other property rights. The interests *ratione impotentiae* and *ratione soli* have been grouped together in this thesis. They give rise to qualified interests, albeit somewhat different interests, in *ferae naturae*. In each, the primary justification for the interest is an interest in the land about which the *ferae naturae* is to be found. It is justified by reason of the ownership of the land. It may give rise to a form of notional possession in the animal. On one view the interest is nothing more than the exclusive right to reduce *ferae naturae* into possession coupled with the right to exclude others from the land (see section 9.4.2).

In the case of *ratione impotentiae*, the greater interest is justified because the young whilst about land have no power of locomotion and therefore cannot escape from the land. They cannot fly away or leave the land and so remain possessions of the landowner (*The Case of Swans*), even if the landowner does not know of
them. The landowner has an action in trespass (*The Case of Swans*; under the former writ system a number of different writs in trespass may have been available).

There was no similar reason to extend the nature of the interest in *ratione soli* with power of locomotion about land. The common law recognised a lesser interest, incidental to the land: an exclusive right to take the animal whilst about the land and a right to exclude others from doing so. The law is never certain about the nature and basis of this right; it becomes confused between rights in respect of personal property and real property (as will be seen in section 9.4). These animals are considered fruits of the land, which are an incident of the ownership of the land. This may be another example of the concern about potential breaches of the peace.

There may be other exceptions, such as those animals about the land without the power of locomotion apart from the immobile young, the molluscs and other produce of *ferae naturae*. Are these the fruits of the land and its ownership (for the other produce see section 9.5 and for molluscs see brief discussion in section 5.1)? In each case, it is not so clear whether the item is any different from any ownerless item found about, attached or under land.

Finally, another interest was recognised, though it may now be solely of historical significance. It however emphasises that the common law regarded the labour and expense of the franchise holder as important and to be rewarded. Initially, it appears that there was no interest in an animal with a power of locomotion about a franchise or land. With time the law recognised that the holder of the franchise had outlaid extra effort, usually the expense of employing keepers. It recognised a notional possession. It is again rewarding a person for their work or outlay. Another justification is that it is a grant from the Crown or a prescriptive right. Both are recognised in *YB* (1521) 12 Hen. 8, 9 where Pollard J. declared that the proprietor of a forest or park had a greater interest in the beasts than persons who do not have a park or forest. In a forest, there were foresters and anybody hunting could be punished by statute, so the owner of a forest had a greater interest (Pollard J., *YB* (1521) 12 Hen. 8, 9). Eliot J. in the same case expressed it more simply: an animal in the forest is in the possession of the forester, and it is not lawful for anyone to take it.

6. The Roman Law Relating to Proprietorship in Animals

6.1. Introduction to Roman Law

This section provides a brief overview of the Roman law principles and aspects of their development as an introduction to the discussion of the common law. It does not consider the learning of the Glossators, Juriconsults or the modern European commentators. The manner by which the Roman law principles came to be adopted by the common law is discussed in section seven.
6.2. The Twelve Tables and the Institutes of Gaius

The earliest code of the laws of Rome was the Twelve Tables, framed in 451 to 450 BC. They were intended to reduce to writing the most important rules of the customary law. The provisions were brief and simple; they were framed as imperatives (Walker 1980). The Twelve Tables themselves make no specific mention of the mode of acquisition of animals either *ferae naturae* or *domitae naturae*. The Twelve Tables do provide for the manner of dealing with certain property classified as “*res mancipi*” (there is little understanding as to the criteria for an item constituting a *res mancipi*, though much conjecture: Leage 1961), which included some animals (oxen, horses, mules and asses; Watson 1971).

Whilst aspects of the basis for the distinction between *res mancipi* and *res nec mancipi* are lost, the former were the things considered important for agriculture and warfare (Watson 1971) and the *res nec mancipi* were the others. The method of transferring ownership was by way of *mancipation*, the formal manner in which a sale of those items *res mancipi* was effected with certain solemnities. Only Roman citizens could effect *mancipation* and it was abolished in Justinian’s era, as it had long fallen into disuse. If a sale of *res mancipi* was not effected in the prescribed manner then ownership did not vest until the proper period of prescription had run (Leage 1961).

So why are animals not more extensively dealt with in the Twelve Tables? As observed by Jolowicz (1932, 144), whilst Justinian

> ventures a historical conjecture. 'It is more convenient' he says 'to begin with the older law, and it is clear that the natural law is the older, seeing that it is the product of Nature herself and so coeval with the human race; for civil rights only came into existence when states were first founded, magistrates appointed and laws written down.' Now, in a sense, as applied to methods of acquiring ownership this is true; no doubt grabbing came before mancipation, but in another sense it is the reverse of what we know now to be the general truth with regard to the historical evolution of law, namely that formality (and the civil law methods are characterised by formality) comes before informality. The recognition that mancipation gave title and the working out of the legal rules on the subject certainly preceded the recognition in legal theory of the rules of occupatio.

The emphasis in the Twelve Tables is on establishing and recording the formal methods of the civil law at that stage of the development of Rome. The concern was not to establish and record such matters as the acquisition of animals from the wild, which was no doubt occurring regularly and accepted without much more. As Buckland (1950) also notes, acquisition by occupation was not of great significance in much of the history of Rome, its chief importance being in the capture of wild animals for food or other purposes (Buckland 1950).
Aspects of the development of the classification of animals in the Roman law have been discussed at length by Daube (1959) as a series of propositions about doves and bees. His discussion focuses primarily on the developments in the period from the time of Varro (116 BC to approximately 27 BC) to the classical period (the classical period is regarded as the period from 100 AD to 250 AD, Walker 1980). Without repeating many of his arguments, a number of propositions relevant to this discussion can be drawn from his paper and the material he uses to support his paper. Another discussion that lends some support to aspects of Daube's views (1959), though with a different emphasise, is that of Watkin (1990).

In preclassical times, Daube (1959) suggests that there were only two classes of animals, *ferae naturae* and *domitae naturae*. No substantive rights were afforded to those who kept *ferae naturae* save those confined. Whilst at large, at least in the earlier part of period (the time of Varro's n.d. writings), doves and bees were *ferae naturae* (Daube 1959). In respect of those populations regarded as *domitae naturae*, the principal attribute was that tameness existed in some group or class; they were owned. It is possible that in the period around 200 BC, ownership of even *domitae naturae* only subsisted whilst the animal had an intention to return (Watson 1971). These laws emphasised tameness, usually associated with return. Leage (1961) does however comment that *domitae naturae* remained owned if they became wild, but he may be dealing with a different period.

By the beginning of the classical period, doves, peacocks and other animals that habitually return were regarded as tame, not wild. They were owned even whilst flying about, though ownership was terminated on their losing *animus revertendi*. The intention to return was interpreted as showing itself in their actual return. On the loss of their intention to return they were regarded as again becoming wild. These animals were trained or induced to return. Bees were regarded as wild (Daube 1959). By the time of Gaius (about 160 AD), however, the distinction between doves that were induced to return and bees returning under the influence of a natural habit was considered artificial. However, at the time, it was not possible to characterise bees as domestic animals for they remained wild. They returned naturally, a habit in many aspects difficult to distinguish from that of doves induced to return. The emphasis focused on the return rather than the source or reason for the return.

So, to leave doves and bees in different categories was apparently to be avoided. This was effected by blurring the distinction between *ferae naturae* and *domitae naturae*. These animals were regarded as inherently *ferae naturae*. They were distinguished from other *ferae naturae* by their intention to return. Effectively doves were reclassified from *domitae naturae* to *ferae naturae* (Daube 1959). It may have also incidentally had the effect of lessening the importance of the attribute of tameness. Now there was a class of animals that, though wild, could be the subject of proprietorship without being maintained in absolute captivity.
Some of them were tame in much the same way as domitae naturae.

In summary:

- In the preclassical period animals that lived among humans or trained or induced to return were regarded as domitae naturae (this did not include bees, which were regarded as ferae naturae).
- By the classical period, the distinction between those animals trained or induced to return and those returning by reason of instinct was said to be artificial, but had not altered. Therefore those animals that return by reason of instinct and those returning by reason of habit or training were recognised as ferae naturae, but a qualified property interest is retained, whilst they have that habit.

Adopting that view, Gaius (n.d., 2:65-68) recognised that proprietary interests were retained in two different classes of ferae naturae, those the subject of captivity and those the subject of animus revertendi:

Property ... can be acquired ... by occupancy, and hence we become the owners of the same because it previously belonged to no one else; and in this class are included all animals which are taken on land, or in the water, or in the air.

Therefore, if we should take captive any wild animal, bird, or fish, it is understood to be ours only as long as it is in our custody; for when it escapes from our control and recovers its natural liberty, it again becomes the property of the first occupant, because it ceases to be ours. It is considered to recover its natural liberty when it escapes from our vision, or, although it may be in our sight, its pursuit is difficult.

In the case of those animals, however, which are accustomed to go away and return, as for instance pigeons, and bees, and also deer which are accustomed to go into the forests and return, we have adopted the rule which has come down to us from former times, namely, that if these animals should not have the intention to return, they also cease to be ours and become the property of the first occupant; and they are considered to have ceased to have the intention to return when they abandon their habit of returning.

Interestingly, in one translation and commentary on Gaius (n.d.) (see the translation by Poste – see Gaius n.d) animals are divided into three classes, namely animals ferae naturae, animals that are half-tame and those that are tame. No mention is made of distinctions based either on species or domestication. Property in the half-tame animals (among those mentioned are deer, peacocks, pigeons and bees) is not limited by detention as with other wild animals, but by their intention to return. Whilst in the case of tame animals (e.g. dogs or geese; the particular portion of the Institutes (Gaius n.d) themselves makes no reference to these animals, geese apparently being permitted to also fly or roam about), the
rights of the owner are not extinguished by their straying without an intention to return. That interpretation of Gaius provides, on its face, a simpler approach. It does however raise the issue as to how you identify those that are owned, and the wild geese from those that are tame.

The Roman law developed other rules applicable to animals and overlaid those rules on the simple divisions between *domitae naturae* and *ferae naturae*, much like the common law (see table 5). This occurred in a number of areas in the Roman law, including the law of derivative acquisition and, also, liability for the actions of the animals possessed. Gaius (n.d., 2:14a, 15-16) distinguishes between *ferae naturae* and *domitae naturae* in his discussion of those things that may be dealt with by *mancipation* by sale, in the following terms:

(14a) Things are either susceptible, or not susceptible of mancipation by sale. Those susceptible of sale by mancipation are lands and houses in Italy, slaves, domestic animals and rustic servitudes; but servitudes attached to urban estates are not thus subject to sale.

(15) Likewise, estates subject to taxation and tribute are not subject to sale. According to what we have stated, cattle, horses, mules, and asses are held by some authorities to be susceptible of sale as soon as they are born; but Nerva, Proculus, and other jurists of a different school think that such animals are not subject to sale unless they have been tamed; and if this cannot be done on account of their extreme wildness, then they are considered to be saleable when they reach the age at which others of the same kind are usually tamed.

(16) In like manner, wild beasts, as for instance, bears, lions, and those animals which can almost be classed as wild beasts, for example, elephants and camels, are not subject to sale; and therefore it makes no difference whether these animals have been broken to harness or to carry burdens, for they were not even known at the time when some things were decided to be saleable and others were not.

The Rules of Ulpian (Ulpian n.d., 19:1) contain a similar discussion. The definition of what could be the subject of mancipation by sale was dependent, in the view of Gaius (n.d.), on the history of the process. It reflected the knowledge of the early society. In the view of Ulpian (n.d.), however, it was attributed to the classification of the animal.

Other rules applicable to differing aspects of animals in the Roman law can also be found. In the *Opinions* of Paul (n.d., 3:6, 73-76) there is a description of the animals that pass under certain legacies that is further illustrative of some of the divisions:

*When flocks are bequeathed, all quadrupeds are included which feed together in herds.*
When beasts of burden are bequeathed, oxen are not included; and where horses are bequeathed, it has been decided that mares are included; where sheep are bequeathed, lambs are not included, unless they are a year old. Where a flock of sheep is bequeathed, rams are also included. Where fowls are bequeathed, geese, pheasants, chickens, and the places where they are kept are included, whether the keepers of the pheasants and of geese are included, depends on intention of the testator.

Clearly absolute property was recognised as existing in a class of animals (e.g. cattle, horses, mules and asses, notwithstanding that some of them still required breaking). The issue as to whether the animals commonly broken to draught only became res mancipi when actually broken was an issue in classical times. The Sabinians held that these animals were res mancipi, the Proculians, from the time they were broken (or if they could not be broken from the usual age of breaking; see discussion in Watson 1971). There is a hint in this debate that absolute property rights were founded on the simple distinction between those tame and those not tame. It is unclear whether this distinction is different in this context from those wild and not wild (i.e. domestic). This may be excluded by the foregoing discussion in Ulpian (n.d.) as to the status of camels and elephants as wild beasts. Columella (n.d.), on the other hand, describes the breaking of young cattle to the plough as a matter of accustoming them to the plough. There appears to be no suggestion that the cattle are ferae naturae, though he does indicate that certain practices will render them tame.

The oxen, horses, mules and asses were no doubt the more important accessories, as beasts of burden in the agrarian activities undertaken at the time of the establishment of the rules (Gaius n.d; Jolowicz 1932; Watson 1991). As already briefly mentioned, the structure of the classes is likely to have changed as the nature of the society changed. The animals within a class are also likely to have changed as the law developed (Jolowicz 1932; Watkin 1990). Others however suggest that the importance of these animals may not, in early Rome, have been as beasts of burden, but rather as the core of the agricultural activities (Diosdi 1970). This proposition assumes that tillage in its early stages is not able to provide a large surplus, whilst animal breeding does assure a large surplus where there is sufficient human power (slave or free). So animal breeding is likely to become the first source of the acquisition of wealth and the starting point for private property (Diosdi 1970).

6.3. Justinian's Digest and Institutes

The principal comment on the topic from the Digest of Justinian (553a, 41,1,1-5) is:

1. Gaius, Common Matters or Golden Things, book 2: Of some things we acquire ownership under the law of nations which is observed, by natural reason, among all men generally, of others under the civil law
which is peculiar to our city. And since the law of nations is the older, being the product of human nature itself, it is necessary to treat of it first. 1. So all animals taken on land, sea, or in the air, that is, wild beasts, birds, and fish, become the property of those who take them.

2. Florentinus, Institutes, book 6: as also their offspring born when they are ours.

3. Gaius, Common Matters or Golden Things, book 2: What presently belongs to no one becomes by natural reason the property of the first taker. 1. So far as wild animals and birds are concerned, it matters not whether they be taken on one’s own or on someone else’s land. Of course, a person entering another’s land for the purpose of hunting or fowling can, if the latter becomes aware of it, lawfully be forbidden entry by the landowner. Any of these things which we take, however, are regarded as ours for so long as they are governed by our control. But when they escape from our custody and return to their natural state of freedom, they cease to be ours and are again open to the first taker.

4. Florentius, Institutes, book 6: other than those tame creatures which are in the habit of going and returning.

5. Gaius, Common Matters or Golden Things, book 2: An animal is deemed to regain its natural state of liberty when it escapes our sight or, though still visible, is difficult of pursuit. 1. The question has been asked whether a wild animal, so wounded that it may be captured, is already ours. Tebatius approved the view that it becomes ours at once and that it is ours so long as we chase after it; but, if we abandon the chase, it ceases to be ours and is open to the first taker. Hence, if, during the period of our pursuit, someone else should take the animal, with intent to profit thereby, he is to be regarded as stealing from us. The majority opinion was that the beast is ours only if we have actually captured it because many circumstances can prevent our actually seizing it. And that is the sounder opinion. 2. Bees, again, are wild by nature and so those which swarm in our trees are, until housed by us in our hives, no more regarded as ours than birds which make a nest in our tree. Hence, if another should house or hive them, he will be their owner. 3. Again, honeycombs which they make can be taken by anyone with no question of theft though, as said earlier, one entering upon another’s land can be lawfully barred by the owner who becomes aware of it. 4. A swarm which flies away from our hive is deemed still to be ours so long as we have it in sight and its recovery is not difficult; otherwise, it is open to the first taker. 5. The wild nature of peacocks and doves is of no moment because it is their custom to fly away and to return; bees, whose wild nature is universally admitted, do the same; and there are those who have tame deer which go into and come back from the woods but whose wild nature has never been denied. In the case of these animals which
habitually go and return, the accepted rule is that they are held to be ours so long as they have the instinct of returning; but if they lose that instinct they cease to be ours and are open to the first taker. They are deemed to have lost that instinct when they abandon the habit of returning. 6. Poultry and geese are not wild by nature; for there obviously exist other species which are wild fowl and wild geese. Hence, if my geese or chickens be disturbed and fly so far away that I do not know where they are, nonetheless they remain my property so that anyone who takes them with a view to gain will be liable to me for theft.

 Whilst a number of other comments bear incidentally on the matter, the next comment of significance is (Justinian 553a, 41,1,55):

[A] wild boar fell into a trap which you had set for such purpose, and when he was caught in it, I released him and carried him off. Am I, then, to be seen as stealing your boar? And supposing him to be yours, would he cease to be or remain your property if, having released him, I set him free in a wood? Again, if he ceased to be yours, what action would you have against me? Should it be an actio in factum? These are my questions. The answer was this: Let us consider whether it be relevant that I set the trap on private land or on public land and, if on private land, whether it was my own or another's and, if another's whether I set the trap with the owner's permission or without it; furthermore, let us consider whether the boar was so caught that he could not extricate himself or could do so only by lengthy struggling. Still I think that the cardinal rule is that if he has come into my power, the boar has become mine. And if you release my boar into his natural state of freedom and thereby he ceased to be mine, I should be given an actio in factum, as was the opinion given when someone threw another's cup from a ship.

Justinian made further relevant comments (Justinian 553a, 41,2,3 and 13 to 16) relating to the acquisition and loss of possession as follows:

13. The younger Nerva says that, leaving aside a slave, movable things are possessed by us only so long as they are in our keeping, that is, so long as we can, if we so choose, take physical control of them. For once an animal strays or a vase falls, so that it cannot be found, it immediately ceases to be in our possession, even though it is possessed by no one else; this differs from the case of something which is still in our keeping, though not immediately traceable; because the fact remains that it is still there, and all that is necessary is a diligent search for it. 14. Then again, we possess those wild animals which we have penned up or the fish which we have placed in tanks. But those fish which live in a lake or beasts which roam in an enclosed wood are not in our possession, because they are left in their natural state of liberty. Any other view would mean that the purchaser of a wood thereby should be held to possess all the animals in it; and that is not
true. 15. We possess also birds which we keep in cages or which, being domesticated, are under our control. It is, further and correctly, the view of some that we possess doves which fly from our cotes, as also bees which fly from our hives, they having the habit of returning.

The relevant extracts from the Institutes of Justinian (553b) relating to the proprietorship of animals that appear in Book 2, Title 1 are, in most material respects, in very similar terms to that already extracted from the Digest (Justinian 553a).

The foregoing quotes emphasise the manner in which the interest in ferae naturae may be acquired. They are from the books concerning occupation, but the final sentence in the quotation from the Digest (Justinian 553a, 41,1,5) highlights the existence of the class domitae naturae and the different nature of the interest: “they remain my property” and anyone taking them is liable for theft. Other quotations to similar effect can also be found in other parts of the Digest (Justinian 553a).

The Roman law position of this time may be described in one of two ways. The first emphasises tameness as the basis of the distinction between domitae naturae and ferae naturae to the exclusion of domestication on a population or species basis (Daube 1959; Gaius n.d.). The other appears to look to domestication and species (Nicholas 1962; Borkowski 1994). This thesis prefers the view of Daube (1959), as does the lay literature of the time (Columella n.d.; Pliny n.d.; Varro n.d.). The recognition of both tame and wild boar supports this view and highlights the nature of the distinction (also see the application of the Aedelian Edict and Justinian 553a, 41,1,5 and 41,1,55).

Attempting to assimilate these rules with the rules relating to possession further requires the creation of fictions. Some have sought to do this by stating that the Romans had an advanced concept of possession (see de Zulueta 1950 and the contrary views of Daube 1959). If that is the case, then ownership can be harmonised with possession. Based on the discussion in Daube (1959), it is unlikely to be have been the position up to about 200 AD. It was unnecessary if animals with an intention to return were regarded as owned like any domitae naturae, albeit a form of notional possession. Physical possession was then only a requirement of ownership for ferae naturae. The apparent requirement for an initial physical capture or contact with the animal only reflects what appears to be a part of a wider debate as to what was required for the person to complete the capture to acquire possession (Olivecrona 1938).

That there is no indication in the Digest or Institutes of Justinian (553a, 553b) or in the works of other jurists mentioned in this thesis as to what constitutes domestication should not be surprising. It was not relevant. It was not the test. The references found in parts of the commentaries of the jurists, and the Digest and Institutes of Justinian (553a, 553b) are to types of animals but without
intending to imply a species test (e.g. sheep, chicken and geese). That says nothing in itself about domestication. The criterion of the time was tameness. There are a few contrary suggestions, so there is little reason to look for a class, population or species test.

Animus revertendi also facilitated identification of tameness. It classified a group of animals according to the objective habit of going away and returning. The courts could then adopt an external criterion. The intention to return is therefore equated with the habit of the animal returning. This implies some shift of emphasis from the internal state of the animal to its habit. It may well have prepared the ground for Celsus’s opinion that the habit as such determined the scope of the rule and the question of tameness was irrelevant (Daube 1959).

In contrast to the approach adopted with animals, a runaway slave was still possessed by an owner “for the slave is held to be still possessed simply so that he shall not, by his own act, deprive his master of possession” (Justinian 553a, 41,2,13). Therefore, an animal ferar e naturae could by its own act of not returning deprive its former owner of a property interest, however a slave doing the same does not achieve the same result.

Slaves are treated differently in a number of other situations in Roman law, such as determining the proprietorship of a child of a female slave born whilst the mother is the subject of a usufruct (Justinian 553b, 2,1,37). The difference was justified by the distaste for classing any human with animals and possibly on a humanitarian basis (Leage 1961). Slaves were clearly more valuable than most animals, particularly those animals that were described as remaining within one’s possession, notwithstanding that they may come and go. Daube (1959) distinguishes between aspects of the rules relating to slaves (for example regarding intention to return) and ferar e naturae.

The Roman law created no special right or privilege in the owner of land for the wild animals in or about that land. Consistent with that approach the young of ferar e naturae belonged to no one until captured, notwithstanding that they may be young in a nest on private land (MacChombaich De Colquhoun 1849). Anybody taking the wild animal in or about the land became the proprietor of it, but the landowner could prohibit a person from coming onto the land to hunt and had a remedy for entry in contravention of such a ban (Nicholas 1962; Van Zyl 1983; Thomas 1975; Lee 1956). However Buckland (1950) appeared to raise some doubts as to this position, when he suggested that the texts do not clearly show whether there was property in the game or fish within land.

So by the time of Justinian (553a) the position can be summarised as follows;

- There was a group of animals recognised by the Roman law as domitae naturae in which an absolute proprietary interest subsisted, a group of
animals about humans and tame, but a grouping not based on species or a distinguishable population.

- *Ferae naturae* reduced into possession and in captivity were the subject of a qualified interest, an interest that remained so long as they were in captivity.
- *Ferae naturae* with the intention to return whether by instinct or training remained the subject of a qualified property interest as large as that of *domitae naturae* so long as they had that intention to return.

7. Some Developments of the Early Common Law

7.1. Introduction

Notwithstanding that the common law has not placed great reliance on the influence of academic lawyers or texts to develop the law, there are a number of works that are undoubted authorities as to the law of their respective times as much as any judicial decision. They clearly include the works of Glanville, Bracton, Littleton, Coke and Blackstone (Walker 1980).

Of those, Bracton and Blackstone deal with the proprietorship of animals in the most significant manner and they have had the most influence on the development of those principles. They are both authors quoted with some frequency in the courts (e.g. the *Commentaries* of Blackstone 1765-1770 have been referred to on approximately 120 occasions in the High Court of Australia in the fifty four years since 1947; the treatise of Bracton 1250 seventeen times). Accordingly, their works and the significance of their works are discussed at some length in this thesis as is the historical context of both.

Bracton (1250) is the starting point for the modern principles. Some 500 years later, Blackstone (1765-1770) appeared to refashion the rules. In doing so, Blackstone (1765-1770) appeared to be influenced by Puffendorf (1672), in particular. This thesis will therefore consider at some length their statements of the law before turning to the body of case law to support its propositions. It does so because the impact of these authors in this area appears to be more significant than many of the decisions. As will be seen, even if Bracton did not introduce the Roman law concepts into the English common law, his treatise is the first indication that those principles had been adopted by the common law of his time, a period from which there is little authority readily available. A number of the authors over the following century merely quote him, with some differences (Britton 1290; Fleta 1290).

The impact of Blackstone (1765-1770) is equally significant. As will be mentioned, his *Commentaries* have been repeatedly quoted in this area of the law and rarely questioned. Notwithstanding that, this thesis will question aspects of his formulation. His formulation appears to be influenced by factors other than decided cases, as will be discussed briefly.
After the initial landing of the Roman legions in Kent in AD 43, it took them the better part of forty years to consolidate the conquest and to extend the Roman frontier to the river Tyne (Whitlock 1983). The Roman rule of Britain was a military occupation rather than a colonisation. It brought to the Britons Christianity and probably something of Rome’s customs and civilisation. Some elements of the Roman law may have been imposed upon the Britons in the towns (Windeyer 1957). Roman law departed with the legions (Plucknett 1939a).

The Romans were followed by Angles, Saxons, Jutes and later by the Danes in the northeast and centre of England. They brought with them their customs and their laws (Windeyer 1957). In 600 AD, or thereabouts, Ethelbert, King of Kent, provided in writing the laws of his kingdom. These writings known as the dooms are not regarded as the origin of English law. Later dooms followed in Kent. However, the continuous history of English law is that of Wessex. The first of the laws of Kent committed to writing were Ine’s dooms, published in about 690 (Windeyer 1957). Further dooms were thereafter published up until the time of Cnut in 1017. None of them were intended to be a code. They did not seek to state the whole of the existing law relating to the matters with which they dealt. Ancient customary law regulated many things. It may be that the dooms only described doubtful matters (Windeyer 1957).

There is nothing in these dooms to suggest the adoption of the Roman law rules as to the proprietorship of animals. No distinction similar to that which is about to be again encountered, between ferae naturae and domitae naturae, can be found expressly in those dooms nor is there any apparent remnant of a Roman law influence. It is likely that the Roman law was fully supplanted by the subsequent invaders (Windeyer 1957). The dooms, apart from those of Cnut (clause 81 prohibited hunting in the king’s domain) and the Constitution of the Forest (the veracity of which is doubted: see Coke 1641c; Thorpe 1840) do not discuss the general principles relating to the ownership of animals. The laws ascribed to King Henry I also contain provisions relating to the forest (Thorpe 1840, 10: pl 24).

From a reading of them, one must assume that there was a distinction between populations that would be regarded as domitae naturae and ferae naturae. There is a strong indication of a distinction. There is a significant emphasis on the manner of proving transactions involving certain animals (particularly cattle, sheep and pigs) and identifying them. The remedies for their recovery, the liability for their wrongs and their agistment are described. There was clearly a division. It is likely that it had two classes, as a minimum, but it is difficult to draw much more from the dooms that are currently available.
No great changes in the law seemed to have suddenly occurred following the conquest by the Normans. Even with the assent in 1215, by King John at Runnymede to the demands of the barons in the Great Charter to redress various grievances that had arisen under his tyrannical rule, there was minimal impact on the law relating to the ownership of animals. In 1225 King Henry III reissued the Great Charter as Magna Carta and the Charter of the Forest (the forest clauses of the Great Charter being embodied in the later charter, Walker 1980). Whilst Magna Carta 1225 is now attributed to have had a significant effect on the preservation of the subject’s right to fish (whether in Chapter XVI or Chapter XXIII or another see Yanner v Eaton and the more detailed discussion in section twelve and appendix five) it had little effect on the law relating to animals. The Charter of the Forest, notwithstanding its name, only had a minimal impact on the law relating to the proprietorship of animals. This charter contained the measures required to redress many of the wrongs committed by King John and his predecessors in connection with the forests. It stopped the further afforestation of lands, the dispossession of the subjects of their land and provided for the return of land reafforested. Notwithstanding that the charter may have only been a codification of certain aspects of the forest law, as suggested by Coke (1641b), the codification facilitated the consideration of the law. There were many other elements. The severity of the punishment for killing the king’s deer was curtailed (Chapter 10). It prescribed the manner in which a nobleman could take deer in the king’s forest (Chapter 11). The Charter recognised the right of the landowner to take hawks, falcons, eagles, herons about the land of the landowner (Chapter 13). In time, this charter became far less relevant as the forests diminished and it was repealed in most respects by the Wild Creatures and Forest Laws Act 1971, with the saving of certain existing rights.

7.3. Bracton and the Influence of the Roman Law

The twelfth century saw the rise in Italy of the law schools of Bologna and Ravenna and a renewed interest in Roman law. The Roman law supplied those city-states with rules appropriate for an advancing civilisation (Windeyer 1957). Irnerius was the greatest of the teachers of Bologna and the founder of the school of Glossators. The Glossators regarded law as a matter for jurists and scholars, a science. Their materials were the writings of Justinian. They expounded on the texts of Justinian by glosses (interlinear explanations of words or marginal interpretations). Among the most notable of them was Azo, an author of a famous work on the Code and Institutes of Justinian (Windeyer 1957).

Henrici De Bracton or Henrici de Bratton (Bracton) was from Devonshire, became a Justice in Eyre in 1245 and, three years later, one of the judges of the assize and of the Curia Regis (see Walker 1980 and Scrutton 1884 for some further details). There remains considerable doubt as to his training and much of his background. There is even some doubt as to whether Bracton was the author of De legibus et consuetudinibus Angliae. The fact that there may be some doubt
as to the authorship of the work has not detracted from its importance (Scrutton 1884).

The text was planned as a treatise on the law of England. The treatise was never finished. Not only did it systematically state the doctrines of the common law, as Bracton found them, applied in the practice of the courts but Bracton culled from the civil law (Maitland 1895). Bracton also used decided cases to support his statements. In this, he did much to introduce the use of precedent.

That Bracton borrowed extensively from the civil law there is no doubt. That he did so using the gloss of Azo known as the Summa of Azo to the Code and the Institutes, there is evidently little doubt (Maitland 1895). The extent to which he resorted to that gloss, the Digest and Institutes of Justinian (553a, 553b) and others is the subject of much debate. There is also considerable debate as to the extent of his civil law learning (see Richardson 1965 for a recent discussion of many of these matters and many of the strongly conflicting views).

Bracton did not simply copy the tracts from Azo. Bracton adopted or adapted passages when he thought it necessary to supply or provide a statement of the law for which the Curia Regis apparently had no answer. In the area of the acquisition and ownership of animals, his passages are apparently taken from Azo, but with qualifications (Maitland 1895).

As stated earlier, Bracton is regarded as authoritative. It means that as Bracton has stated the law to be, the law is so regarded unless the law has since been altered (Gifford v Lord Yarborough, (1828) 5 Bing. 163, 130 E.R. 1023). Some earlier decisions do not support that approach (Stowell v Lord Zouch, (1564) Pi. 353, 75 E.R. 536 and others collected in Scrutton 1884). Whilst those quoting or referring to him usually issue a caution about the use of medieval concepts and changes since his time, no one now suggests that he is not an authority in the common law.

Unfortunately, even this starting point has its difficulties. There are two English translations of Bracton (1250) available. The first is one edited by Sir Travers Twiss and published in 1878. The second translation is one edited by Professor George Woodbine as translated with revisions and with notes by Samuel Thorne in 1968. As may be expected, there are differences.

The following quote from Bracton (1250, 2:f.8b-9) is from Sir Travers Twiss's edition, the relevant tracts being taken from chapter one of the second book:

*The dominion over things by natural right or by the right of nations is acquired in various ways. In the first place, through the first taking of those things, which belong to no person, and which now belong to the king by civil right, and are not common as of olden time, such, for instance, as wild beasts, birds, and fish, and all animals which are born*
on the earth, or in the sea, or in the sky, or in the air; wherever they may be captured, and wherever they shall have been captured, they begin to be mine, because they are coerced under my keeping, and by the same reason, if they escape from my keeping and recover their natural liberty they cease to be mine, and again belong to the first taken. But they recover their natural liberty, then, when they have either escaped from my sight in the free air, and are no longer in my keeping, or when they are within my sight under such circumstances, that it is impossible for me to overtake them.

Occupation also comprises fishing, hunting, and capturing; pursuit alone does not make a thing mine, for although I have wounded a wild beast so that it may be captured, nevertheless it is not mine unless I capture it; on the contrary, it will belong to him who first takes it, for many things usually happen to prevent the capturing it. Likewise, if a wild boar falls into a net, which I have spread for hunting, and I have carried it off, having with much exertion extracted it from the net, it will be mine, if it shall have come into my power, unless custom or privilege rules to the contrary. Occupation also includes shutting up, as in the case of bees, which are wild by nature, for if they should have settled on my tree they will not be any the more mine, until I have shut them up in a hive, than birds which have made a nest in my tree; and therefore if another person shall shut them up, he will have the dominion over them. A swarm, also, which is flown away out of my hive, is so long understood to be mine, as long as it is in my sight, and the over-taking of it is not impossible, otherwise they belong to the first taker; but if a person shall capture them, he does not make them his own if he shall know that they are another's, but he commits a theft, unless he has the intention to restore them. And these things are true, unless sometimes from custom in some parts the practice is otherwise.

What has been said above applies to animals, which have remained at all times wild; and if wild animals have been tamed, and they by habit go out and return, fly away and fly back, such as deer, swans, seafowls, and doves and such like, another rule has been approved, that they are so long considered as ours, as long as they have the disposition to return; for if they have no disposition to return, they cease to be ours. But they seem to cease to have the disposition to return, when they have abandoned their habit of returning; and the same is said of fowls and geese, which have become wild after being tame. But a third rule has been approved in the case of domestic animals, that although tame geese and fowls have escaped out of my sight, nevertheless in whatever place they may be, they are understood to be mine, and he commits a theft who retains them with the intention of making gain with them.

There are a number of general issues that require comment. A consideration of many aspects of Bracton's text and those that have commented on it very quickly leads one into a quagmire of views (most of them in conflict) spanning hundreds
of years of debate, of which there currently appears little resolution, and on which
this thesis will not dwell. Another and more difficult issue is the extent to which
it reflects the law of England. That there was no simple slavish coping of Azo can
be seen in the qualifications that appear in the text, quoted above, as to the king’s
right, privilege or custom. It is unfortunate that the nature and extent of such
rights and customs are not described. As appears in the quote, Bracton (1250)
began with a statement that appears to override all his further law about wild
animals that he took from Azo. Bracton (1250) drew no distinction between those
animals the subject of the forest, chase or warren and all other wild animals
(Maitland 1895). The problems created by this will be discussed briefly in
connection with the privileges of the Crown (see discussion in appendix one).

The following is a summary of the foregoing tract:

- The first rule is that proprietorship of a wild animal is achieved by taking
possession of the animal subject to any franchise rules to the contrary.
However, Bracton (1250) notes that there may be a further exception in the
form of a contrary custom. No examples or indications of such contrary
customs or their nature and extent are provided.

- The second rule is that if wild animals have been tamed and by habit they
come and go of their own volition, then for so long as they have that
disposition they remain the property of the person who has tamed them. The
examples provided are deer, swans, seafowls and doves.

- The third rule is that animals that have been domesticated remain the property
of the owner no matter that they are out of sight, in whatever place they may
be.

The similarity and differences between Bracton’s writings and the Digest and
Institutes of Justinian (553a, 553b) require a few comments. The place where the
animal is taken attracts less comment in Bracton. In the Digest of Justinian (553a)
the point was made that it does not matter whether it is one’s own land or that of
another. In Bracton (1250) the place was wherever the animals were captured.
The right of the landowner to ferae naturae about the land was apparently yet to
be established, unless the right was encompassed in the later qualifications that
property acquired by capture and hunting is subject to custom or privilege. In
addition, there was no mention of the right of a landowner to forbid entry by
another. So the example in the Digest of Justinian (553a) of the honeycomb of
bees belonging to no-one and the right to prohibit others entering one’s land to
take honeycomb is also omitted by Bracton (1250) (see discussion in appendix
two and elsewhere on The Charter of the Forest).

The example of the trapping of the wild boar, taken from Justinian (553a,
41,1,55), is considerably abbreviated and appears confused. For an explanation
and a discussion of that matter, see Maitland (1895).

In the pursuit of a swarm of bees, Bracton (1250) stated that it is impossible to
overtake the swarm rather than the pursuit is difficult, as in the Digest of Justinian
He then added a qualification, based somewhat on Justinian (553a, 41,5,1), but of which there appears to be no express similar qualification in the parallel paragraph of the Digest. That is, if another person captures the swarm and appropriates them, knowing that they belong to another, then that person commits theft. One must assume that the capture that is referred to is effected whilst the original owner is still in pursuit. However, this is further qualified by a reference to the custom in some parts of the country to the contrary. No adequate indication is given of such contrary practices or rights, or their scope and nature.

Bracton (1250) then discusses wild animals that have been tamed. They are the animals whose wild nature is of no moment in the Digest of Justinian (553a), the peacocks and doves, and bees that have a wild nature, but are grouped here because of their custom of going away and returning. This category is not limited to birds or bees; Bracton (1250) includes deer, like Justinian (553a, 41,5,5). Though in respect of bees one is left questioning whether it is the captivity of the swarm rather than the returning that is regarded as more important.

The animals included in this second class are variously described in the translations. The Twiss translation of Bracton (1250) suggested that it includes deer, swans, seafowls and doves. Scrutton (1884) however indicated that Bracton (1250) added cygni to Azo’s list and queried Twiss’s authority for translating pavones as seafowl, a genus not usually including peacocks. In Bracton (1250) in the Thorne translation they are described as deer, peafowl and pigeons, apparently omitting the addition of cygni. The inclusion of swans is significant, as will become apparent in the later discussion. Bracton (1250) in the Twiss edition leaves the class open by the use of “such like”.

Having dealt with the disposition and habit of returning animals, Bracton (1250) added two further animals, namely fowls and geese that were once tame and are now wild. So, unlike the Digest of Justinian (553a), Bracton (1250) provided an example of animals ceasing to return and describes them as animals becoming wild after being tame.

The third rule was then introduced. This distinction or division was not explicitly recognised in the Digest of Justinian (553a), nor, it appears, was the classification of this class as domestic. The Digest of Justinian (553a) described poultry and geese as being not wild by nature and therefore animals in which absolute property exists. Bracton (1250) used the same animals as the Digest of Justinian (553a); they are also the same animals that he has just described as being tame and reverting to their wild state. In that latter condition, they are part of the second class (the Digest of Justinian 553a), this also highlights that there are both wild fowl and geese and domestic fowl and geese (Justinian 553a, 41,5,6). Similar to the Digest of Justinian, Bracton (1250) stated that such animals out of sight remain one’s property, recognising the absolute property right. But in using the same animals in his examples of those tame and wild, Bracton (1250) highlights that which also appears in the Digest but is not so simply stated. The
distinction between *domitae naturae* and *ferae naturae* in either Justinian or more importantly Bracton’s era is not based on species. There are both domestic hens and wild hens and domestic geese and wild geese. There is some unstated attribute of *domitae naturae*. It involves something more than tameness, or does it?

Bracton (1250) in the Twiss translation may, in the case of hens and geese, be construed as dealing with feral animals that have reverted to their natural state, that is, those animals that were once domestic that have returned to a wild state. Another view, inconsistent with that of the *Digest* (Justinian 553a) is that tame geese and fowl whether now wild or otherwise are *domitae naturae* and remain so, no matter that they could become wild.

Bracton (1250) made no mention of bees in the second category. One assumes that this was in recognition that they had not been tamed in England and the right to the produce of bees was addressed by the Charter of the Forest (Chapter 13).

Much academic debate on the substance of Bracton’s treatise revolves around the status, influence and place of the statements taken from the Roman law. As Guterbock (1866) comments, the treatise is presented as a whole, portraying it as a statement of the law of England. It is not a comparative law presentation or one describing sometimes domestic and sometimes foreign law.

Until there has been a very thorough examination of the court rolls of the time, it is not possible to say whether these Roman law parts were indeed the law of England at the time of Bracton or the introduction (Plucknett 1939a) of Roman law principles by him, whether to fill a void, by way of an introduction or the block effect (i.e. self-contained and self-referential blocks or bodies of law rather than the Roman law itself or particular principles, such as marriage, divorce, ownership and possession are adopted) described by Watson (1981), or most likely both. The views are clearly mixed but seem to favour the latter (Scrutton 1884).

So to suggest that these principles at once became the common law of England appears to be overstating the situation. It implies that the common law of the time knew of no such principles (Guterbock 1866), no distinction between *domitae naturae* and *ferae naturae*, an unlikely proposition having regard to the discussion in the dooms (see earlier discussion in section 7.2). With time, aspects have been described or adopted as the common law of England. In the subsequent parts of this thesis, the adaption of those principles, as part of the common law, will be considered.

So at this point, it can be stated, subject to a few difficulties, that the law of England as propounded by Bracton (1250) in respect of the acquisition of wild animals and the proprietorship of animals has many similarities with the Roman
law. With that are carried many of the same issues and difficulties encountered in
the Roman law, as discussed (see section six), however there were already
differences and they increased (see sections eight and nine and also appendices).

7.4. Blackstone

William Blackstone was born on 10 July 1723. In 1741, he entered the Middle
Temple; in 1743, he was elected a fellow of All Souls College, Oxford and on 12
June 1745, at the age of 22, he graduated from Oxford with the Degree of
Bachelor of Civil Law. Following his graduation, he returned to the Middle
Temple to pursue his study of the common law, returning to Oxford in 1753 to
devote his entire energies to academic pursuits and local practice. In that year, he
started to execute what he previously planned, the giving of lectures at Oxford on

The principal work that Blackstone followed in the preparation of his
Commentaries (Blackstone 1765-1770), was Sir Mathew Hale’s posthumous The
analysis of the law (Hale 1713), although he also drew heavily from most of the
leading English and European writers including Bracton, Coke, Hale, Grotius,
Montesquieu, Puffendorf (Lockmiller 1970).

Theodore Plucknett stated that Blackstone was in harmony with the thoughts of
his age when he regarded English legal history as an object of temperate curiosity
rather than a subject of exact scholarship, and added that the Commentaries were,
generally speaking, remarkably sound and fascinating literature (Lockmiller
1970). The Commentaries were not intended to examine every fact and
proposition in definitive detail. They dealt with the system of law as Blackstone
found it. The Commentaries were not intended to be a study of the jurisprudence,
which was still dominated largely by the legacies of feudalism. Blackstone wrote
for all English people (Lockmiller 1970).

Blackstone (1765-1770) made repeated reference and calls to natural law. The
arguments do not differ significantly, in many areas, from that of some of the
most influential books on the subject current in Blackstone’s era. Aspects of his
call to the natural law came directly from Puffendorf (1672), who is often cited.
In his discussion of the laws of England, Blackstone (1765-1770) failed to
distinguish between nature “meaning the world as it was and nature meaning the
world as it ought to be” (Boorstin 1941).

Blackstone treated the law of property of animals as a branch of natural science.
Boorstin (1941) suggested that “the reader was encouraged to believe it as absurd
that the English law of animals should be otherwise, as it would be for wild
animals to be tame, and tame animals wild.” A further suggestion is that it is
often hard to tell whether the categories put forward are of a legal nature or have
some other basis (Boorstin 1941). The examples proffered extend beyond
animals. In the case of animals, much of what Blackstone (1765-1770) wrote was in the style of Justinian, Bracton and Puffendorf. Other examples help highlight Blackstone’s desire to enunciate principles that show precision and conformity with the law of nature (Boorstin 1941), principles that are not well supported by the authorities. These aspects and others discussed by the foregoing commentators are not considered by many of those who rely on Blackstone, for the law as to the proprietorship of animals.

Blackstone (1765-1770) cited no authority for his views. Since the publication of his Commentaries (Blackstone 1765-1770), his view has been regularly adopted (Reeve v Wardle; particularly in United States decisions Manning v Mitcherson, 69 Ga. 447 (1882); Kimple v Schafer et al, 161 Iowa 659, 143 N.W. 505 (1913); State v Taylor, 27 N.J.L. 117 (1858); Hughes v Reese, 109 So. 731 (1926)). Nevertheless, Blackstone (1765-1770) has not always been applied in some states of the United States of America (Morris v Fraker, 5 Colo. 425 (1880); E.A. Stephens & Co v Albers, 256 P. 15 (1927)).

It is in book two of Blackstone’s Commentaries (1765-1770, 2:389-395 ) that he dealt with the law relating to animals:

But with regard to animals, which have in themselves a principal and power of motion, and (unless particularly confined) can convey themselves from one part of the world to another, there is a great difference made with respect to their several classes, not only in our law, but in the law of nature and of all civilized nations. They are distinguished into such as are domitae and such as are ferae naturae: some being of a tame and others of a wild disposition. In such as are of a nature tame and domestic, (as horses, kine, sheep, poultry, and the like,) a man may have as absolute a property as in any inanimate beings; because these continue perpetually in his occupation, and will not stray from his house or person, unless by accident or fraudulent enticement, in either of which cases the owner does not lose his property: in which our law agrees with the law of France and Holland. The stealing, or forcible abduction, of such property as this, is also felony; for these are things of intrinsic value, serving for the food of man, or else for the uses of husbandry. But in animals ferae naturae a man can have no absolute property.

Of all tame and domestic animals, the brood belongs to the owner of the dam or mother; the English law agreeing with the civil, that partus sequitur ventrem in the brute creation, though for the most part in the human species it disallows that maxim. And therefore in the laws of England, as well as Rome “si equam meam equus tuus praegnantem fecerit, non est tuum sed meum quod natum est.” And for this, Puffendorf gives a sensible reason: not only because the male is frequently unknown; but also because the dam, during the time of her pregnancy, is almost useless to the proprietor, and must be maintained
with great expense and care: wherefore, as her owner is the loser by
her pregnancy, he ought to be the gainer by her brood. An exception to
this rule is in the case of young cygnets; which belong equally to the
owner of the cock and hen, and shall be divided between them. But
here the reasons of the general rule cease and "cessante ratione cessat
et ipsa lex:" for the male is well known, by his constant association
with the female; and for the same reason the owner of the one doth not
suffer more disadvantage, during the time of pregnancy and nurture,
than the owner of the other.

II. Other animals, that are not of a tame and domestic nature, are
either not the objects of property at all, or else fall under our other
division, namely that of qualified, limited, or special property; which is
such as is not in its nature permanent, but may sometimes subsist and at
other times not subsist. In discussing which subject, I shall in the first
place show how this species of property may subsist in such animals as
are ferae naturae, or of a wild nature; and then how it may subsist in
any other things, when under particular circumstances.

First, then, a man may be invested with a qualified, but not an absolute,
property in all creatures that are ferae naturae, either per industriam,
propter impotentiam, or propter privilegium.

I. A qualified property may subsist in animals ferae naturae per
industriam homis: by a man's reclaiming and making them tame by art,
industry and education; or by so confining them within his own
immediate power that they cannot escape and use their natural liberty.
And under this head some writers have ranked all the former species of
animals we have mentioned, apprehending none to be originally and
naturally tame, but only be made so by art and custom; as horses,
swine, and other cattle; which, if originally left to themselves, would
have chosen to rove up and down, seeking their food at large, and are
only made domestic by use and familiarity: and are therefore, say they,
called mansuetum, quasi manui assueta. But however well this motion
may be founded, abstractedly considered, our law apprehends the most
obvious distinction to be, between such animals as we generally see
tame, and are therefore seldom, if ever, found wandering at large,
which it calls domitae naturae: and such creatures as are usually found
at liberty, which are therefore supposed to be more emphatically ferae
naturae, though it may happen that the latter shall be sometimes tamed
and confined by the art and industry of man. Such as are deer in a
park, hares or rabbit in an enclosed warren, doves in a doveshouse,
pheasants or partridges in a mew, hawks that are fed and commanded
by their owners, and fish in a private pond or in trunks. These are no
longer the property of a man, than while they continue in his keeping or
actual possession: but if at any time they regain their natural liberty,
his property instantly ceases; unless they have animum revertendi
which is only to be known by their usual custom of returning.
A maxim which is borrowed from the civil law; "revertendi animum videntur desinere habere tunc, cum revertendi consuetudinem deseruerint". The law therefore extends this possession further than the mere manual occupation; for my tame hawk that is pursuing his quarry in my presence, though he is at liberty to go where he pleases, is nevertheless my property; for he hath animum revertendi. So are my pigeons, that are flying at a distance from their home, (especially of the carrier kind,) and likewise the deer that is chased out of my park or forest, and is instantly pursued by the keeper or forester; all which remain still in my possession, and I still preserve my qualified property in them. But if they stray without my knowledge, and do not return in the usual manner, it is then lawful for any stranger to take them. But if a deer, or any wild animal reclaimed, hath a collar or other mark put upon him, and it goes and returns at his pleasure; or if a wild swan is taken, and marked and turned loose in the river, the owners' property in him still continues, and it is not lawful for any one else to take him: but otherwise, if the deer has been long absent without returning, or the swan leaves the neighborhood. Bees are also are ferae naturae; but, when hived and reclaimed, a man may have a qualified property in them, by the law of nature, as well as by the civil law. And to the same purpose, not to say in the same words, with the civil law, speaks Bracton: occupation, that is, hiving or including them, gives the property in bees: for though a swarm lights upon my tree, I have no more property in them till I have hived them than I have in the birds which make the nest thereon, and therefore if another hives them, he shall be their proprietor: but a swarm which fly from and out of my hive, are mine so long as I can keep them in sight: and have power to pursue them; and in these circumstances no one else is entitled to take them. But it hath been also said, that with us the only ownership in bees is ratione soli; and the charter of the forest, which allows every free man to be entitled to the honey found within his own woods, affords great countenance to this doctrine, that a qualified property may be had in bees, in consideration of the property of the soil whereon they are found.

In all these creatures, reclaimed from the wildness of their nature, the property is not absolute, but defeasible; a property that may be destroyed if they resume their ancient wildness and are found at large. For if the pheasants escape from the mew, or the fishes from the trunk, and are seen wandering at large in their proper element, they become ferae naturae again; and are free and open to the first occupant that hath ability to seize them. But while they thus continue my qualified or defeasible property, they are as much under the protection of the law as if they were absolutely and indefeasibly mine; and an action will lie against any man that detains them from me, or unlawfully destroys them. It is also as much felony by common law to steal such of them as are fit for food, as it is to steal tame animals: but not so, if they are only
kept for pleasure, curiosity, or whim, as dogs, bears, cats, apes, ferrets, and singing-birds; because their value is not intrinsic, but depending only on the caprice of the owner: though it is such an invasion of property as may amount to a civil injury, and be redressed by a civil action. Yet to steal a reclaimed hawk is felony both by common law and statute; which seems to be a relic of the tyranny of our ancient sportsmen. And among our elder ancestors the ancient Britons, another species of reclaimed animals, viz., cats, were looked upon as creatures of intrinsic value; and the killing or stealing one was a grievous crime, and subjected the offender to a fine; especially if it belonged to the king’s household, and was custos horrei regii, for which there was a very peculiar forfeiture. And thus much of qualified property in wild animals, reclaimed per industriam.

2. A qualified property may also subsist with relation to animals ferae naturae, ratione impotentiae, on account of their own inability. As when hawks, herons, or other birds build in my trees, or conies or other creatures make their nests or burrows in my land, and have young ones there; I have a qualified property in those young ones till such time as they can fly or run away, and then my property expires: but, till then, it is in some cases trespass, and in others felony, for a stranger to take them away. For here, as the owner of the land has it in his power to do what he pleases with them, the law therefore vests a property in him of the young ones, in the same manner as it does of the old ones if reclaimed and confined; for these cannot through weakness, any more than the others through restraint, use their natural liberty and forsake him.

3. A man may, lastly, have a qualified property in animal ferae naturae, propter privilegium: that is, he may have the privilege of hunting, taking, and killing them, in exclusion of other persons. Here he has a transient property in these animals, usually called game, so long as they continue within his liberty; and may restrain any stranger from taking them therein: but the instant they depart into another liberty, this qualified property ceases. The manner in which the privilege is acquired, will be shown in a subsequent chapter. The qualified property which we had hitherto considered extends only to animals ferae naturae, when either reclaimed, impotent, or privileged. Many other things may also be the objects of qualified property.

Blackstone (1765-1770) in his Commentaries drew the distinction between the two classes on the basis that domitae naturae are rarely found wandering at large, whilst ferae naturae are usually found wandering at large. At least in respect of a number of classes of animals the matter cannot be so easily dealt with. These animals are deer, rabbits, pigeons, ducks and pigs.
Some authorities predating Blackstone support this view. In *Child v Greenhil* it was said that the owner of a franchise had a special property in deer in a park and rabbits in a warren. It did not apply to deer or rabbits outside of a park or warren unless they were domestic. In this case, “domestic” did not mean *domitae naturae*. Yet, in biological terms there were clearly examples of domesticated rabbits, pigeons and deer (see section eleven and appendix two). Ducks and pigs appear to provide examples of both wild and domestic populations. However, by Blackstone’s day there may have been few wild pigs at large, if any. Their history would suggest that for many centuries domestic populations and wild populations co-existed, and during much of the period would have fed in the same forests during winter (Seebohm 1927; Thorpe 1840). There were also both domesticated and wild ducks. As discussed in *Keeble v Hickeringill*, (1706) 11 Mod. 74, 88 E.R. 898 and applied in *Carrington v Taylor*, (1809) 11 E. 571, 103 E.R. 1126, wild ducks are *ferae naturae* and a person has property in them whilst they are in the person’s pond, yet ducks were held to be within the writ of cattle rescue (*Westley v Fulewelle*, YB (S.S.) (19) (1309) 2 &3 Edw. 2, 149) and accordingly regarded as *domitae naturae* (see section eleven). These and some other animals cast doubt on the basis for Blackstone’s distinction.

Rabbits are another example of an animal that could be either wild or tame. A French text discussing the husbandry of rabbits including their housing and mating was translated into English in 1600. Further texts by Markham (1660) entitled *A way to get wealth* and Mortimer (1712) both discuss or include treatises on the rearing of rabbits. Not unusually, there are references to taming or keeping them tame. The texts continue into the eighteenth and nineteenth centuries. In this case, it is suggested that the description “tame rabbit” was synonymous with domestic rabbit (Sandford 1996).

More importantly in this context (Sandford 1996, 15):

> All domestic rabbits throughout the world are the same species, *Oryctalagus cuniculus*. The domestic rabbit is the same species as the wild rabbit, and the different characteristics of all domestic breeds arise through either mutations or by a combination of different inherited characteristics. Selection thereafter modifies the breed or colour variety by an increase or decrease of the modifying genes.

The common law has not recognised rabbits as *domitae naturae*, notwithstanding the commercial or scientific position. They are regarded as *ferae naturae*. Yet, some parts of their population have undergone both genetic and environmental change. The common law does not appear to recognise this, possibly because of the protection afforded by the free warren and the concern about liability. At least on that aspect, the distinction put forward by Blackstone (1765-1770) holds good, as it may in respect of alien animals (see section 9.7).
8. Absolute Property in Animals in the English Common Law

8.1. Introduction

In 1903 W. Trotter in the opening to an article entitled *Property in wild animals*, (Trotter 1903, 138) noted:

*So far as the writer knows, there is no reported case either in Scots or in English law which provides us with a concise and exact judicial definition of a wild animal. It may, perhaps be said that this is only what might be expected. Everyone has a general idea of what a wild animal is.*

The position does not appear to have altered in nearly a hundred years either in connection with *faeræ naturæ* or *domitae naturæ*. That the classes are mutually exclusive there is no doubt. What are the criteria by which the classes may be divided is not so clear, though there are a few modern decisions that provide differing criteria, as a guide. Space never allowed Trotter (1903) to explore the cases on the law relating to wild animals.

As can be seen from section eleven, many of the animals regarded as *domitae naturæ* are not the subject of decisions that discuss the appropriate classification or appropriateness of the classification. They are regarded as chattels, they are the subjects of cattle trespass and they may be replevined. Their status is accepted and rarely questioned.

This thesis has put forward in the introduction to this chapter (see section 4.4) the rules for determining *domitae naturæ*. It is now appropriate to demonstrate how those rules are supported. The basic proposition has a number of elements. The proposition is concerned with: a group of animals; a population of animals; a recognition in a particular community or society that the population has a particular quality or attribute whether it be tameness as a population attribute, a long association with the community or exploitation by humans; those animals with a power of locomotion; and those distinguishable in the community as such.

The discussion will initially and briefly turn to the basis of the distinction between *domitae naturæ* and *faeræ naturæ*. It will consider tameness and then association with humans or the community in the law. The discussion will dwell on what is a population as distinct from species and justify that as an important test, one that enables the population to be distinguished in a community. It will explore at length the concept of significant or consistent exploitation and its recognition in the community. In doing so it will seek to justify the rules and what may be regarded as such exploitation. The discussion will leave to a later part of this thesis further matters of identification. Finally, there will be brief consideration of the rights to the progeny and produce of *domitae naturæ* as an incident of ownership.
8.2. Basis for Distinction

The benefits for an owner of an animal that is classified as *domitae naturae*, are clear. Firstly, like the owner of any inanimate object, the owner of an animal classified as *domitae naturae* remains the owner of that animal even if the animal exercises its power of independent motion and is no longer within the physical power or control of the owner or is lost (subject to the laws relating to strays, cattle trespass, distress damage feasant and abandonment) (*The Case of Swans; Goff v Kitts*, 15 Wendell (N.Y.) 548 (1836); *Reeve v Wardle; Koop v United States*, 296 F. 2d 53 (1961); *Burnside and Marrakai Ltd v F.C.T.*).

Usually it is not possible in the decisions to find the features that determine whether an animal fits into the one class or the other, nor an acknowledgment that particular rights flow from that determination. More usually, one identifies in the decision a finding as to the rights attributable to the animal and, as a consequence, its classification. In yet other decisions it is taken for granted that the animal is of a particular description, falls within a particular class and that the consequential rights flow from that. Most cases relating to cattle, horses and sheep do not commence with a discussion of the appropriate classification nor the nature of the right. It is assumed that they are the subject of absolute ownership (e.g. *Dennis v Dennis*, (1971) 124 C.L.R. 317 in respect of the co-ownership of a horse; *Territory Loans Management v Turner*, (1992) 110 F.L.R. 341 in respect of a stock mortgage of cattle), a matter long accepted in the community.

The second principal attribute of the classification of a group of animals as *domitae naturae* is that in most cases the owner of the female is entitled to the progeny no matter where (*The Case of Swans; Cohen* 1954). There may be some other incidents such as liability for the wrongs committed by the animal. Finally, the owner is entitled to the benefits of the use and produce of the animal (as distinct from the progeny), the milk of the cow and the goat, the wool of the sheep and goat and the eggs of fowl (see discussions in section 8.8 and 9.5).

Once the law has placed a population of animals in one class it is not possible to obtain an interest in an animal of that population other than in the manner prescribed by law for that population. So the principle of title by occupancy (i.e. the method by which ownership of ownerless personal property may be acquired) does not apply to *domitae naturae*, since it is utterly inconsistent with the notion of absolute property. It applies to *ferae naturae* at large, both initially and upon their regaining their liberty (in the wider sense), as nobody has any property in them (Reeve v Wardle, also see section 9.2.3).

So what attributes have been recognised as affording the owner of an animal falling within the class *domitae naturae* these rights? In many of the earlier decisions, the attribute that has been most commonly recognised is that of tameness. In yet others, tameness and domestication have been coupled, whilst in others tameness alone is sufficient only for a qualified interest.
The test adopted by Blackstone (1765-1770, 2:391-392) for distinguishing domitae naturae and ferae naturae has already been set out, but it is worth repeating;

our law apprehends the most obvious distinction to be, between such animals as we generally see tame, and are therefore seldom, if ever, found wandering at large which it calls domitae naturae: and such creatures as are usually found at liberty, which are therefore supposed to be more emphatically ferae naturae.

As previously observed, whilst this may have been a convenient method of distinguishing between the classes, no authority is offered nor can any clear authority for that view, up to that point, be found. Some support can be found in one of the earlier decisions in the yearbooks in the comments of Brook J. when he said “we must see of what nature these beasts are, that are called ferae naturae; for it is their property to be wild," (YB (1521) 12 Hen. 8, 9; Chitty 1812, 2:806). Blackstone (1765-1770) does not refer to concepts of zoology, taxonomy or genetics in support of his proposition. This is not surprising having regard to the stage of development of modern taxonomical classification in his time.

The test is a convenient but shorthand way of describing the relationship, a lay test, one without criteria. It is a test that allows the person in the street, on the farm or on the highway to apply it readily, without complication. In many cases, it will give the appropriate answer. It requires no examination of authority, and there is no need to be concerned with the distinctions between avers and other cattle or the rigidities of the writ system. The test is similar to that proposed in the writings of Puffendorf (1672) (whom Blackstone (1765-1770) quotes only some pages earlier in his Commentaries). For, as Puffendorf (1672, 573) says, the distinction between ferae naturae and domitae naturae can be expressed as:

the former are more averse to association with men, delight more in unfettered liberty, and become accustomed to live among us only with difficulty and scarcely ever without the need of our watching them, while of the latter the opposite is true.

Even where tameness is adopted as the test for the distinction, that by itself does not appear to be sufficient. It is the tameness of a recognised group or class of animals, a community recognition and something further that appears to be required. A few decisions simply refer to “tameness” by itself. But the decisions as a whole, up to the time of Blackstone, appear to involve something more, namely some particular association with humans.

Kent (1826-1830, 2:349) in his Commentaries emphasised an aspect of that lack of precision, in his description of the applicable rules for dividing ferae naturae from domitae naturae:

The difficult in ascertaining with precision the application of the law arises from the want of some determinate standard or rule, by which to determine
when an animal is ferae vel domitae naturae. If an animal belongs to the class of tame animals, as, for instance, to the class of horses, sheep, or cattle, he is then clearly a subject of absolute property; but if he belongs to the class of animals which are wild by nature, and owe all their temporary docility to the discipline of man, such as deer, fish, and several kind of fowl, then the animal is a subject of qualified property, and which continues so long as the tameness and dominion remain.

As will be demonstrated, the association required prior to the 1600s appeared to be a simple agricultural relationship. The animals were required for food or draught, an aspect emphasised by the law of larceny, which was not concerned about animals kept for pleasure. The animals kept for food or about the farm were classified as avers, with particular remedies available based on the various writs used during the period (Williams 1939). Avers are sometimes said to include the whole stock of a farm (Williams 1939). Larceny of those animals was a felony (see section 5.5.4).

Animals such as dogs, cats, singing birds and ferrets, whilst apparently useful to humans in various ways, however, were not only outside of the class of animals called avers but also larceny could not be committed of them. They were regarded as being of a base nature, kept for pleasure or of little value (see section 5.5.4). Their usefulness was apparently far more limited. They were not important in an agrarian society. This was apparently the case notwithstanding the usefulness of dogs for guarding flocks from wolves and other predators, as watchdogs and to a lesser extent the use of cats to deal with vermin (Seebohm 1927).

The decision of Ireland v Higgins highlights the change in attitude in the sixteenth century, allowing recovery of a dog, though in the view of Williams (1939) there were also remedies for this in the late thirteenth and early fourteenth centuries (relying on YB (R.S.) (1294) 21 & 22 Edw. 1, 527; De La More v Thwing, (1308-1309) YB (S.S. 17) 1 & 2 Edw. 2, 176). The statute of 10 Geo. 3, c. 18, which made the stealing of dogs an offence, also highlights the shift in attitude. That is, there was now an additional subclass or subgroup of animals, which, though tame as a group, did not have the same economic association with humans. They were in time recognised as domitae naturae. The common law followed the community recognition.

On the other hand, a number of other groups of animals that, though tame, formed a significant part of many English farms or farming activities were not included. In particular, rabbits and pigeons appear never to have been regarded as domitae naturae, notwithstanding that a very large number were domestic. Pigeons clearly achieved a special status, and were suggested by some to be domitae naturae, though in fact they have remained ferae naturae, with the recognition of a qualified property right where there is a propensity to return (Dewell v Saunders;
Hamps v Darby). They were recognised by Bracton (1250) for that propensity. However, during much of the time between Bracton and Blackstone pigeons were regarded as a nuisance. The ability to distinguish between those that had an animus revertendi and those at large was a matter of concern (see section 5.5.5 and appendix two).

Rabbits were likewise regarded as a nuisance (not in a legal technical sense, though in some situations that may have also been the case, see Williams 1939). The law regarded persons making and maintaining rabbit burrows as having no property in the rabbits; they were ferae naturae (Boulston's Case, (1597) 5 Co. 104b, 77 E.R. 216). It is likely that there was a concern that if rabbits and pigeons were regarded as domitae naturae then their owners may have some form of liability for the damage they caused. The practice of rabbits returning to their burrows was never sufficient animus revertendi.

The keepers of rabbits could obtain a more significant property interest by obtaining the benefit of a franchise. A warren was a proper place for the keeping of rabbits and hares (see Manwood 1615). They were then in possession and a property interest was recognised. They could not be pursued in the warren other than by the owner. If wrongly pursued from the warren, the interest of the franchise holder survived, even if they were ultimately killed outside of the warren. With this level of recognition and the avoidance of the risk of liability there was for a long time little need or want to recognise rabbits as domitae naturae.

Blackstone’s (1765-1770) approach does not adequately accommodate feral animals or hybrids. That feral animals may need to be accommodated was only comparatively recently recognised in the cases by Wanstall J., in Reeve v Wardle. In doing so, he suggested that the recognition be by way of another exception rather than a re-examination or recasting of the basic criteria. The need to distinguish between feral animals only arises if you adopt a modern scientific species classification (zoological, biological or taxonomical) as the criteria for the population distinction (see further distinction in section 8.5). If you recognise a class based on other criteria (e.g. the distinguishing features of a group or population) the difficulty may not arise. That is, there is a population of animals recognised by a community as domitae naturae. The distinguishing feature becomes apparent when humans keep animals. This is illustrated by patch or silver foxes in Canada, domestic and wild pigs in Australia, rabbits in England, possibly carp in Europe (Balon 1974, 1995a, 1995b) and Atlantic salmon (as demonstrated in chapter three). In each case each population is discernible (see Tisdell 1982).

However, an even stronger rebuttal of Blackstone’s test may be found in the decisions relating to deer. In those decisions, species issues are not even mentioned. The fact that deer are wandering at large in other estates is not
mentioned. As those decisions demonstrate, if deer are now regarded as *domitae naturae*, which appears to be suggested by some and consequently the species as a whole are to be so regarded (as required by the liability decisions and Blackstone 1765-1770), then many of the franchises cease to have what appears to be an essential requirement (see section 9.3). For, as will be seen, the requirement of each of these franchises is that there are certain *ferae naturae*, they form part of the franchise and pass with the franchise. Even in the case of deer, these issues have only arisen relatively recently. Before this period, many deer were maintained in the franchises (see section 8.4). Like rabbits and possibly pigeons, there was sufficient protection of the property rights without the need to find that they were *domitae naturae*.

A somewhat simpler description of the difference between *domitae naturae* and *ferae naturae* was provided by Mr Christopher Robinson QC, in the *Fur Seal Arbitration* (1893, 4:597) in the following terms:

*There is just this difference: that a domestic animal proper remains a domestic animal forever, and must remain a domestic animal forever; it was born so, and must die so; but an animal that has been tamed and reclaimed belongs to the class of domestic animals only so long as it retains that nature. If that animal should escape and regain its wild nature then it relapses into the class of wild animals.*

8.3 Association with Humans

In the context of the proposition put forward in section 4.4, *domitae naturae* includes a group of animals that are tame and live in association with humans. Tameness (see section 5.2) and an association with humans are necessary requirements of the population. The test is not concerned about individuals. It means the population is not wild. Nor does the test concern itself about the source of that tameness, whether it is a natural characteristic of the population or whether it arises from a long association with humans or a short association and selective breeding. A practical matter, as a population, can its members be readily handled and controlled by humans? This is the experience of the community. As a population, the animals have an attenuated flight response. There may of course be individuals in the population that do not exhibit all of the characteristics.

As already seen, Brook J. in *YB* (1521) 12 Hen. 8, 9, said it is the nature of *ferae naturae* to be wild. In that case, it was questioned whether the taking of tame and domestic peacocks was a felony. All judges agreed it was; they were regarded as the same nature as hens, capons, geese or ducks. In the earlier decision of *YB* (1478) 18 Edw. 4, 18 (Chitty 1812, 2:776) Brian J. distinguished between those things that a person has by their nature (“beasts by reason of the nature of the beasts themselves”) and those by reason of the land (e.g. deer). The early English decisions relating to property interests in animals appear to rarely mention the concept of animals being associated with humans. Blackstone (1765-1770) does
not use those express words in Book II, Chapter XXV but clearly adopts the distinction between those animals found around humans and those wandering at large.

In Halsbury (1907, 1:365) the concept of an association with man occurred in the first edition in Part 1 under “The Classification of Animals” and is carried forward into each of the subsequent editions, in slightly different wording (the differences between the first and second edition and between the third and fourth being underlined), as follows.

In the first edition (Halsbury 1907, 1:365):

796 The common law follows the civil law in classifying animals in two divisions, as follows;
(1) Domestic or tame (domitae, or mansuetae, naturae). This class includes all such beasts and birds as by habit or training live in association with man; for example, cattle, horses, sheep, goats, pigs, poultry, cats and dogs.

(2) Wild (ferae naturae), and not classed as domestic or tame. This class includes not only lions, tigers, eagles, and other animals of an undoubtedly savage nature, but also deer, foxes, hares, rabbits, game of all kinds, rooks, pigeons, wild fowl and the like, and all fishes, reptiles and insects.

797 Domestic animals, like other personal and movable chattels, are the subject of absolute property.

In the second edition (Halsbury 1931, 1:531):

912 The common law follows the civil law in classifying animals in two divisions, as follows;
(1) Domestic or tame (domitae, or mansuetae, naturae). This class includes all such beasts and birds as by habit or training live in association with man; for example, cattle, horses, sheep, goats, pigs, poultry, cats and dogs.

(2) Wild (ferae naturae). This class includes not only lions, tigers, eagles, and other animals of an undoubtedly savage nature, but also all not classed as domestic or tame, such as deer, foxes, hares, rabbits, game of all kinds, rooks, pigeons, wild fowl and the like, and all fishes, reptiles and insects.

913 Domestic animals, like other personal and movable chattels, are the subject of absolute property.

In the third edition (Halsbury 1959, 1:655):
Domestic or tame (domitae, or mansuetae, naturae). This class includes all such beasts and birds as by habit or training live in association with man; for example, cattle, horses, sheep, goats, pigs, poultry, cats and dogs. An animal which does not exist in the wild state anywhere in the world is in law a domestic animal.

In the fourth edition (Halsbury 1991, 2:83):

The term domestic animals includes all those domestic or tame animals as by habit or training live in association with man; for example, cattle, horses, sheep, goats, pigs, poultry, cats and dogs. An animal which does not exist in the wild state anywhere in the world is in law a domestic animal. It is a question of law, not fact, whether an animal is within the class of domestic animals or wild animals.

The authorities quoted in each case for the core proposition as to the definition of "domestic animals" are "3 Co. Inst 109; 1 Hale P.C. 512. See also Nye v Niblett [1918] 1 K B 23." Yet there is nothing in Lord Coke's third Institutes (1641b) at this reference that expressly supports it, further there appears to be very little in these Institutes (Coke 1641b) dealing with domitae naturae, the passages generally being directed at the question of larceny of ferae naturae, with only the occasional reference to domitae naturae. Hale's History of the pleas of the Crown (1736) is in much the same terms; he refers to larceny being committed of domestic cattle such as sheep, oxen, horses, etc. and of domestic fowls such as hens, ducks, geese etc.

As described elsewhere, Nye v Niblett, involved the killing of cats and the issue was whether they were domestic animals in terms of the statute. There is no substantive discussion or suggestion in the decision that the mere habit or training of animals is sufficient for individuals or populations thereby to be regarded as domitae naturae.

The first sentence in the definition, the description of "domestic animals", those in which an absolute property right subsists, is unsatisfactory. Better authority can be found for those propositions, as can be seen in this thesis. The proposition exemplifies the problem of the use of the expression "domestic animals". It uses an inclusive definition; one is left to identify what else is to be encompassed. It attempts to use one definition for, domitae naturae for property purposes and mansuetae naturae for liability purposes, notwithstanding the comments in the cases that they are different (see Filburn v The People's Palace). On the other hand, it does seek to identify criteria, namely those animals that by habit or training live in association with humans.

In the case of the sentence as to the property rights subsisting in domestic animals, the discussion elsewhere in this thesis suggests it is too wide, if the sentence is
intended to imply anything more than a qualified right may be obtained in individual *ferae naturae*. A raccoon or kangaroo can by training live in association with humans, but that is an individual, not the population. The individual animal may be a domestic animal, but it remains a member of a population *ferae naturae*, the individual animal is not *domitae naturae*, and a property interest will only subsist whilst the animal is in captivity or whilst it has *animus revertendi*. There are no absolute property rights in such animals.

In the context of ownership of animals, Halsbury’s *Laws of England* (1931, 1959) has been said to be incorrect in two decisions relating to animals, namely *The Falkland Islands Company v The Queen*, (1863) 2 Moo. N.S. 267, 15 E.R. 902, mentioned in a footnote appearing in the second and third editions of Halsbury only and secondly in *Tucker v Farm and General Investment Trust Ltd*, [1966] 2 Q.B. 421 in respect of the right to progeny (following Blackstone 1765-1770).

A similar approach to that of Halsbury’s *Laws of England* (1907, 1931, 1959, 1991) is adopted in the Corpus Juris Secundum (1936), quoted earlier (section 5.3), when it makes specific reference to animals “accustomed to the association of man”. The Corpus Juris Secundum (1936) cites *People v Dello*, 71 N.Y.S. 2d 145 (1947) in support, but merely to suggest that the status of a dead wild animal does not change from *ferae naturae* to *domitae naturae* by reason of its death (the property interest however does change; a dead animal may be the subject of absolute property rights). The footnote lists a number of animals and United States authorities in support of the classification that it attributes to them. The animals regarded as *domitae naturae* are cats, dogs, domestic (this need to qualify this animal must itself raise a question) turkeys, horses, oxen and cattle. It also lists the following animals as *ferae naturae*: bees, doves, “feral” hogs (again the need to make a distinction may raise issues), mink, monkeys, otters and rats. The list can usefully be compared with that in section eleven.

The omission of sheep, goats and the wider class of poultry from *domitae naturae* is noteworthy. Notwithstanding their omission, it is doubtful that it implies they are not recognised in the class *domitae naturae*, with the possible exception of goats. The role of goats and their significance may have altered.

The distinction between a domesticated turkey and a turkey appears to recognise that there may be multiple populations or classes of animals of the same species or subspecies in the one country (*State v Turner*, 66 N.C. 618 (1862); *Holcomb v Van Zylen*, 174 Mich. 274, 140 N.W. 521 (1915)). There is far less commonality in the list of animals regarded as *ferae naturae*. The status of pigeons (doves), which also highlights some of these issues, is more fully discussed in appendix two.
The distinction does not adequately deal with the commensals (see Tutin v Mary Chipperfield Promotions Ltd) including rodents living about humans, the house mouse, the brown rat and the black rat (Hemmer 1983). It does not adequately deal with the feral animals, on the edge of the human environment and in coexistence, with in many cases a suppressed flight response. Therefore, the mention of rats in the list in the Corpus Juris Secundum (1936) highlights the issue. The older English decisions would of course suggest that there can be no property in vermin and it was in the common good to destroy them (see section 9.6). In Stearn v Prentice Bros Ltd, [1919] 1 K.B. 394, following Boulston's Case, the court held that rats were *ferae naturae* and a landowner finding them about the landowner's land may kill them. The decision in Ebhardt v Safeway Stores Inc, 227 F. 2d 379 (1955) supports that view. It cites Stearn v Prentice Bros Ltd for the discussion of the common law on the topic.

Rats and mice have long lived in close proximity to humans. They appear to have a degree of familiarity and daring in dealing with humans. Commensalism is not association, notwithstanding its many similarities with tameness. Humans gain little benefit from the association with most rats and mice and, in the case of some, suffer considerably from their association (e.g. disease carried by some rats and spread to humans). Not all rats may be so regarded. Some constitute a distinguishable and separate population useful to humans; white rats raised for experiments were accordingly held not to be wildlife (Sprague-Dawley, Inc v Moore, 155 N.W. 2d 579 (1968)).

Tameness as a class attribute, as already observed, varies from class to class. The fact that rats and mice may have a limited flight response is not tameness. A number of *ferae naturae* appear to show a somewhat similar response, but lions, tigers etc may avoid contact, but do not necessarily flee. It has clearly been demonstrated that the Norway wild rat can be tamed and become accustomed to handling by people, as has the white rat (Sprague-Dawley, Inc v Moore). It is a strictly learned behaviour of individuals (Grandin & Deesing 1998) unless it has become a population attribute (as appears to be the case for the white rat).

That rats and other animals live in association with humans, but are not domesticated, was recently mentioned in Tutin v Mary Chipperfield Promotions Ltd (Unreported, Cantley J., 23 May 1980) Lexis. The court had to consider whether camels were domesticated in England, and said:

*I have to decide not whether camels are domesticated in the British Islands but whether they are commonly domesticated here. I do not find any ambiguity in the sentence. In the Shorter Oxford Dictionary there are various definitions of "domestic" and "domesticated", one is in relation to animals "living in or near the habitations of man; tame, not wild". "Living in or near the habitations of man" will not do, that would apply to foxes or wild rats"; "tame, not wild" would. "Domesticate" is defined as "to tame or bring under control".*
In the relationship between humans and nearly all *domitae naturae* there is an economic benefit for humans, such as sustenance and well-being, at its simplest. Their use in commerce has been far wider than mere sustenance; the use has included draught, oils, skins and furs. In the case of dogs, they have clearly had wider roles, but possibly less so for cats. But even in their roles as pets, there have been benefits, elements of well-being, and at times commerce. It has involved the subjugation of a population (see next section) by humans for their purposes and, in doing so, the establishment of an association or relationship. It could be described as a partnership, but humans so dominate that subjugation appears to be more appropriate. For those populations that have been subjugated by humans, there have been benefits: the provision of food and shelter, protection from dangers, assistance with disease and the facility for the greater survival of their species or group (Hemmer 1983). There is no similar relationship for most populations of rats and those other populations of animals living on the fringe of humans, the commensals.

There is a significant further difference between the two concepts of association. In the case of Halsbury’s *Laws of England* (1907, 1931, 1959, 1991), the requirement is that the animal by “habit or training live in association with man”, whilst in the Corpus Juris Secundum (1936) it is those animals that have from time immemorial “been accustomed to live in association with man”. These are clearly different.

Based on the authorities there is no requirement for association unless tameness is to imply it. Much like the description used by Blackstone (1765-1770), it is another convenient way of describing the relationship or one of the relationships that must exist between a human and an animal. It helps to determine which class an animal falls into for the purposes of the law, but many of the details are lost in using that method alone. Clearly humans have had a long association with most of those populations of animals regarded as *domitae naturae* and must have an appropriate relationship with any further classes that are to be regarded as *domitae naturae*. Humans have also had a long association with many populations regarded as *ferae naturae* (e.g. deer, rabbits, bees, pigeons), as described elsewhere.

Such associations and their extent are so very different that it is difficult to rely on any one particular aspect. It must be a combination of aspects. Some of the foregoing and the discussion in appendix two indicates that bees may be regarded as domesticated, yet others do not share that view. In terms of association, the following quote from Sir Charles Russell QC in the *Fur Seal Arbitration* (1893) highlights this and some of the differences. At this point in his argument, Sir Charles Russell QC is describing the French law. After quoting a French text, he then refers to a recent decision in the French courts in the following terms (*Fur Seal Arbitration* 1893, 4:263-64):
The reasons given in the Cour d'Appel de Toulouse, delivered in 1876, I might read: "Considering that according to the tests furnished by principles and by jurisprudence, domestic animals are those which associate with man, live about him in his house, are nourished and bred by his care; that the bees still retain, after being taken possession of by man, their wild nature which the Roman law recognized; that they do not live near man and under his roof, and they are separated from his habitation by reason of the inconvenience and danger which their proximity involves; that the bees familiarize themselves so little with man that one is obliged to take precautions in approaching their hives and removing their honey, which the labor of these insects has stored in cells; considering further that if in certain measure the surveillance and care of the proprietor is employed in the preservation and nourishment of the bees, that they rely for their subsistence in taking from shrubs and flowers near the hives, and in carrying thither the substance that they have gathered. Considering all so that these essential difficulties make it impossible to class bees in the category of domestic animals."

8.4. Exploitation and Value to the Community

At the core of the proposition in this thesis is that a population of animals has been recognised by the community as associated with the community or, more importantly for this discussion, been exploited by the community in a significant or consistent manner. So what are the rules that have developed for identifying animals that satisfy this latter element? They appear to be more discernible in the modern cases than the older ones, but elements of them can be found in those older decisions.

As already described, in Ireland v Higgins the court upheld the plaintiff's argument that nothing is more amenable and domestic than a dog; it cannot be ferae naturae. So, is mere domestic sufficient? Clearly in the decisions relating to larceny, it is not, as already described (see section 5.5.4). In matters of property, an association or relationship with humans is required. That relationship appears from this argument to be one required on a population basis. The plaintiff's argument also recognises the importance of horses, cows, and animals that are "most profitable" for the service of humans. The defendant's argument suggested three elements for the recognition of domitae naturae: the animal should pass by a grant; the animal is titheable; finally, the animal must be an asset (this is usually a wider concept than property), suggesting that it must be recognised as property (this type of argument can become circular).

Some of the decisions suggest that the courts took notice that the item in dispute was a valuable thing, for example a mastiff, hound, spaniel and tumbler are valuable items. Therefore, a person may justify a battery in defence of a dog (Wright v Ramscott, (1668) 1 Saund. 84, 85 E.R. 93). In this decision, the court did not classify the dog as domitae naturae nor ferae naturae. Value, as will be
seen, is also significant in the case of *ferae naturae* and may therefore be inconclusive in this context (see *The Case of Swans*).

Turkeys are said by Williams (1939) to have been regarded as avers in 1526, in *Fettiplace v Bates*, (1624) Benl. 143, 73 E.R. 999. He primarily relied on the side note; for he also notes that Doderidge J. agreed with a submission suggesting that they were not avers, because they could fly. Notwithstanding Williams’s (1939) view in *Hugton v Prince*, (1595) Moo. 599, 72 E.R. 783, turkeys were still regarded as *ferae naturae* and to be regarded as like partridges; they were not titheable. In *Carleton v Brightwell*, (1728) 2 Peere Wms. 462, 24 E.R. 815 it was held by the Master of the Rolls that turkeys are birds as tame as hens or any other poultry and accordingly titheable. So by 1728 they were clearly regarded as *domitae naturae* on the basis that they were like any other poultry exploited by humans.

Lord Chief Justice Willes takes this emphasis on profit and husbandry as a basis for determining rights much further in *Davies v Powell* (1737) Will. 47, 51, 125 E.R. 1048, 1051, in overturning the old rule that distress for rent could not be levied of *ferae naturae*:

*When the nature of things change, the rules of law must change too. When it was holden that deer were not distrainable, it was because they were kept principally for pleasure, and not for profit, and were not sold and turned into money as they are now. But now they are become as much a sort of husbandry as horses, cows, sheep or any other cattle. Whenever they are so and it is universally known, it would be ridiculous to say that when they are kept merely for profit they are not distrainable as other cattle, though it has been holden that they were not so when they were kept only for pleasure.*

Is this change in relationship sufficient to mean that the animal is now to be regarded as *domitae naturae* or does it remain classified as *ferae naturae* with some incidental rights or remedies? As already mentioned and to be discussed in this section, some may still not regard deer as *domitae naturae*.

As foreshadowed, the more recent decisions do appear to be a better source of criteria. In general terms, the more significant matters considered appear to be acceptance in the community, economic significance, husbandry and tameness. But simply being part of extensive husbandry may by itself be insufficient, so a suggestion that *domitae naturae* are the animals that contribute to the support of a family or the wealth of the community is not enough, for as observed in *E.A. Stephens & Co v Albers*, 256 P. 15, 17 (1927) it would extend the class “to all fur bearing animals held in captivity, wherever born or however wild”. In Australia it could extend to emus and kangaroos.
In *Weeding v Aldrich*, (1839) 9 Ad. & E. 861, 112 E.R. 1440 the defendant seized deer trespassing on the defendant's close by way of distress damage feasant and the plaintiff brought trover for them. Whilst the substance of the decision appears to be a pleading matter (noted as that by Williams 1939 and as a matter in which the issue could have been clearly decided and was not), it could be said there is enough in the decision to confirm that distress damage feasant was available. Otherwise, the demurrer (a matter of pleading, one that only raises a point of law on the facts as pleaded) would have been dismissed as not raising an effective response by way of a special defence. The implication is that deer are to be regarded as cattle and *domitae naturae*. Unfortunately it is a slender thread on which to rely.

In *Morgan v The Earl of Abergavenny*, (1849) 8 C.B. 768 the issue was whether the deer passed to the executors as personal property or to the heir with the franchised park. They were held to pass to the executors, not with the park to the heir; they were personal property, chattels of the deceased. A number of aspects were regarded as relevant. The deer had the range of the park, were attended by keepers, were fed in winter, were watched for falling, the fawns were marked as they were dropped, and from time to time some were selected and caught with muzzled dogs and penned and enclosed for the purpose of fattening for consumption or sale to venison dealers. They were bought and sold in later years like sheep and other animals. Some escaped the park, but very few and some were very tame. There were five hundred and forty fallow deer and one hundred red deer. A slaughterhouse was maintained for preparing and dressing the carcasses.

At first instance, the facts suggested that deer enclosed and caught in a pen or in a small area were reduced into immediate possession. The general rule is that deer in a park pass to the heir unless tamed and reclaimed, in which case they pass to the executor (in *Grey v Bartholomew*, it was said the heir shall have the deer in a park). It could be asserted that the decision merely found that the animals remain *ferae naturae* and in captivity and the subject of a qualified property right rather than ceasing to be *ferae naturae* (and by implication *domitae naturae*). Much of the discussion focuses on the terms “tame” and “reclaimed” and that each matter is to be determined on its facts.

The decision was approved and followed a few years later in *Ford v Tynte*, (1861) 2 J. & H. 150, 70 E.R. 1008. The facts were very similar to *Morgan v The Earl of Abergavenny*. It was said that the deer were even tamer. Vice Chancellor Sir Page Wood did not accept the suggestion that it was decisive in the earlier decision that they were bought and sold. The Vice Chancellor held that the deer in question in the case before him had been reclaimed, and went further and said they were no longer *ferae naturae*. They were tame, and no longer part of the inheritance. One could question at this point whether he intended to say they were no longer *ferae naturae*. That he did intend that is clear from his earlier
statement, *Ford v Tynte*, (1861) 2 J. & H. 150, 153, 70 E.R. 1008, 1008: “To reclaim the deer is an act of waste, precisely because it makes them no longer venison in a park, but chattels, like any other domesticated animal.” On this authority, it would appear that deer have become *domitae naturae* in England. The decision did not consider the animal’s status in England, and there was no discussion of the wider import of the decision. It was an examination of the particular matter. Much like many of the earlier decisions, there was no consideration or discussion of the wider community impact.

This trend in respect of deer culminated in the Irish case of *Brady v Warren*, [1900] 2 I.R. 632. The defendant maintained deer in a demesne. The defendant was held liable for the damage they did to the plaintiff’s crop, but not for the damage done by the rabbits from the demesne. Early in his judgement Johnson J. said that on one point of view the deer were not *ferae naturae*. He said at another point, *Brady v Warren*, [1900] 2 I.R. 632, 649, that whether fallow deer “are *ferae naturae*, or tame and domesticated, the chattel property of the owner varies with the facts of each particular case”, and cites *Ford v Tynte* and *Morgan v The Earl of Abergavenny*. If he was referring to the difference between *ferae naturae* with or without *animus revertendi* then he was correct, otherwise he was incorrect. As already mentioned, it is a class or population matter in the case of *domitae naturae* (unless you return to possibly the early Roman law position). Yet, the animals causing the difficulty were then described as the “progeny of tame and domesticated deer for successive generations through many years”. There were no other deer in the district, they were bred on the property, the fawns were dropped and reared there, and the defendant’s predecessor fed them as any domestic animal. The deer causing the damage always went back to their home, their strain was of tame fallow deer and the lack of marking was not significant.

Johnson J., also held, obiter, that tame doves and pigeons were not *ferae naturae* and were to be regarded as poultry, and he appeared to suggest that there were wild pigeons (woodquests) in the same area, but nobody was to be held responsible for them. They were different. Johnson J. may be construed as implying that there is no class requirement for *domitae naturae*; it is an individual factual matter, but more importantly, in the case of the pigeons at least, a population matter, a recognition of the distinguishable populations of animals. If what is intended is a suggestion that there is no class or population requirement, it appeared to be inconsistent with the general view. Palles C.B. appeared to regard the deer in a similar way. They were managed in the same way as any other domestic cattle, oxen, sheep, etc. allowing for the differences in their nature.

Williams (1939) questions whether, on the facts of *Brady v Warren*, the deer were in fact *domitae naturae*. If the position was the same in Ireland as in England, then deer as a class were accepted as domesticated on the basis of the decisions in *Ford v Tynte* and *Morgan v The Earl of Abergavenny*. Their status in the particular demesne would appear to be irrelevant. Williams (1939) mentions the
concept of class (or species) a few paragraphs further on when noting that the mere domestication and training of an individual otter does not affect the matter. It may be that the status of deer in Ireland is different from England, but there is no suggestion in the cases that this should be so in respect of deer, recognising the situation at the time of the cases (see however later discussion of community in section 8.7). In the United States decision of *Rosalind Hayman Swain v Elizabeth H. Tillett, Administratrix of the Estate of Herman A. Tillett, Elizabeth H. Tillett, Individually, and Radford Tillett*, 269 N.C. 46, 152 S.E. 2d 297, 301 (1967), the following statement as to the status of deer was cited with apparent approval:

*Certain animals ferae naturae may be domesticated to such an extent as to be classed, in respect of the liability of the owner for injuries they commit, with tame or domestic animals. ... Thus, deer are subject to such substantial domestication as to come within this principle."

The decision endeavoured to address the problem for liability by again creating a different class. This approach must be doubted, at least in a property context.

The approach suggested in that decision was much like the way in which the law in England has addressed these problems. The decision created another class with different attributes. It overlaid it on the existing structure, so as to preserve and recognise the current allocation of animals without having to reclassify many populations *ferae naturae* to *domitae naturae* (or *domitae naturae* to *ferae naturae* if that can occur; also see later discussion on the franchises and *ratione soli*).

Since the introduction of the turkey, the common law in England has not reclassified any animals (other than possibly for deer as described, of which there may be some doubt). In many respects the turkey was easy to deal with. It was domestic, non-native and readily fitted into the barnyard. The fact that some may have been let loose in some closes could be ignored. They were isolated cases and could be accommodated by the exception allowed by Blackstone (1765-1770).

However, once the rules had to be applied in common law jurisdictions outside England, issues once again arose. In North America, skins and furs were valuable, but they came from vermin or animals of a base nature (in many cases). How were they to be dealt with? New industries were being undertaken or developed. Several decisions in North American courts emphasised the latter situation (e.g. *E. A. Stephens & Co v Albers*).

Whether franchises were received law in the colonies is open to doubt; there appear to be few if any examples to be found in the dominions. In practice the forest, the chase, the park and the warren were not established. The right of the Crown to grant interests in land was circumscribed to a significant extent in many early colonies. More recently, it was suggested, at least in respect of Australia,
that they did not form part of the received law (Yanner v Eaton, for a suggestion that those relating to fisheries may have formed part of the received law of other colonies see Fleet v Hegeman, 14 Wend. (N.Y.) 42 (1835)).

The use of the franchise as an intermediate step was therefore not available. In these colonies new agricultural activities and practices were established, in some cases centred on indigenous populations and in others the adaptation of introduced animals. In these places, far less closely settled, feralisation of some of the imported animals became a problem. It was then that the common law had to consider and apply the rules relating to *domitae naturae* and *ferae naturae* in different circumstances. In these situations, the rules needed once again to be more closely examined. Much of this has occurred since the time of Blackstone (1765-1770). Most of these situations were adequately addressed by finding qualified property rights, but some were not. They have created decisions that sometimes cannot be reconciled with the older decisions.

In *Kastaniuk v Sarsons*, [1935] 2 W.W.R. 415 a squatter on the foreshore of a lake had taken some eggs of Canadian geese and hatched them under domestic geese. They mingled with the domestic geese and were quite tame. They showed no disposition to get away or assert their liberty. They responded to the plaintiff’s call. They would eat out of the plaintiff’s hand and the hands of others. They were tamer than ordinary geese. The defendant shot some of them, in blatant disregard of the interests of the plaintiff, and the plaintiff sought damages. MacDonald D.C.J, said, obiter, in *Kastaniuk v Sarsons*, [1935] 2 W.W.R. 415, 418, that they “were not in the proper sense, *ferae naturae*.” This must be doubted; the classification is surely *ferae naturae* with *animus revertendi*, those tamed by the art and industry of humans, not *domitae naturae*. The decision also highlights, once again, that the test is a population test that is community-based. There were ordinary domestic geese, geese having been recognised in England as *avers* (*domitae naturae*) since at least 1304 (*YB (R.S.) (1304) 32 & 33 Edw. 1, 65*) and these were Canadian geese. The other possibility is that they were all to be regarded as *domitae naturae*, no distinction being drawn between the two different populations (an approach that is not supported by this thesis). This suggestion may surprise many, and appears inappropriate in the circumstances.

However there have been two decisions in which animals have been held not to be *ferae naturae* after a consideration of many aspects relevant to the class and two further decisions from the United States that may imply that. All appear to be contentious. Two involve silver or patch foxes, one *Apis mellifera* and the fourth albino rats. The criteria identified in the two non-United States decisions have a strong common theme.

In *Ebers v MacEachern* a ranch-reared silver fox escaped and was killed by the defendant. The plaintiff sought damages for killing the animal in breach of the Domestic Animals Act 1888 of Prince Edward Island. The plaintiff won, the
court holding that the animal was not *ferae naturae*. In doing so the judges appeared to have regard to the following matters: silver foxes had been bred in the province for many years (it started about 1910 with a few pioneers prior to that); many farmers were breeding them (hundreds of ranches); they were as much a part of husbandry as cattle, sheep and pigs (many thousands were raised); silver fox shows and exhibitions were held each year in the province and other parts of Canada; they were registered and pedigree records were kept; they were very valuable; their habits had considerably changed; they were regarded in the province as domestic animals; they were recognised in legislation as part of domestic livestock; and they had become subservient to humans.

The United States decision of *E.A. Stephens & Co v Albers*, 256 P. 15 (1927) also related to the killing of a silver fox. In that case the plaintiff was held to retain the property in the animal that had escaped by accident. As discussed elsewhere, it is very difficult to discern the basis for the decision, other than to do justice between the parties. It was also said that the fox was semi-domesticated. The evidence showed that there were 500 silver fox farms in the United States holding 15,000 animals in captivity, representing an investment of $8 million. Registration books and the other indicia mentioned in *Ebers v MacEachern* were also mentioned. In argument, it was also suggested that domestic animals are ones that contribute to the support of a family or the wealth of the community and these did that. As already noted, that by itself would extend the class too far. The case has been justified in a case note in Anon. (1927-1928) on the basis that the common law rule was based on the social policy of protecting the hunter in a place where the animal is found in a state of wildness, which was not the situation in Colorado.

A contrary position to both *Ebers v MacEachern* and *E.A. Stephens & Co v Albers*, can be found in *Campbell v Hedley* and *Reese v Hughes*, 144 Miss. 304, 109 So. 731 (1926). Neither appeared to suggest that foxes existed in a wild state in their respective jurisdictions. In *Reese v Hughes*, there appeared to be insufficient evidence of tameness. In the former case, the court was not satisfied that they were other than *ferae naturae*.

In *Stormer v Ingram* the plaintiff sought an interlocutory injunction to restrain the plaintiff from keeping hives of bees. The court held that *Apis mellifera* were not *ferae naturae* in South Australia. In making that finding the court considered: the history of their introduction to South Australia; that legislative protection and sanctuary was afforded to them in the community; there was a licensing system; a licence was required for their possession; the extent to which they have spread in South Australia; the nature and extent of the business of their keeping; the voluminous written material on bee keeping and that it was essentially practical; their social behaviour and habits were developed, as was their housing and hiving development; and the frequent appearance of hives (described as housing and domestication). There is at least a second genus of other bees besides that of *Apis*, namely *Megachile* which are indigenous to South Australia and to many people
indistinguishable. Also bees cause a number of difficulties in the property classification as described elsewhere (also see appendix two). On the other hand in Parsons v Manser, 119 Iowa 88, 91, 93 N.W. 87, 88 (1903) Ladd J. said “But bees, while generally classed as ferae naturae, are so useful and common as to be all but domesticated. Keepers of the aviary have studied their habits and instincts, and control them almost as certainly as domestic animals.”

Ebers v MacEachern would appear on a species basis (scientific-based) to hold that all foxes in the province are not ferae naturae. One must assume that if there is a native population, the populations are distinguishable. Stormer v Ingram appears to raise a similar difficulty. Whilst there are native bees in the State of South Australia, there appear to be no other bees of the species Apis in the State (Paton 1996). There are other genera. There are different populations, but a non-professional may have difficulties in readily distinguishing them, and it is the community concept that is significant.

In Sprague-Dawley, Inc v Moore, albino rats were held not to be wildlife. They were said to be a domestic animal and this expression appears to imply that they were domitae naturae. The matters that led to this view were: they were developed in a controlled environment under special conditions; they do not and cannot survive in the wild; they were developed by humans on the basis of selective breeding and would not otherwise exist except as an occasional aberration of nature; they were mass produced by humans; and they were a product of humans’ dominion over nature. It was held that the enterprise of breeding and selling rats was not agriculture.

Finally, assuming molluscs remain within the classification of animals ferae naturae, then the comments of Shepherd J. that oysters in this day may be domitae naturae is a matter of fact to be determined suggests the possibility that yet a further population may have or is about to cross the classification line (oysters, based on Shepherd J. in Myler v Commissioner of Land Tax, though he offers little by way of justification).

Much of the foregoing has emphasised three factors that are required for recognition as domitae naturae. There must be a population of animals (a matter to be discerned more fully in the next section) that are tame and have a relationship with humans. This relationship until recently had to be predominantly of an agrarian nature, though more recently it has included some animals regarded as kept for pleasure or otherwise beneficial to humans, but generally now said to be valuable. The basis for that was they had value, a value that arose out of the trade of supplying the animals, for whatever purpose (Davies v Powell).

The economic view also pervades the occasional text. Schouler (1876) appeared to suggest it was the industry and involvement that created the property. This is
consistent with the recognition of the art and industry of humans, creating a right in *ferae naturae*. Matters of industry were emphasised strongly by Lord Coke in his judgement in *The Case of Swans*. *Animus revertendi* was only an outward sign of the effectiveness and ongoing nature of that art and industry. In this context, it was an extension of the principles applicable to *domitae naturae* (see section 9).

The economic view runs very strongly through the claims of the United States and the dissenting opinions in the *Fur Seal Arbitration* (1893), so much so that husbandry of numbers and preservation for future use itself was put forward as a strong plank for property rights. The economic sacrifice of today were said to be justified because of the benefits tomorrow. This view was clearly rejected.

The economic view has been more recently discussed in Favre and Loring (1986), who recognised that the distinction between *ferae naturae* and *domitae naturae* arose to reward and promote the associated beneficial activities. The raising of animals for food or draught was protected with the full sanctions of the law, both civil and criminal. Aspects of this in a liability context are also discussed in *Clark v Brings*, 284 Minn. 73, 169 N.W. 2d 407 (1969). Others suggest that the law must take into account a number of matters, including fairness, certainty, the economic aspects emphasising the benefit to the community, ease of administration and whether the approach fits in existing human and animal habits and forces (Cohen 1954).

One may finally say that, for the common law to suggest that the dog was *ferae naturae* for any period (see the assertion in section 11 that dogs were domesticated in the scientific sense at least ten thousand years ago (Clutton-Brock 1984) and sections 5.4 and 5.5), let alone many hundreds of years, only confirms that it was not concerned with any scientific basis; it was developing classifications of its own. These classifications were based on the other attributes already described, and also recognised that the efforts of humans had created distinguishable populations.

So, to summarise, from these decisions consistent exploitation may be recognised by a finding by a court that, in respect of a population of animals in the community, a combination of some of the following is involved:

- The animal has been bred in the jurisdiction for many years.
- The animal is now commonly bred on farms in the jurisdiction.
- The raising of the animal occurs in much of the jurisdiction.
- There are significant number of farms in the jurisdiction raising them.
- There are a significant numbers raised on those farms.
- They are as much a part of husbandry as cattle, sheep and pigs.
- The animals are shown at shows and exhibitions held regularly and commonly each year in the jurisdiction and other parts of the country where it is a federation.
A registration and pedigree system is maintained and kept in respect of the animals.

- The animals are valuable.
- The animals have developed social behaviour and habits.
- The animals are tame.
- There are established and recognised methods of raising, housing and keeping of the animals.
- Collectively they represent in the jurisdiction a significant value to the community.
- Their habits have considerably changed under the influence of humans.
- They are regarded in the jurisdiction as domestic animals or semi-domesticated.
- They are recognised in legislation as part of domestic livestock.
- They are afforded legislative protection and sanction.
- There is a licensing system for those engaged in raising them.
- They have become subservient to humans.
- There is significant written material on the raising and husbandry of the animal which is essentially practical.
- They are an introduced animal in the jurisdiction.
- They are distinguishable from native populations of animals in the jurisdiction.
- They cannot survive in the wild in the jurisdiction.
- They were developed by humans on the basis of selective breeding.
- They cannot reproduce in the wild.
- They are mass produced by humans.

8.5. Populations

8.5.1. Introduction

In this chapter the proposition that has been put forward is that species in the scientific context (whether zoological, biological or taxonomical) are not the basis of the classification or division of animals. In the property context, the older authorities support this. What is needed is a discernible or distinguishable population, recognised in the community. This may be at odds with a few of the more recent decisions. A species-based test does not work without the creation of more exceptions; it does not adequately address either feral animals or hybrids.

8.5.2. Species

In many of the commentaries and in a few more recent decisions, animal groups are divided by species. Division on a species basis is far more prevalent in the liability cases, though they are not always consistent.
In *Filburn v The People's Palace*, one of the modern leading authorities in the area, the word "species" is not even used. Their Lordships undertook the analysis by reference to a class of animals. Of course, the comments about elephants as a class appear to imply a species distinction. Adopting the same approach in *Nada Shah v Sleeman*, (1917) 19 W.A.L.R. 119, McMillan C.J. took the view that camels belong to the class of domestic animals. Nowhere did McMillan C.J. refer specifically to species, though the reference to camels may again be regarded as implying a species. In each case, it can also be construed as a population.

In *Temple v Elvery*, [1926] 3 W.W.R. 652 in the District Court of Saskatchewan, Doak D.C.J. was faced with what should not have been, but was seen as, a far more stark problem: the classification of a cross between a great dane and a coyote or prairie wolf (which he thereafter describes as a wolf). Doak D.C.J. held, while recognising some of the problems of doing so, that the animal was *ferae naturae*, but in case he was wrong he also found that the defendant knew of a mischievous trait. Again, there was no discussion of the use of species. A similar problem was again faced by Scheibel J. of the Saskatchewan Court of Queen's Bench in *Sparvier v MacMillan*, (1990) 67 D.L.R. (4d) 759 in the case of a dog that was part husky, part hound and part wolf. In an *ex tempore* judgement, Scheibel J. regarded the animal as a dog with no mischievous or vicious propensities. There was no discussion of the species issue nor was the decision in *Temple v Elvery* mentioned or cited. Other cases can also be found that refrain from using the expression "species". Some use the word "groups", as in the case of *Stormer v Ingram*.

Notwithstanding the avoidance of the use of the word "species" in some decisions, Devlin J. in *Behrens v Bertram Mills Circus Ltd*, [1957] 2 Q.B. 1, 16 was called on to go further. Devlin J. was not prepared to do so. In refusing to distinguish between different varieties of elephants, he said, *Behrens v Bertram Mills Circus Ltd*, [1957] 2 Q.B. 1, 16:

> **Common knowledge about the ordinary course of nature will extend to a knowledge of the propensities of animals according to their different genera, but cannot be supposed to extend to the manner of behavior of animals of the same genus in different parts of the world. Nor can one begin a process of inquiry which might lead in many directions (for example, I am told that female elephants are more docile than male, and that is why circus elephants are usually female) and be productive of minute sub-divisions which would destroy the generality of the rule.**

A further example of the court being asked to look at the taxonomical situation is found a few years later. In *Brook v Cook*, (1961) 105 S.J. 684, the Court of Appeal heard argument that there was no authority on the point that a monkey was *ferae naturae*. The old authorities were said to be hearsay or otherwise distinguishable. The case, as reported in *the Solicitors Journal*, does not clearly hold that a monkey is not *ferae naturae*. It could be asserted that it was unnecessary to make such a finding to decide the case.
However, a note of the case appearing in the Solicitors Journal suggests that the court in *Brook v Cook* accepted the argument that the monkey in question was not to be presumed to be within the category of *ferae naturae* (Scrivener 1961). Counsel for the appellant, according to the note, apparently asserted that there were a number of monkey genera and it could not be presumed that all of these different genera were to be regarded as being *ferae naturae*, though it is not clear why that should be the case. The note further suggests that whether a particular species of monkey will fall into the *ferae naturae* category or not will depend on the experience of humanity as to the particular species alone. Therefore it could be suggested that some species of monkey may not be *ferae naturae* (Scrivener 1961).

Subsequent liability decisions in New Zealand (*James v Wellington City*, [1972] N.Z.L.R. 70, 73, in which the foregoing decision was not mentioned) and in the United States do not support this view (*Garelli v Sterling-Alaska Fur & Game Farms, Inc.*, 206 N.Y.S. 2d 130 (1960); *Scott Isaacs, a Minor, by his Father and Natural Guardian, Howard Isaacs, Appellant, v Lester M. Powell and Arlyss R. Powell, doing business as Monkeytown, U.S.A., Appellees*, 267 So. 2d 864 (1972)) (also see *Whitefield v Stewart*, 577 P. 2d 1295 (1978) a decision about a woolly monkey where there is a discussion as to the changing view of the basis for the classes for liability purposes).

In *James v Wellington City* Quilliam J., citing as authority *Filburn v The People's Palace and Aquarium Company, Ltd*, as approved in *Behrens v Bertram Mills Circus Ltd*, said that “once a member of a species of animal has been designated as dangerous, that designation attaches to the whole of the species.” There is however no further discussion of the implications of this, or what is meant by species in this context.

The Law Reform Commission of New South Wales (1970, 9-10) discussed the issue of a species basis (in the liability context) in these terms:

10. *To some extent these problems are arbitrarily answered by rules which are peculiar to the sciencter action. In order to determine whether an animal is ferae naturae it is not permissible, according to these rules, to have regard to the disposition of the particular animal. Regard can be had only to the species as a whole. ... It is settled law that the fact that an animal is not normally domesticated does not necessarily mean that it is ferae naturae. A rabbit is not dangerous to the bodily safety of mankind. Should, then, the fact that an animal is, as a species, generally domesticated be conclusive that it is not ferae naturae? - or should this fact be only part of the material upon which the court declared, as a matter of law, whether it is ferae naturae?*

In *Fischer v Stuart*, (1979) 25 A.L.R. 336, Forster C.J. was required to consider the status of a dingo in a liability case. Forster C.J. classified the animal as *ferae*
naturae and recognised and discussed the fact that a dingo was a subspecies. Further, he cited *Behrens v Bertram Mills Circus Ltd* on other aspects. At no time did he appear to be constrained from considering the dingo a wild animal by the fact that he was required to classify it as a member of a subspecies of the population of domestic dogs (*Canis familiaris*). Further, Forster C.J. specifically acknowledged that the dingo is capable of a degree of domestication.

Favre and Loring (1986, 8-9) discuss the issue with reference to species, without describing what is meant. They undermine their position (assuming species is a reference to a zoological, biological or taxonomical concept; also compare the status of these sheep with the feral goats in *The Queen v Drinkwater*) in the following example:

_Historically, sheep are considered domesticated. In the United States, however, there are a limited number of naturally wild sheep. The species would be considered domesticated, but the presumption would be subject to rebuttal by showing that a particular sheep is of the wild variety. Rabbits are more difficult. They have been raised domestically as pets and for commerce over a substantial period, yet there is a significant population of wild rabbits. For this species, then, no presumptions can be made and the courts must deal directly with the nature of the animal at issue._

Are these commentators saying that species becomes a variety at common law in one situation, or are they saying that “species” does not mean “species” in the scientific sense? If they are saying the former then having placed “a particular sheep” in a population/variety, there is nothing further to demonstrate or rebut. It is either _domitae naturae_ or _ferae naturae_. However if they are using species in the scientific sense then they are wrong, using the conventional rules. Having determined that the particular animal is a member of the species commonly embraced by “sheep” there is no further enquiry; it is _domitae naturae._

Alternatively, it could be suggested they were asserting that there are no rules if there are both domestic and wild members of the species in the community (e.g. the rabbit example), but sometimes there may be presumptions to aid or assist. They propose that, in most situations, the nature of the animal is to be examined to determine its status and the incidental property rights. This is a view that is at odds with that suggested by this thesis and the authority it relies on.

The difficulties with the use of the word “species” do not appear to have been adequately considered or resolved in the cases to date. In England where the common law rules relating to the liability for animals have been abolished and replaced by a statutory scheme (the Animals Act 1971, which has since been followed in part in New South Wales) the word “species” has been adopted to describe the populations. Notwithstanding that use, it has been defined in section 11 of the Animals Act 1971 in the following terms: “‘species’ includes sub-species and variety”.
North (1972) discussed many aspects of the legislation shortly after its introduction. In considering the status of cats and rabbits in Great Britain under the legislation, he mentioned wildcats in Scotland and the difficulties that arise in connection with domesticated and wild rabbits. North did question whether the existence of tame rabbits removed their wild cousins from any possible category of dangerous animals, unless one says that wild rabbits and the like belong to a different species or subspecies from tame rabbits. This is using the concept of species in a taxonomical sense; North appears to proceed on the basis that the taxonomical sense is the relevant criterion.

The decisions on that legislation so far, have only touched on the issue briefly. Ormrod L.J. in Cummings v Granger, [1977] Q.B. 397, 406, where an alsatian dog attacked an intruder, stated:

*So far as section 2 of the Animals Act 1971 is concerned, the first thing is to see what the word “species” means, and it is defined in section 11 as including 'sub-species and variety.' Those words have very much the ring of biological terms of art, and no doubt they should be given that meaning. In other words, it would be wrong to treat, say, a guard dog as being a variety of a species or sub-species for the purposes of the section. What we have to deal with here is a sub-species of dog or variety of dog called ‘Alsation’.*

In respect of dogs, that case has been followed in at least two subsequent decisions. In Hunter v Wallis, The Times, 10 May 1991, Lexis, Pill J. said; after quoting the foregoing:

*The comparison for the purpose of paragraph (b) is, in my judgment, between Bruce and the characteristic Border Collie. Where there is an identifiable breed of dog, a breed of long standing with acknowledged and identifiable characteristics, at least where it is a breed whose qualities are recognised as beneficial to man, the comparison should be with that breed or sub-species. Border Collies are not normally dangerous. A comparison can sensibly be made between Bruce and the generality of his breed. This is a case in which the presence of the word “include” in the interpretation section allows sub-species to be substituted for species in paragraph (b).*

As can be seen from the foregoing, it appears that, at least in this legislative scheme, a flexible biological approach is to be adopted. The biological terms of art are to be used, the court having the discretion as to whether to use species, sub-species or variety as the test criterion in any particular situation. So far, there has been little further discussion of the impact of this approach (see Marston 1996 for some discussion). Clearly if the court can distinguish between breeds, it can distinguish between wolves and great danes and most likely it will need to regard the cross as a different variety or breed. The foregoing quote suggests it may be constrained, as a cross is not an identifiable breed, though Marston (1996) appears to suggest to the contrary.
In the cases on property in animals, the law generally appears to be in the same position as the liability cases before legislative intervention. The word "species" does not appear to be used in the cases prior to Blackstone (1765-1770). Since then the concept of species (using a scientific concept, which accords with the common dictionary definitions) has been used in at least one decision, namely Reeve v Wardle (which has been cited with approval in The Queen v Drinkwater), where Wanstall J., referring to Blackstone (1765-1770), held, Reeve v Wardle [1960] Q.L.R. 143, 149:

*that once the law classed a species as domitae a member of the species remained the absolute property of its owner until he willed the transference of his property in it to another, with the consequence that mere loss of possession whether accidental or fraudulent (as by theft) did not affect his title. But since, in law, the title to an animal of a species classed as ferae naturae co-existed only with possession (save for the irrelevant privilegium which affected game) property therein was acquired by occupancy i.e. taking the animal into possession, and was lost upon its escape.*

One can find few authorities as strong as this. There was however no discussion as to whether species means something other than a scientific classification. No other authority was cited in support of this approach. One would expect in a case as recent as this, that it was using the modern scientific use of the word, though without also indicating which branch of science.

In *E. A. Stephens & Co v Albers* the court noted that the silver fox in question was a member of a subspecies, but appeared to make nothing further of that aspect. It did however reject the principle that the classification must be determined by reference to the species, in the following terms, *E. A. Stephens & Co v Albers*, 81 Colo. 488, 493, 256 P. 15, 16:

*Counsel for the defendant insists that whether an animal be wild or domestic must be determined from the species, not from the individual. In this position the cases do not support him, even those at common law.*

The suggestion of using the genus would appear to create yet more difficulties, not resolve them (as discussed above in connection with *Brook v. Cook* and *Scrivener 1961*). If any approach can be discerned from the main stream of property cases, it is a focus on those animals recognised by the community as having common attributes. The reference to species is not a reference to them in the taxonomical, biological or zoological sense, but a reference to a recognised population. It is a population or class differentiation, not a scientific distinction (as discussed and highlighted in the remaining discussion of this section 8.5). The community may be prepared to accept that a distinguishable population of monkeys are not *ferae naturae* and apes and gorillas are *ferae naturae* for the purposes of liability. In the same way, they are prepared to distinguish between wolves, dingoes and dogs. However, as demonstrated elsewhere, the matters that
have been more significant in the past in determining the status for property purposes is whether the population of animals has been useful to humanity in a broad economic sense (earlier in history for food or draught, and more recently extended to include others, those kept for pleasure or their pelts).

The population view, rather than a species emphasis, can be found in the liability context in the United States in the following quote from the Restatement of the Law 2d, Torts (American Law Institute 1977), cited with approval in Warren County Combined Health District, Plaintiff-Appellant v Kurt Rittenhouse, et al., Defendants-Appellees, 117 Ohio App. 3d 97, 100, 689 N.E.2d 1036, 1038 (1997):

The fact that a particular animal is kept for a socially valuable purpose does not prevent it from being a wild animal; the test is whether the animals are as a class recognized as devoted to the service of mankind.

So to recap, species in the scientific context (whether zoological, biological or taxonomical) is not the appropriate method of effecting the classification or division of animals for the purposes of discerning proprietary rights. It is the identification of a discernible population, one that is recognised and recognisable in the community.

8.5.3. Feral Animals and Mixed Populations

Both feralisation and hybridisation highlight the proposition that the appropriate basis for the distinction is population and not species. Feralisation can be defined in different ways and from different perspectives. The common description of a feral animal is one descended from domesticated stock that has either been abandoned by humans, deliberately released by humans or has escaped into the wild. In some cases, a feral animal may be an alien animal released into the wild of newly settled or colonised land.

Feral animals are therefore usually merely free-living populations of animals that originated from domestic stock (in a scientific sense). They represent the evolutionary process in reverse. The reversal will not be achieved in a single stage. Another description requires that, in addition to a free-living population, the feral animals must be unowned, not intentionally cared for by humans and not dependent on humans for breeding (as summarised in Price 1998).

Fox (1978, 3) described feral animals and feralisation:

*If an animal, after domestication, reverts back to a wild state and natural habit, it is called feral. This is quite possible for most domestic species since the process of domestication has not removed natural survival instincts but rather has altered or suppressed certain of these instincts over generations in order to adapt the animal to its domestic environment.*
A more technical and limited view is that a feral population is a population of animals from wild ancestors that have evolved through two phases of selective pressure. The first phase is domestication, a phase involving an appreciable modification of anatomy, physiology and behaviour with a high degree of dependence on humans. The second phase involves a return to the natural state and requires that a population of animals is capable of surviving in the wild, independent of humans (Munton et al. 1982).

In Australia feral animal populations include honeybees, pigs, goats, carp, camels, Asian swamp buffalo, horses, cattle, cats and dogs (Tisdell 1982; Munton et al. 1982; Paton 1996). Using a scientific species test, most will continue to be regarded as domitae naturae (Reeve v Wardle). In a practical way, the population of feral pigs in Australia highlights the nature of the issue. The size of the population is unknown; it has been estimated on two occasions (both of which are subject to reservations) to be in the range between 470,000 and 1,470,000 and more recently between 8 million and 11 million (Tisdell 1982). The number of pigs in domestic livestock production in Australia during the 1980s and 1990s was in the range of 2,400,000 to 2,775,000 (Australian Bureau of Statistics 2001). On either estimation the relative size of the feral pig population is significant. On Blackstone’s test, or a species basis, pigs may not be regarded as domitae naturae.

From a legal property perspective, little consideration has been given to feral animals. As will be described, they have come before the courts on a few occasions and been mentioned on a couple of other occasions. In each of the cases, outside of the United States, it has never been necessary to determine their status (assuming you exclude the status of the dingo in Australia for liability decisions – see Fischer v Stuart). In the United States, feral turkeys in Hawaii have been held to be domestic and feral pigs in Tennessee to be wildlife.

The need to be concerned with the status of feral animals is bound up with the classification method adopted. If you use species or a broad identifier such as “pigs” then an issue arises, as already demonstrated. If you accept that there are individual populations of a species (in a scientific sense) having different attributes, with some populations satisfying the criteria for domitae naturae and others not, then the problem does not arise and their classification should not be an issue. One must then determine the criteria that distinguish those populations. In most cases, nature facilitates identification. Lessened flight response, coat colour and other such characteristics may within a few generations permit easy distinction to be made between ferae naturae in the conventional nomenclature, the feral class, and domitae naturae. In others, it may not be so simple (feral cats and domestic cats are likely to be more difficult to distinguish for many generations).

In a community where a distinguishable population of a species (using a scientific basis) is to be found running at large (whether feral animals or those that have remained in the natural state) and at the same time a separate identifiable
population is tame and domesticated (the latter regarded as *domitae naturae*), their classification should not be an issue. There may be uncertainty in the transitory stage, when the group of animals have many of the characteristics of the tame and domestic population. This problem is not new; it has surrounded much of the history of the transition of many animals. The process of feralisation is diagrammatically represented in Figure 3, which also recognises that introduced animals may also be regarded as feral animals without undergoing the two-stage process.

![Diagram of possible feral and hybrid population transition](image)

**Figure 3. Possible Feral and Hybrid Population Transition**

Britons, Romans, Saxons and Normans all hunted wild boar in the forests of England (Tisdell 1982). Hunting pressures, diminution of the forests for cultivation, burning of the forests and human population expansion all contributed to the extinction of wild boar in England by about the seventeenth century, notwithstanding attempts to reintroduce them from Europe (Tisdell 1982).

However, during the early establishment and adoption of the rules relating to animals in England and much of the period of their development, those wild pigs were to be found in the forests of England. At the same time, those being raised
were clearly the subject of absolute property rights (Williams 1939; YB (R.S.) (1344) 18 & 19 Edw. 3, 233). There appears to be no suggestion that they were all regarded as one group in property terms. The wild boar was *ferae naturae*. Even as late as 1863, this situation may have applied to cattle in the United Kingdom, as acknowledged in The Falkland Islands Company Case, (1863) 2 Moo. N.S. 267, 270, 15 E.R 902, 903 by the Attorney General when he said: “there are wild cattle in the Highlands of Scotland. Are they not animals *ferae naturae*?” Of course it was unnecessary for the Privy Council to deal with that suggestion.

Simply being a stray or an offspring whose ownership may not be capable of being established will not render an animal a feral animal (*Reeve v Wardle*). It must return in some way to its wild state. Clearly, to cease to be a domestic animal must also involve an element of wildness (*Nye v Niblett*) and the same will be the case with *domitae naturae*.

What is the wild state? Does it mean simply free to roam and wander about at large or does it require some other identifiable distinguishing change (Hemmer 1983)? This fact has received some judicial notice in *Davis v Green*, 2 Haw. 367 (1861). The law has taken some cognisance of scientific principles, but not necessarily adopted their distinctions (see section 8.5.5). There appears to be no reason to suggest the approach should be any different in the case of feral animals.

*The Queen v Drinkwater* highlights the problem of identification. How can the community determine which animals at large it may take as a *res nullus* and which it may not? In that particular case, the status of goats as cattle was the subject of a statute, but without that this thesis suggests that the issue is not as clear as Mitchell J. appeared to suggest, notwithstanding that goats have long been held to be *domitae naturae* (see discussion in sections 5.5.5 and 5.5.6).

In *Davis v Green* it was noted that the feral cattle in question were distinguishable from the cattle maintained in private herds in a conventional manner. That was not considered sufficient, the only difference being said to be, *Davis v Green*, 2 Haw. 367, 375 (1861) “the degree of wildness in habit and appearance, superinduced by various causes, and they can no more be regarded as animals *ferae naturae* than the cattle of the plaintiff could be so regarded”. More importantly, the court found that the animals were in the constructive possession of the king and the government (which had continually asserted its ownership) and they were the owners, notwithstanding that they were at large and in the somewhat wild state. They were therefore not *ferae naturae*; they were always the subject of property. This was recognised by the community, who recognised such cattle and usually handed them over to the agents of government, on finding any mixed with their cattle. They were distinguishable, and by custom and practice wandered at large.
In a later Hawaiian decision, *The King v Manu*, 4 Haw. 409, 410 (1881) it was held that turkeys brought to the islands and allowed to go wild were not *ferae naturae*, the court said:

> These turkeys, although wild, are not, properly speaking, wild animals. Where the phrase wild animals is used the word wild is used as a generic term to indicate that they are of a species not usually domesticated, and does not refer to their comparative docility or familiarity with men. We consider that these turkeys are not, properly speaking, animals *ferae naturae*, though partaking of their habits.

Notwithstanding that holding, the court found no proven ownership (denying the landowner a sufficient interest) in the turkeys, so there was no larceny. There was no claim to ownership by the king and government in this case. In this case, there was a class of unowned *domitae naturae* running wild without becoming *ferae naturae*, akin to the exception contemplated by Wanstall J. in *Reeve v Wardle*. The law of abandonment appears to be a better solution in this situation. On abandonment, the chattel becomes ownerless and will belong to the first taker. You take it at the risk that somebody will claim it to be theirs and can prove their title, until the population becomes distinguishable as a separate population.

In another United States decision, *Key v State of Tennessee*, 384 S.W. 2d 22 (1964) the court found (citing *The King v Manu*), in construing a statute about hunting wild animals, that feral hogs were wildlife protected by the statute and that both by statute and the common law the property in them was in the state. This view is more consistent with the approach suggested in this thesis, a feral population distinguishable from the population currently raised in captivity is to be regarded as *ferae naturae*.

### 8.5.4. Hybrids

In this context, a hybrid is to be regarded as a cross between any two populations that are regarded separately in the law. This avoids the many difficult issues as to what is a hybrid in scientific terms. Subject to a later reservation, there appears to be no reason why the situation should be any different whether the hybrid occurs readily (because of overlapping niches in nature) (Hill 1993), the isolation mechanism relaxes because of survival needs (Hill 1993), or the hybrid arises out of the intervention of humans (including by the use of biotechnology). This latter issue is relevant in the case of fish, as they are particularly susceptible to biotechnological manipulation (Tave 1993; Purdom 1995). A recent example of this involves the commercial production of the hybridisation of *Pagrus auratus* (see section 13.5) and *Dentex dentex* (Glamuzina et al. 1999).

The initial problem is to determine the method of classifying any cross as *domitae naturae* or *ferae naturae*. The other issue is whether there is any difference if a
species classification is preferred to a population approach. This thesis suggests not. Effectively, as there are only two classes, there are only two possibilities that can be applied to the resultant animal. They are either *domitae naturae* or *ferae naturae*. It could be assumed that a cross between two *domitae naturae* would give rise to a *domitae naturae*. However, if the result is a new type of animal, leading to a new population of animals, it should be classified on its own merits based on the criteria recognised by the law.

If one adopts the test of Blackstone (1765-1770) and the class as a whole is tame and not naturally occurring, then it will, in all places, constitute *domitae naturae*. It will seldom be found wandering at large, at least in the short term. The same can be said of the offspring of crosses between two *ferae naturae*, two *domitae naturae* or a *ferae naturae* and a *domitae naturae*, not occurring naturally and as a class tame. If the offspring are indeed, as a class, tame and satisfy the other tests, is there any reason why absolute property should not subsist? If the animals as a class are not tame, then notwithstanding that they are not found wandering at large, they will be regarded as *ferae naturae*.

The adoption of a population test should give the same result to the non-naturally occurring hybrids. If there is only one population of animals recognisable in the community, then there appears to be no reason why it should not be regarded as *domitae naturae* if it satisfies the other applicable criteria (e.g. tameness, useful to humans, commercial aspects, etc.). The situation is very similar to *Sprague-Dawley, Inc v Moore*. If the animals as a population do not satisfy the applicable criteria then they may be regarded as *ferae naturae*. Tameness in all cases will need to be determined having regard to population attributes, not an individual’s attributes.

In naturally occurring hybrids, the situation should not be any different.

The law has so far encountered the hybrid in few reported situations. The sterile cross between a horse and a donkey is a mule and it appears to be regarded as a domestic animal in its own right (see *Patterson v Devlin*, 1 McMull. Eq. (S.C.) 459 (1840-42)). As already described, the cross between a great dane and a wolf was regarded as a wild animal, at least for the purposes of liability in *Temple v Elvery*. The court expressed the view that there was no justification for holding that the rules applicable to domestic animals applied to such animals. In *Sparvier et al. v MacMillan et al.* the court held that an animal that was a cross between a husky, hound and wolf was not *ferae naturae* for the scienter rules.

In the property context *Temple v Elvery* and *Sparvier et al. v MacMillan* are unsatisfactory. In taxonomical terms both involve crosses in the same genus but not species, whilst in biological terms they involved the one species. Each involved parent animals that in a population sense are distinguishable and regarded as *ferae naturae*. Both cases involved sled dogs, dogs of recent origin.
and purpose with particular attributes (Coppinger & Coppinger 1998) and of value.

8.5.5. The Use of Science

Reference has been made to the scientific meaning of "species" and domestication but without considering the use that may be made of science in the law in this context. For that purpose, it is necessary to distinguish between the use of scientific evidence and its role in proving an individual fact situation. The latter is a matter that would normally be put to a jury, such as the use of DNA testing to assist in proving or disproving some relationship or connection (see Freeman & Reece 1998 for a discussion of this area). The former is when a court takes judicial notice of a particular situation or phenomena (Law Reform Commission of Canada 1973).

The status of a class of animals is now regarded as a matter of law and it is for the judge to decide (Filburn v The People's Palace; at least based on the liability decisions). The judge may be assisted by evidence in forming a view as to the ordinary course of nature. The status is not a matter of the zoologist's theory of domestication, the taxonomist's view of classification or an evolutionary biologist's view as to how or why it occurred. Any evidence on this aspect put before the judge is only to acquaint the judge with the ways of nature, as Clauson J. explained in McQuaker v Goddard, [1940] 1 K.B. 687, 700-701):

I should like, however, to add a word as to the part taken in the matter by the evidence given as to the facts of nature in regard to camels. That evidence is not, it must be understood, in the ordinary sense evidence bearing upon an issue of fact. In my view the exact position is this. The judge takes judicial notice of the ordinary course of nature, and in this particular case of the ordinary course of nature in regard to the position of camels among other animals. The reason why the evidence was given was for the assistance of the judge in forming his view as to what the ordinary course of nature in this regard in fact is, a matter of which he is supposed to have complete knowledge. The point is best explained by reading a few lines from that great work, the late Mr. Justice Stephen's "Digest of the Law of Evidence". In the 12th edition, Article 62 is as follows: "No evidence of any fact of which the Court will take judicial notice need be given by the party alleging its existence; but the judge, upon being called upon to take judicial notice thereof, may, if he is unacquainted with such fact, refer to any person or to any document or book of reference for his satisfaction in relation thereto, or may refuse to take judicial notice thereof unless and until the party calling upon him to take such notice produces any such document or book of reference." From that statement it appears that the document or book of reference only enshrines the knowledge of those who are acquainted with the particular branch of natural phenomena; and in the present case, owing to some extent to the fact that there appears to be a serious flaw in a
statement in a well known book of reference on the matter here in question, the learned judge permitted, and properly permitted, oral evidence to be given before him by persons who had, or professed to have, special knowledge with regard to this particular branch of natural history. When that evidence was given and weighed up with the statements in the books of reference which were referred to, the facts became perfectly plain; and the learned judge was able without any difficulty whatever to give a correct statement of the natural phenomena material to the matter in question, of which he was bound to take judicial notice.

Even before that statement, Doak D.C.J. in Temple v Elvery, [1926] 3 W.W.R. 652, 654, in the District Court of Saskatchewan said:

No evidence was tendered to show what the biological result of a cross between a dog and a wolf would be. I am not prepared to say just to what extent a court would be justified in taking judicial notice of the generally accepted modern theories of heredity. A court can and should take notice of such matters of scientific knowledge as are of common and familiar cognizance, such as for instance the fact of radioactivity, or of chemical reaction, although not necessarily of the causes or theories pertaining to these phenomena. Similarly in the field of biology the doctrines of Mendelism have been so thoroughly established by a long series of experiments and observations that it may safely be said the knowledge thus obtained is common at least to that portion of mankind which is interested in the question of heredity as applied to the breeding of animals, even although the courses which produce the observed effects may be obscure, or different scientists may have opposite opinions regarding them.

The foregoing highlights that the judge is not limited to the evidence presented but may ascertain in such manner as the judge considers appropriate matters of science and may consult such sources as the judge considers necessary. As Legoe J. said in Stormer v Ingram, (1978) 21 S.A.S.R. 93, 94:

I have gone a great deal further in researching scientific and other literature available to me in libraries to which I have had access. In view of the approach and analysis of the claim which I have felt obliged to undertake I have used the information available to me in order to decide the questions of law which the claim has raised e.g. to determine whether apis mellifera is an animal ferae naturae (see Clauson L J’s remarks in McQuaker v Goddard). It is apparent in the reasons given by me below where I have used this scientific or practical information and how I have applied it.

This approach was discussed in the study paper of the Law Reform Commission of Canada (1973), and noted in the report of the Law Reform Commission of New South Wales (1970), and it also prevails in the United States (Garelli v Sterling-Alaska Fur & Game Farms, Inc).
This approach may not be altogether surprising having regard to the historical view expressed by Puffendorf (1672) and Blackstone (1765-1770). It avoids the need to use science; it looks to the experiences of humanity in a very practical manner. The approach is put much more strongly by Kent (1826-1830, 2:349) in his *Commentaries* (a view repeated by Smith 1908 somewhat differently) in the following terms:

*It is a theory of some naturalists that all animals were originally wild, and that such as are domestic owe all their docility and all their degeneracy to the hand of man. This seems to have been the opinion of Count Buffon; and he says that the dog, the sheep, and the cattle, have degenerated from the strength, spirit, and beauty of their natural state, and that one principal cause of their degeneracy was the pernicious influence of human power. Grotius, on the other hand, has suggested that savage animals owe all their untamed ferocity, not to their own natures, but to the violence of man. But the common law has wisely avoided all perplexing questions and refinements of this kind, and has adopted the test laid down by Puffendorf, by referring the question, whether the animal be wild or tame to our knowledge of his habits, arrived from fact and experience.*

So what set of scientific principles will a court take judicial notice of, adopt and apply? If the courts adopt a species test, should it be by reference to the taxonomical classification or species definition generally adopted by the scientific community (Mayr 1982; Hill 1993), a biological species concept (as adopted by Mayr 1982), “a reproductive community of populations (reproductively isolated from others) that occupies a special niche in nature”, and generally accepted by biologists with some reservations (Hill 1993), or one biochemists may adopt or some other group of scientists?

The issue is not a matter of how a jury is to resolve a dispute with highly technical content, or to decide whether it should be allowed to go to a jury (Jasanoff 1995). It is a matter of whether and how a judge, in forming a view as to the course of nature, should take account of the very different approaches in the various branches of science (Behnke 1993). The question is how the judge should address the difficulties of the ongoing issues and the considerable debate as to the appropriate classification under the existing methods used for many different purposes, recognising that taxonomy is a dynamic biological science, not simply an arbitrary system of classification to satisfy a craving for order (Hill 1993), and also recognising that the term species has become so “vague and undefinable for contemporary taxonomists – essentially a return to Darwin’s vague species concept; a species is what an authority (committee), using ‘sound judgement,’ says it is.” (Behnke 1993).

A number of examples can highlight the difficulties of the divergence of the scientific view. The first is an ongoing debate as to the appropriate manner of classifying domestic animals and more particularly its application to the
appropriate species and subspecies designation of domestic and feral pigs (Mayer & Brisbin 1991). Another is the classification of dogs. The domestic dog is *Canis familiaris*, the grey wolf *Canis lupus*, and the coyote *Canis latrans*. Each is within the nomenclature and taxonomy of Linnaeus of the genus *Canis* and each occupies a separate species in that genus, as described by their respective species names, (the second limb of their names). Yet, in terms of the biological species concepts the domestic dog can breed and does breed with wolves. So, which is to be used? This problem is exemplified by *Temple v Elvery*, [1926] 3 W.W.R. 652, a decision that highlights that the distinction is not based on genus or species or any such scientific concepts or classification; it is the experience of humans, the perception in the community as determined by the judge. It is based on the community definition of the class or population of animals.

One of the most telling reasons why none of the scientific descriptions or classifications has been or will be adopted in this branch of the law is the loss of certainty and control. If a taxonomical classification is adopted, then, theoretically, a scientific decision to reclassify an animal, on appropriate scientific grounds, from one species to another or from one subspecies to a separate species could have a very significant legal effect. It is arguably an effect without any grounds or opportunity for judicial intervention. On the other hand, if resort to the court is to occur on the proper application of the scientific classifications, the effect is likely to make the court the arbiter of the scientific evidence and the maintainer of such classifications, a role that is clearly inappropriate.

So based on scientific reclassification, a class of animals may cease to be *domitae naturae* and become *ferae naturae* in a property sense, with the consequential change in property rights in respect of the animals and their produce. Such a situation is one that the community will find disturbing, if not wholly unacceptable. This is not dissimilar to the concern expressed in a liability decision by Neville J. in *Heath's Garage Ltd v Hodges*, [1916] 2 K.B. 370, 383 when he said:

> It seems to me impossible to suppose that the question whether domestic animals are dangerous or harmless by the wayside, where they have ever been common objects, can have been one to be left to the jury, for that would have been to leave the character of domestic animals indeterminate for all time. There can be little doubt, I think, that our ancestors showed the wisdom in the conclusion they arrived at in this respect.

Various practical examples can be found. There are also at least two cases of important commercial aquaculture species (see chapter three), rainbow trout and snapper, having undergone reclassification recently. In the case of rainbow trout, the change occurred in the late 1980s and was from *Salmo gairdneri* to *Oncorhynchus mykiss* (Kendall 1988; Gall & de Groot 1990). Snapper in Australia and Japan were regarded as separate species and called *Chrysophrys auratus* and *Pagrus major* until being recognised as one and renamed as *Pagrus*
auratus (Paulin 1990). Neither change appears to have caused any legal difficulties.

There is no reason to suggest that the foregoing approach will not also be adopted in the property cases. In Ebers v MacEachern, Saunders J. specifically cited the above paragraph from Kent's Commentaries (1826-1830) with apparent approval. In that case, there is no suggestion that any scientific evidence was put before the court as to any genetic or other significant changes in the animals. Saunders J. also indicated in Ebers v MacEachern, [1932] 3 D.L.R. 415, 420, that he was "convinced beyond doubt that foxes in this Province ... have greatly changed in their habits and disposition". One could ask whether there is any need for science in this area; the scientists may have had difficulty in providing evidence of domestication in the case of such foxes, after such a short period of raising. A few years earlier, in the United States decision of Hughes v Reese the court indicated that if necessary it would adopt a similar approach and it would take judicial notice of the fact that foxes do not have animus revertendi.

When the constraints of court procedure and rules are lifted, resort to varying degrees is had to science. In the Fur Seal Arbitration (1893) much scientific data was collected and presented to the tribunal on the nature and habits of fur seals by commissioners appointed by both sides for that purpose, pursuant to the treaty to resolve the dispute by referring it to the arbitration. The United States suggested that the fur seals were domesticated; in response, the British counter argument noted the lack of characterisation of fur seals as domestic animals in the report of the United States commissioners. Even in this situation, the tribunal only considered evidence of the views of scientists, no doubt formed on the appropriate scientific basis of the time.

8.5.6. Matter of Law not Fact

This aspect is very much intertwined with the preceding items. Like those items, it has not been the subject of much judicial consideration. The consideration in the liability area has been somewhat more extensive. The leading and principal statement on the topic is that of Clauson L.J. in McQuaker v Goddard, already quoted in the preceding item. This particular approach has regularly been quoted and approved (Lake v Taggart; Behrens v Bertram Mills Circus Ltd.; Stormer v Ingram).

In the property context, Wanstall J. in Reeve v Wardle said the determination of the issue was a matter of law not fact on the authority of McQuaker v Goddard. Mitchell J. adopted the same view, though obiter, in The Queen v Drinkwater (see section 8.6).
8.5.7. Identifiable

Whilst the foregoing discussion has dealt with a number of specific situations relating to populations of animals, it has also emphasised the final element of the proposition put forward in this thesis for *domitae naturae*, namely that the members of the population are identifiable as part of that population. It has emphasised that a population of animals or a member of that population is distinguishable or identifiable; the animal is distinguishable as a member of a population that is recognised in that community, notwithstanding that it may be a member of a species that has multiple populations.

A member of the population *domitae naturae* will be distinguishable from its wild cousin by some attributes (e.g. colour, other physical attributes or marks), as discussed in respect of feral animals. Some of those distinguishing aspects may not always be readily identifiable or identifiable to everybody in the community. In some cases, the population may not exist in the wild, the animals making up that population may be hybrids, they may be mutations fostered by humans (*Sprague-Dawley, Inc v Moore*), or they may have been introduced into the community. In the latter case, if a population is *domitae naturae* in its place of origin, it may be accepted as such immediately, or it may take some time before it is accepted (e.g. turkeys in England – see sections 8.4 and eleven). Even if not *domitae naturae* in its place of origin, the population may be so accepted in its new community, either initially or after some time.

The distinction is not species-based, it is population-based, and they are distinguishable. This situation is not without its difficulties, particularly where the population is on the edge, as highlighted in the discussion of feral animals (also see appendix two). In this context, the proposition does not mean that you can identify the owner or determine whether the animal has been abandoned. As already described a person finding a cow in the street recognises that the cow is owned; it is recognisable as a member of a population accepted by the community and common law as *domitae naturae* (section 5.5.5). It makes no difference that the finder cannot identify the owner or whether the animal has been abandoned. That involves other processes in the law, in accordance with the rules applicable to abandoned chattels, subject to the specific principles applicable to *domitae naturae* (see earlier parts of this section).

8.6. Are the Classes Closed?

There are two aspects to this: the first is whether a population can move from *ferae naturae* to *domitae naturae*, and the second whether the population can move from *domitae naturae* to *ferae naturae*. The first is less controversial.

The decisions already discussed clearly demonstrate the movements of populations of animals from the class *ferae naturae* to the class *domitae naturae*. 
The history of the law in this area demonstrates that up until the 1700s a number of such de facto movements occurred. The expression “de facto” is used because rarely is there an acknowledgment in those cases of what is occurring. The discussion is of the incidents not the criteria by which the classification or movement has occurred. This movement or recognition is highlighted in section eleven.

Since then, there have been a number of decisions that have identified such movements or possible movements. The ongoing changes in human's relationship with animals will permit the movement of further groups of animals from \textit{ferae naturae} to \textit{domitae naturae}. For, as Legoe J. said in \textit{Stormer v Ingram}, (1978) 21 S.A.S.R. 93, 97: “All animals have to be placed in one or other of these groups by judicial decision.” The movement of a population from \textit{domitae naturae} to \textit{ferae naturae} appears less likely, but again it is a matter of what is meant by species, class or population. In \textit{Heath's Garage Ltd v Hodges}, [1916] 2 K.B. 370, 383, Neville J. said:

\textit{But in my opinion it is not competent for the Courts to reconsider the classification of former times and to include domestic animals of blameless antecedents in the class of dangerous animals.}

In the property context, once again Wanstall J., in \textit{Reeve v Wardle}, [1960] Q.L.R. 143, 149, adopted Blackstone (1765-1770) and held “that once the law classed a species as \textit{domitae naturae}, that was a finding in law. This approach was approved of in \textit{Lake v Taggart} and by Mitchell J. in \textit{The Queen v Drinkwater}, albeit likely obiter. The latter was a larceny case. Without distinguishing between the property and liability decisions, she said in \textit{The Queen v Drinkwater}, (1981) 27 S.A.S.R. 396, 400:

\textit{McQuaker v Goddard is authority for the proposition that it is for the judge to determine as a question of law whether a particular animal belongs to the class of domestic animals or the class of wild animals: see per Scott L.J. at p. 696. This seems clearly to follow from the somewhat arbitrary classification of animals being or not being avers or cattle.}

A criticism of this approach is that it creates a \textit{res judicata} for all times. It is a rule of law. A subsequent litigant is bound by an earlier finding as to the classification of a class or population of animals as \textit{domitae naturae}. An answer to this criticism is that it is a finding as to the law, and subject to a superior court overruling or contradicting the decision, all potential litigants can ascertain what the law is. It provides certainty in property cases, for those animals of the population. This is particularly important in the community, when property and similar rights depend on legal recognition.

Clearly, our forebears relied on a far wider variety of animals for their sustenance than many modern communities (e.g. swans, ravens, raccoons). Most of those animals appear to have been regarded as \textit{ferae naturae}, with the possible
exception of swans. The law relating to swans is particularly confusing (see appendix two; Theobald 1929). Their treatment as a table fowl would appear to suggest that up until the sixteenth or possibly the seventeenth century they might have been regarded as *domitae naturae*. In *The Case of Swans*, (1592) 7 Co. 15b, 16a, 77 E.R. 435, 436, there is a suggestion that they are subjects of absolute property:

*But it was resolved also, that the subject might have property in white swans not marked, as some may have swans not marked in his private waters, the property which belongs to him and not to the king; and if they escape out of his private waters into an open and common river, he may bring them back and take them again.*

A number of other rights or interests applicable to swans add to the view they were regarded as *domitae naturae*. A person having swans within private waters has property in them. The person may bring a writ of trespass for their wrongful taking; a person may obtain rights in a game of swans by prescription; a person may prescribe that a game of swans may swim within the manor of another; and a swan may be a stray (see appendix two).

If swans were indeed *domitae naturae*, community attitude and anecdotal evidence would now suggest they are now *ferae naturae* (notwithstanding the continuing practice of swan upping and some level of continuing property). They are likely to have moved, in the view of the community in England, from a source of food to that of wildlife (they may never have been otherwise in most colonies). There appear to be no reported decisions highlighting this change.

The issue will be relevant in respect of feral animals. On the basis of this thesis, if they constitute a distinguishable class there should be no issue. The species (scientific) approach creates far greater difficulties, for the reasons already discussed in the context of feral animals and hybrids. It has minimal support. Certainty can prevail, as put forward in this thesis, without it.

8.7. Community: Same Country, Same Jurisdiction

The proposition put forward in this chapter focuses heavily on the status of the population in the community. The cases in respect of liability issues have determined that the status of an animal is to be determined on a country-by-country basis, or in a federation on a jurisdiction-by-jurisdiction basis. It is within such communities that the test is to be applied.

In *Filburn v The People’s Palace* Lord Esher said that it cannot possibly be said that an elephant comes within the class of animals known to be harmless by nature, or within that shown by experience to be harmless in England. That approach was adopted in Western Australia in *Nada Shah v Sleeman* by McMillan C.J., who indicated that he had to deal not with the state of affairs in England, but
with those that had existed for many years in Western Australia and which existed then. The same approach has been adopted in respect of elephants in *Vedapuratti v Koppan Nair*, (1911) I.L.R. 35 Mad. 708 and *Maung Kyow (Maney Kyaw) v Ma Kyin*, (1900) 7 Bur. L.R. 73. Buffalo in India were regarded as cattle and accordingly domesticated, *Madho v Akaji*, (1912) 17 Ind. Cas. 899 (Nag), yet in Ceylon they were held not to be sufficiently domesticated to be harmless, *Anon.*, (1851) Aust. 153 (Ceylon) (as noted in Williams 1939).

In the area of liability, Williams (1939) questions whether only the experience of the particular country is to be adopted or whether a more cosmopolitan view is to prevail. Williams (1939) puts forward the proposition that neither the test of local experience nor the more cosmopolitan view is workable by itself. As can be seen from his discussion, this problem becomes more acute if the animal has been imported from another country (an alien animal). The suggestion is that, whilst no country is required to accept the experience of another country if it has its own experience, if the species is entirely foreign then attention should be paid to its status in those countries where it is commonly found (see various discussions as to the status particularly on the introduction of turkeys to England in sections 8.3, 8.4 and eleven).

The more cosmopolitan view appears to have been adopted in *McQuaker v Goddard*, where it was recognised by Scott L.J. that, as a camel did not exist in a wild state in any part of the world, it had also ceased to be a wild animal in England or in any other country (whether that is the case for feral camels in Australia remains to be seen). This has been altered in England by legislation and so applied, overturning *McQuaker v Goddard*, in *Tutin v Mary Chipperfield Promotions Ltd*. The more narrow view has more recently been repeated by Favre and Loring (1986) without much discussion; on the basis that in the particular place it depends on whether the manners, characteristics and risks are known.

So, whilst the rule remains that it is a country-by-country basis (or jurisdiction basis in a federation), *McQuaker v Goddard* clearly supports a grafted worldwide approach where there are no members of the population in the wild state. Whilst Legoe J. in *Stormer v Ingram* held that *Apis mellifera* are not animals *ferae naturae* in South Australia, relying on the principle that the matter is to be determined on a country-by-country basis, there was no discussion as to whether that matter is to be determined by reference solely to local experience or the more cosmopolitan view. Legoe J. relied predominantly on local matters, but did have regard to foreign literature and developments and examined the approach in a number of other jurisdictions.

The few available property decisions do not adequately address the issue. Ultimately this thesis emphasises the experience of the community, clearly favouring the narrower view.
As to the situation in a federation, there appears to be nothing in the Australian decisions to suggest that anything other than a jurisdiction-by-jurisdiction approach will be adopted. In Canada there are two conflicting decisions on silver foxes, one in the Province of Prince Edward Island where they are *domitae naturae* (*Ebers v MacEachern*) and the other in the Province of Ontario where they are *ferae naturae* (or were in 1917, *Campbell v Hedley*). In the report of the case in Prince Edward Island the Ontario decision is not mentioned. Even with a common final court of appeal, and an expectation that in most respects the common law will be uniform in this aspect in each country having regard to the criteria to be used (as discussed earlier), it is not unreasonable to have different classifications in different jurisdictions. Obviously, in large multi-jurisdictional countries, with a wide range of habitat and climatic conditions, populations of animals may be treated differently. As far as possible, a common approach should be adopted and uniformity preferred. A similar situation appears to exist in the United States to that of Canada in respect of silver foxes. A Mississippi court regarded them as *ferae naturae* (*Hughes v Reese*) and the contrary decision in *E. A. Stephens & Co v Albers* adopted the view that the property remained with the former owner, implying a possible *domitae naturae* classification (see earlier discussion in section 8.4).

8.8. Progeny, Produce and Use

The right to the progeny is truly an incident of ownership; with few exceptions the owner of the female is entitled to the progeny. So the owner of a sow taken distress damage feasant is entitled to the immediate delivery of the litter born after the seizure of the sow and to bring replevin to recover the litter. If they are not returned immediately, only the sow may be retained distress damage feasant (*YB* (R.S.) (1344) 18 & 19 Edw. 3, 233; *YB* (1472) P 12 Edw. 4, 4b). The general rule is that the owner of the female is entitled to the offspring (*The Case of Swans*; Puffendorf 1672; Blackstone 1765-1770; *Carruth v Easterling*, 150 So. 2d 852 (1963); *Kauffman v Stenger*, 151 P. Sup. 313 (1943); Cohen 1954). On the other hand, it has been suggested in one United States decision that lawful possession of the female only gives rise to a presumption of title (*Frank v Symons*, 88 P. 561 (1907)).

The general rule has exceptions. The custom in respect of swans is different. In their case, the owners of the swans have a cygnet each and any landowner the third, which is to be the one of least value. This is justified by the caring nature of the male swan. In the case of the landowner, whilst the landowner could chase them out, if the landowner does not and they hatch on the landowner’s land, then the landowner is entitled to recompense (*YB* (1484) 2 Rich. 3, 15; *The Case of Swans*). In all other cases, the cygnets are to be divided between the owner of the cock and the owner of the hen (*The Case of Swans*).

The difficulty as to the offspring of feral animals *domitae naturae* has been recognised but not considered, apart from the suggestion of the possibility of an
exception from the usual rules for all feral animals (Reeve v Wardle).

The other exception to the general rule deals with lesser property interests. In this situation the rule mentioned above, as described in Halsbury’s Laws of England (1907, 1931, 1959, 1991) based on Blackstone (1765-1770), was said to be too wide in Tucker v Farm and General Investment Trust Ltd, following the decision in Wood v Ash & Foster, (1586) Ow. 139, 74 E.R. 958. So, in the case of a flock of sheep, the increase in the stock of sheep passes to the bailee and the bailor is not entitled to them at the end of the term unless the bailment provides to the contrary (Wood v Ash & Foster). The bailor is not entitled to have the numbers the subject of the bailment kept up, unless the bailment specifically stipulates for that to occur.

Some American decisions have considered further situations. An owner of a limited estate in livestock, such as a life interest or an interest during widowhood, is entitled to the increase. A tenant for life with remainder over is bound to keep up the numbers. If the animals cannot produce young, the owner is not bound to supply a fresh one in the place of one dying. In the case of a gratuitous loan, the offspring belongs to the lender (Ingham 1900).

In many cases, the progeny is the most significant part of the produce of animals. In the case of cattle, where they are no longer used for draught, the principal purpose is the meat and hides. In those cases, there is no issue. In the case of sheep, the wool belongs to the owner as does the milk. They are in the possession of the owner (The King v Martin, (1777) 1 Leach 171, 168 E.R. 188; Pollock & Wright 1888). So, the milking of a cow at pasture and taking the milk was held to be larceny, as was pulling the wool from a sheep’s back (East 1803).

If the animal is a stray, whilst it was originally doubted that other than the owner could milk the animal, the law took the humane view that the cow ought to be milked (Anon., (1613) 12 Co 101, 77 E.R 1375 and the footnotes). On one report of Bagshawe v Goward, (1606-7) Cro. Jac. 147, 79 E.R. 129 the court indicated “milch-kine taken as estrays” and for distress could be milked for the benefit of the owner. There are contradictory reports in this area (see Williams 1939 for those reports and discussion).

The situation in the case of an animal taken by way of distress is based on the older case law and not so humane. In Chamberlayn’s Case, (1590) 1 Leo. 220, 74 E.R. 202 it was confirmed that the distrainor could not milk the animal, subject to the qualification that the animal should be placed in an open pound so that the owner might milk her, for if not milked the milk is lost and the cow impaired thereby. This is contradicted in Bagshawe v Goward.

The situation of using the animal is not so difficult whether as a stray or taken by way of distress. The use of an animal taken as a stray or distress constitutes a
trespass *ab initio* (*Bagshawe v Goward; Oxley v Watts*, (1785) 1 T.R. 12, 99 E.R. 944; *Pleydell v Gosmoore*, (1623) Hut. 68, 123 E.R. 1106, the latter cases dealing with the working of a horse). So, apart from the foregoing exceptions, the owner is entitled to the produce and anybody interfering with those rights commits a wrong.

The eggs of domestic birds belong to the owner of the animal and larceny is committed by taking them (*Coke 1641b; Hawkins 1716*). Larceny could not be committed of the eggs of swans or of hawks, because the statute 11 Hen. 7, c 17 had appointed a lesser punishment, namely, fine and imprisonment (*Coke 1641b*) (see section 9.5).

A large number of eggs of *ferae naturae* in the possession of a person may be the subject of larceny; they are goods and chattels (*R v Stride and Millard*, [1908] 1 K.B. 617). However, the matter of the proprietorship of eggs of *ferae naturae* on one’s land becomes very confusing (see discussion in section 9.5). Honey and the produce of insects is another area of considerable uncertainty. Again the rights appear to follow the landowner, the produce is inanimate (as discussed in section 9.5).

9. Qualified Property in Animals in the English Common Law

9.1. Introduction

This section considers the development of the different sub-classifications of *ferae naturae* at common law, the requirements of those sub-classes and the nature of the rights flowing from them. It does so for a number of reasons. The first and foremost is that the common law recognises a qualified property right in *ferae naturae*, an interest that may be just as important to the person in possession of an animal (notional or actual) as the owner of a member of the class *domitae naturae*. It has some peculiar features (*Burnside and Marrakai Ltd v F.C.T.*). As will be discussed in chapter three, most fish are within this classification.

This thesis also asserts that the common law in England did not need to admit other animals to the class *domitae naturae* because of the use of the franchises. An understanding of their working underpins this proposition. It is clearly interrelated with the rights of the Crown to *ferae naturae*, which at some times may have been absolute (see appendix two).

Conceptually the common law and the Roman law are at one on the basic concept that the nature of beasts “that are called *ferae naturae*” is to be wild, they belong to no one (*Brook J., YB* (1521) 12 Hen. 8, 9; *Chitty 1812, 2:806*). Anyone may take possession of them and acquire them, subject to some exceptions. The Roman law had one principal exception to the rule relating to *ferae naturae*: those
animals with *animus revertendi*. The common law adopted that and developed a number of others.

Ingham (1900) describes the three sub-classifications in the common law as *per industriam hominis, per impotentiam* and *propter privilegium*. He omits *ratione soli*, yet *ratione soli per impotentiam* and *ratione soli* both arise from the possession of the land. As will be seen, they could be regarded as members of the one group, with different incidents, as suggested in this thesis.

The nature of the interest in *ferae naturae* under each of these sub-classifications differs. They have also altered over time. The right *ratione soli* (differentiated from *ratione impotentiae*) appears to have declined or become confined. Not only did the nature of the interests alter but so did the remedies. Many changes and adaptations in the law, the abolition of the writ system, changing legislation, and changes to the original underlying assumption have all had their effect on these divisions.

The common law also created a further distinction, namely vermin. In these animals, not only did property not subsist for some time, but also trespass could be justified in pursuing and killing such animals in the common good.

9.2. Animals Tamed and *Per Industriam*

9.2.1. Introduction

The first of the classifications, and the most important, is those animals tamed and *per industriam*. Tameness in this context has much the same meaning as *per industriam*: the art and industry of a person has contained an animal, induced it to return or tamed it. It requires a consideration of the facts pertaining to each individual animal, after recognising that the animal is *ferae naturae*.

There are two distinct groups of animals *per industriam*. An animal in captivity is clearly the subject of a qualified property interest, so long as it remains in captivity. Usually the nature and extent of the captivity is not an issue; the animal is contained and, accordingly, there is an assertion of property rights. In the case of fish, the nature and extent of the captivity has caused greater difficulty (see section twelve and appendix two). The nature and extent of the captivity required in respect of certain populations of animals also appears to differ (see the discussions in appendix two).

The other distinct group is animals at large. This thesis has further divided that division into two groups, for the purpose of this discussion. There are those animals that are in the course of escaping from captivity and those that have *animus revertendi*. In the case of the former, property rights remain in those animals, for so long as there is fresh pursuit. Those that have *animus revertendi*
also remain the subject of proprietorship. In the context of this thesis, the requirements in respect of this group are particularly significant. The required elements will, accordingly, be considered at length. Again, there may be differences as to the nature and extent and the manner in which animus revertendi is evinced, in the case of different populations of animals (appendix two highlights some of those differences).

9.2.2. Captivity or Tamed

9.2.2.1. Captivity

"[H]e that hath possession has property" (Pollexfen & Ashford v Crispin, (1672) 2 Keb. 757, 766, 84 E.R. 478, 484); property is dependant on possession (Reeve v Wardle; Yanner v Eaton). Bracton (1250, 2:8b) clearly had that view: "wherever they may be captured, and wherever they shall have been captured, they begin to be mine, because they are coerced under my keeping". It was also the view of Brook J. in YB (1521) 12 Hen. 8, 9 (Chitty 1812, 2:806): "but when any one by his industry and labour hath made them tame, then they are his chattels, for then they are in his possession such as rabbits, fish and other things, then it is not lawful for any one to take them out of his possession. For, if I have deer in my house or garden, it is not lawful for any one to take it".

Once taken or tamed they are reduced to property; they have been obtained per industriam (Yanner v Eaton; Geer v Connecticut, 161 U.S. 519 (1896)). Once in the possession of a person it is not lawful for anyone to take them out of the person's possession (Brook J., YB (1521) 12 Hen. 8, 9). If attempting to flee possession, the animal remains in the person's possession whilst the animal is in sight, unless it is no longer possible for the person to catch the animal. The property interest is in most respects as large as that possessed by an owner of domitae naturae. However, the interest must arise per industriam, from the activity of the person; a person has no interest in ferae naturae where the person is not at any trouble or expense in respect of them (Hannam v Mockett, (1824) 2 B. & C. 934, 107 E.R. 629).

9.2.2.2. Born in Captivity

In Ebers v MacEachern, [1932] 3 D.L.R. 415, Saunders J. observed that for an animal ferae naturae to regain its freedom (to satisfy the common formulation) it must have once had its freedom. An animal born in captivity has never had its freedom to regain. Applied literally, that would mean that all animals, including all animals otherwise classed as ferae naturae, would remain the absolute property of the person that bred them, no matter where they are to be found. It would create yet another sub-class of ferae naturae, with a property right similar to an absolute property right. That is to misapply the rule.
The rule is a class rule; if the animal is of the class *ferae naturae* and escapes from its owner with no intention to return, it ceases to be that person’s property (alien animal concepts aside). The animal is available to the first taker (any matters of branding, etc. aside). In *E. A. Stephens & Co v Albers*, 256 P. 15, 17 (1927), the court rightly rejected the fact that birth in captivity makes any difference in class terms. For, as it said, “nor has birth in captivity anything to do with the question. A wild cat may be just as wild if born in a cage as if born on a mountainside.”

9.2.2.3. Is More than Captivity Required? Reclaimed or Tame

The proposition of Brook J. in *YB* (1521) 12 Hen. 8, 9, mentioned above, appears to require industry and labour not merely captivity (confinement in a narrow area). There are occasional other comments that something more than mere confinement is required. Pheasant, partridge, hare and rabbit, although kept so that they cannot escape, if not reclaimed and known to be reclaimed, could not be the subject of larceny (Anon., (1527) Jenk. 204, 18 Hen. 8, 2) even though good for food (*Fines v Spencer; Vincent v Lesney*, (1624) Cro. Car. 18, 79 E.R. 621; *Lyster v Home*).

Later it was said that an indictment must show that the *ferae naturae* were either dead, tame or confined; otherwise they were presumed to be in their original state (*The King v Rough*, a decision that appears to be approved but distinguished by the Court of Appeal in *R v Stride and Millard*). Tameness here was apparently a sufficient alternative to confinement. Confinement with nothing more was also sufficient. One must therefore question whether in an action for trespass anything more than confinement was ever required. After the decision in *The King v Rough*, even larceny no longer appears to require more. So a tamed animal or a confined animal is the subject of property *per industriam* (*Yanner v Eaton*). They are alternatives (but not mutually exclusive).

The hunting cases have always suggested that capture, once complete, is sufficient, subject to any custom to the contrary. This may be physical possession or capture within nets. In the pursuit and capture of *ferae naturae* there are differences of opinion as to what is required for the taking of physical possession (*Pierson v Post*, 3 Cai. N.Y. 175 (1805); Ingham 1900; see discussion in section 16.3.1).

In the United States, the decisions appear to have reached much the same position, namely taming or confining each give rise to a qualified property interest *per industriam* (*Geer v Connecticut*). It was so described in *State v Lee*, 41 So. 2d 662, 663 (1949) in the following terms:

*It will be observed that animals ferae naturae become property, and entitled to protection as such, when the owner has them in his actual possession,*
custody or control and usually this is accomplished by taming, domesticating or confining them.

The distinction between "domesticating" and "taming" may in this context be questioned, there may be no difference. Fish in ponds, stews and lakes created their own difficulties. This is considered further in sections twelve, sixteen and appendix five.

9.2.2.4. What is Industry?

Tameness in this context appears to be regarded as the consequence of the art and industry of the person; it is not simply an animal possessing an attenuated flight response. Therefore, taking naturally occurring tame individuals is not enough, though it is likely to assist. In practice, in many cases it is likely to be difficult to discern a difference between tameness occurring naturally or through human effort. It is the industry of a person that is rewarded.

This tameness is to be distinguished from that of tame animals purely about one's land, even if there is an element of intervention. In the case of animals the subject of industry, the property interest is all but as large as an absolute interest, the difference being that it can be defeated by the actions of the animals (Fur Seal Arbitration 1893). It is not the industry that is afforded a measure of protection; it is the property in the animals (Fur Seal Arbitration 1893) which reflects the industry, such as quelling their natural flight response by training or inducing them to return (Hamps v Darby).

This is described in The Case of Swans, (1592) 7 Co. 15b, 17b, 77 E.R. 435, 438:

as by taking them, or by making them mansueta, i.e. manuei assueta, or domestica, i.e. domui assueta: but in those which are ferae naturae, and by industry made tame, a man hath but a qualified property in them, scil. so long as they remain tame, for if they do attain to their natural liberty, and have not animum revertendi, the property is lost.

A very much wider definition was put forward in the Fur Seal Arbitration (1893, 8:91) by the United States, and effectively rejected by the panel, in these terms:

that whenever any useful wild animals so far subject themselves to the control of particular men to enable them exclusively to cultivate such animals and obtain the annual increase for the supply of human wants, and at the same time to preserve the stock, they have a property interest in them.

The industry must be a positive undertaking. It must involve a series of acts, not simply one or two or those simply of a preserver or gamekeeper. Profiting from the natural increase occurring about the land does not constitute industry for this purpose (Brady v Warren). Not killing all or merely fostering or maintaining the numbers is insufficient. Something more than obtaining the maximum sustainable
yield from a population at large is required. These are efforts to merely preserve. Even some efforts to increase will not be sufficient; the occasional or repeated restocking of the land, rivers or sea without more is unlikely to be sufficient. In addition, simple acts of husbandry may be insufficient. There must be positive acts and a course of conduct. The interest arises in situations where a person can with a greater degree of certainty preserve the stock and produce an excess for the market from their art and industry (*Fur Seal Arbitration* 1893).

The intermingling of the claimed animals with wild animals may in some cases detract from the claim of industry and property (*Fur Seal Arbitration* 1893), particularly if there is an element of confusion (*Foster v Urban Council of Warblington*). The practise of selective slaughtering demonstrates management and property (*Fur Seal Arbitration* 1893; *Morgan v The Earl of Abergavenny*, (1849) 8 C.B. 768).

If the conduct is similar to that applied to those animals *domitae naturae*, then it is likely to be regarded as *per industriam*. The usual comment is that when the animals become as much the subject of husbandry as sheep, horses, cows, fowl, etc. then they are to be regarded in most respects in the same manner (*Davies v Powell; Carleton v Brightwell*).

9.2.3. Animals at Large

9.2.3.1. Loss of Captivity and Fresh Pursuit

Once a *ferae naturae* is out of possession (*animus revertendi*, marks and fresh pursuit aside) the animal is open to the first taker (Bracton 1250; *The Case of Swans*). A good example of this is the alien animal. In these cases the strict application of the law means an escaped lion, tiger or sea lion (*animus revertendi*, marks and fresh pursuit aside), even in a country or community where it does not exist in the wild, is available to the first taker (see further discussion on the absurdity of the situation in section 9.7). In *Mullet v Bradley*, 24 Misc. N.Y. 695 (1898) a sea lion escaped from its captors on Long Island and was recaptured by fishers two weeks later, more than seventy miles from Long Island Sound. The plaintiff sought to recover the animal but failed. The animal had regained its liberty and did not have *animus revertendi*. The fact that it was alien to those waters and had not reached its native waters of California was not sufficient for the plaintiff’s claim.

Whilst in fresh pursuit of escaping *ferae naturae*, the animal remains in the owner’s possession (*Reeve v Wardle*). This commonly mentioned exception to loss of captivity has rarely been applied, apart from cases involving swarms of bees and possibly swans. This pursuit is different to the case of pursuit in the hunting situation. In the former, the possession continues until the animal or swarm is no longer capable of recapture (with some qualifications as to what
capable of recapture means), whilst in the latter, possession is not achieved until the capture is complete (Bracton 1250; see also section 16.3 and appendix five).

The decision in YB (1521) 12 Hen. 8, 9 does not acknowledge that fresh pursuit is sufficient, but that must now be considered to have altered. *The Case of Swans* acknowledges that the interest subsists, and the right of the Crown to unmarked swans does not apply, for so long as pursuit by the owner occurs (assuming swans are *ferae naturae*).

The foregoing rules have been criticised in some United States decisions (*Ulery v Jones*, 81 Ill. 403 (1876); *Manning v Mitcherson*, 69 Ga. 447 (1882)). They have not always been strictly applied. The mere likelihood of return, possibly a single instance or some other identifying attribute, has been held to be sufficient intent to return. These are examples of the misapplication of the *animus revertendi* rule to permit property to be retained (to be discussed shortly). As will be seen they may be more a recognition of the industry invested and the ability to identify the animal, rather than truly the *animus revertendi* rule. This suggests a possible further rule.

So in *Ulery v Jones* a young buffalo captured when a calf and reared on a farm with domestic cattle had become so tame as to take food from the hands of its master like other cattle and to be easily driven home when it strayed. It was held to be no longer in a wild state. It was the subject of property, even when straying from its owner. The court in *Ulery v Jones*, 81 Ill. 403, 405 (1876) holding:

> An ordinary domestic bull, at the early age of two years, would, quite likely, lack the observance of the custom insisted upon as an unerring evidence of domesticity. This animal may be said to have been, at all times, in the keeping and actual possession of his owner, for he was so tame and gentle, there was no trouble in driving him home to his accustomed pasture – as much in his actual possession and keeping as a domestic breachy animal can be who is absent from his home for weeks or months. Who can say, when this young animal should have matured he would not have returned regularly with the herd to their proper home? But, whether or not, it can not be denied, under the evidence, the animal was so tame and gentle as to render it no longer of a wild nature. It was completely tamed and, therefore, the subject of property.

Similarly in *E. A. Stephens & Co v Albers* (as discussed elsewhere, it is not altogether clear whether the animal is regarded as *ferae naturae* or *domitae naturae*), it was held that the fox remained the property of the plaintiff and that title to the pelt with a tattoo was in the plaintiff. Foxes were not indigenous to the area. It may be different if foxes are found at large in the countryside (*Reese v Hughes*).

The cases relating to bees and fresh pursuit also highlight what may be required, though sometimes they are disregarded in the cases relating to other animals for
reasons that are not clear (see *E. A. Stephens & Co v Albers*). The retention of possession by pursuit being common to all *ferae naturae*, no distinction should be made between any types of animals (i.e. bees, foxes or buffalo) or possibly presumed in respect of any classes. In that case (marks and domestication aside), the pursuit had long ended when the fox was shot. In *Campbell v Hedley* the plaintiff was not aware of the initial loss of the animal, so fresh pursuit was inapplicable.

In *Kearry v Pattinson*, [1939] 1 K.B. 470 a beekeeper sought to recover damages because the defendant prevented the beekeeper pursuing a swarm of bees from a hive of the beekeeper onto the defendant’s land. Slessor L.J. was of the view that there is really no authority for the proposition that the plaintiff had any right in law to follow the bees onto another’s land without consent. Slessor L.J. held the swarm only remained the property of a person whilst the person had the right in law to pursue it (he quoted Puffendorf 1672 in support of his view). This approach is consistent with an earlier Scottish decision of *Harris v Elder*, (1893) 57 J.P. 553 to the effect that once a swarm could not be lawfully followed onto the land of another, then anybody who hived the swarm became the owner. Arguably, lawful recapture has become impossible.

The United States decisions suggest a different approach. The position adopted by the court in *Goff v Kiils*, 15 Wendell (N.Y.) 548, 549 (1836) (and generally re-affirmed in *Brown v Eckes*, 160 N.Y. Supp 489 (1916)) is expressed in the following quote:

> The question here is not between the owner of the soil upon which the tree stood that included the swarm and the owner of the bees; as to him the owner of the bees would not be able to regain his property, or the fruits of it without being guilty of trespass. But it by no means follows, from this predicament, that the right to the enjoyment of the property is lost; that the bees, therefore, become again *ferae naturae* and belonged to the first occupant. If a domestic or tame animal of one person should stray to the inclosure of another, the owner could not follow and retake it, without being liable for trespass. The absolute right of property, notwithstanding, would still continue in him. Of this there can be no doubt. So in respect to the qualified property in the bees. If it continued in the owner after they hived themselves, and abode in a hollow tree, as this qualified interest is under the same protection of law as if absolute, the like remedy existed in the case of invasion of it.... It is said that the owner of the soil is entitled to the tree and all within it. This may be true, so far as respects an unreclaimed swarm. While it remains in that condition, it may, like birds or other game (game laws out of the question), belong to the owner or occupant of the forest, *ratione soli*.... But if animals *ferae naturae* that have been reclaimed, and a qualified property obtained in them, escape into the private grounds of another in a way that does not restore them to their natural condition, a different rule obviously applies they are then not exposed to become the
property of the first occupant. The right of the owner continues, and although he cannot pursue and take them without being liable for trespass, still this difficulty should not operate as an abandonment of the animals to their former liberty.... The cases of Hermance v. Vernoy, 6 Johns., 5, and Blake v Jerome, 14 Id., 406, are authorities for saying, if any were wanted, that the inability of the owner of a personal chattel to retake it all on the premises of another, without committing a trespass, does not impair his legal interest in the property. But it only embarrasses the use or enjoyment of it. The owner of the soil, therefore, acquiring no right to the property in the bees, the defendant below cannot protect himself by showing it out of the plaintiff in that way. It still continues in him, and draws after its possession sufficient to maintain this action against a third person who invades it by virtue of no other claim than that derived from the law of nature.

The American view is the view preferred by this thesis for the reasons expressed in Goff v Kitls. The limited property interest should not be defeated merely by the inability to enter the land of another. There should be no difference in these circumstances between an absolute and a qualified interest. The interest in an inanimate chattel is not lost if it is deposited or left on another's land (Vine v Waltham Forest London Borough Council, [2000] 4 All E.R. 169; Arthur v Anker, [1996] 2 W.L.R. 602).

9.2.3.2. Animals with Animus Revertendi

9.2.3.2.1. Introduction

This Roman law concept has already been discussed. Bracton (1250) clearly described its adoption. It is a form of notional possession, one that the law attributes to the person to whom the animals return, and a fiction of the law (see section 5.5.3).

9.2.3.2.2. Acceptance

Notwithstanding that Bracton (1250) mentioned it, none of the judges in YB (1521) 12 Hen. 8, 9 did so. Nevertheless there was considerable discussion about the nature of the property in ferae naturae outside of a park, forest or on a person’s land. There was no suggestion of there being a rule dealing with ferae naturae with an animus revertendi at this point.

Animus revertendi was however mentioned a few years later in YB (1528) 19 Hen. 8, 2 by Fitzjames J. and the other justices in a somewhat confusing context, namely, in connection with domitae naturae. It was discussed with acceptance on a number of occasions in The Case of Swans and also in Dewell v Saunders, specifically quoting Bracton (1250). There is clearly some confusion in this later decision though, with Montague C.J. appearing to suggest that the nature of the property was absolute, even when the pigeons are away from the dovecote, rather than qualified. Both Blackstone (1765-1770) and East (1803) confirmed this.
In more recent times there is no doubt that the property subsists in *ferae naturae* out of the owner’s land with *animus revertendi* (*Hamps v Darby*; *R v Sikyea*, [1964] 43 D.L.R. 2d 150, Affirmed 50 D.L.R. (2d) 80; *Ebers v MacEachern*; *Campbell v Hedley*) and that proceedings in trespass may be brought to recover for wrongful interference with that property (*Hamps v Darby*).

### 9.2.3.2.3. Habit of Returning

In the common law, *animus revertendi* does not appear to be a separate head of its own; it is an aspect of the art or industry of a person. Neither Gaius (n.d.) nor Justinian (553a) appeared to expressly require that an animal the subject of *animus revertendi* be the subject of industry. It is possible that the requirement of industry could be implicit, for the bees must be hived and both Gaius (n.d.) and Justinian (553a) refer to tame deer, a reference that could be construed as indicating that they have been subject to some labour or effort. Bracton (1250) followed this by requiring that the animals had been tamed, but nothing more. In *The Case of Swans*, there was a greater emphasis on industry; *animus revertendi* was merely an outward sign of retaining possession by reason of the art or industry of the person. There had to be some industry or effort. There must have been at least a taking of possession and some indication of an intention to retain possession, where the animals have the ability to come and go (*Fur Seal Arbitration* 1893). The emphasis was on a notional possession, one that is retained whilst the animals have this ability to come and go. Rabbits returning to their burrows on one’s land is insufficient; more is required. Rabbits returning to a hutch maintained by a person to be fed are different. There is industry on the part of the person providing the hutch and the food.

The intention is to be inferred from the habit. As long as the habit of returning exists, the intention exists, and when the habit of returning ceases, then the intention to return is felt to cease (*Fur Seal Arbitration* 1893). It is therefore dependent on each individual animal’s intention. A matter requiring examination in each individual situation, it is based on the evidence to be adduced at the time of the claim. This is unsatisfactory in many respects. In *Mullet v Bradley* a contention that the animal must return to its native place or another hospitable environment before the interest is lost was also rejected (see discussion of alien animals in section 9.7).

In *Ulery v Jones*, there was evidence that the calf had returned once voluntarily, but the more usual practice of the owner on receipt of a neighbour’s complaint was to have somebody drive the buffalo home. This was sufficient for the court to hold that a property interest subsisted. However, this decision may be sustained on the ground that all the neighbours were on notice, the animal was identifiable and apparently known to them (see sections 5.5.5, 5.5.6 and 10) or because of its tameness (section 9.2.2 and 9.2.3.1). That this decision has gone too far was suggested in *E. A. Stephens & Co v Albers* (a decision that may also be questioned). A mere absence in some cases has not been construed as a lack of an
intention to return, at least in the case of cats (*Whittingham v Ideson*, (1861) 8 U.C.L.J. 144). This could be extended to *ferae naturae*.

Another descriptions of what is required comes from the United States argument in the *Fur Seal Arbitration* (1893, 8:47):

*the essential facts which, according to these doctrines, render animals commonly designated as wild, the subjects of property not only while in the actual custody of their masters but also when temporarily absent therefrom, are that the care and industry of man acting upon a natural disposition of the animals to return to a place of wonted resort, secures their voluntary and habitual return to his custody and power, so as to enable him to deal with them in a similar manner, and to obtain from them similar benefits, as in the case of domestic animals. They are thus for all the purposes of property assimilated to domestic animals. It is the nature and habits of the animal, which enable man, by the practice of art, care and industry, to bring about these useful results that constitute the foundation upon which the law makes its award of property, and extends to this product of human industry the protection of ownership. This species of property is well described as property per industriam.*

As described, it is not the industry that is afforded a measure of protection; it is the property in the animals (*Fur Seal Arbitration* 1893). It reflects the industry, the training and inducing the animals to return (*Hamps v Darby; The Case of Swans*), the level of investment. The industry must be a positive undertaking, and a series of acts. On this view, there are three requirements for the interest to be maintained; some initial industry, an ongoing industry sufficient to induce the animals to continue to return and a propensity to return. The requirement of ongoing industry and a propensity to return clearly distinguishes between the rabbit returning to the burrow with nothing more and the one returning to the hutch. There are more difficulties with bees, where historically the colony was housed in facilities provided without much more.

Alternatively, a softer test may be considered, a test that requires an initial industry (a taming or reduction into possession) and thereafter an ongoing return, without requirement for continuing substantial industry. If an animal exhibits *animus revertendi* then there is (sufficient) evidence of it being tame and of the initial industry. The initial industry continues to be at work; it is evinced by the ongoing return. It is a view that accords with the Roman view and possibly Bracton (1250), but not so clearly that of the more modern common law. This view may accommodate a sea rancher relying on released fish utilising their homing instinct. The initial industry in raising and imprinting the fish is sufficient; the return evidences the initial industry.

The decisions ultimately do not appear to provide a clear distinction between those tests. They highlight the need for industry and the requirement for an initial
positive undertaking. The Fur Seal Arbitration (1893) would appear to suggest that the first of the tests is the applicable test, as does The Case of Swans, with its requirement that they remain tame, but it may be going too far to suggest that is what is intended in that case. On the other hand, Bracton (1250) and Brooke J. in YB (1521) 12 Hen. 8, 9 would appear to support the second test. They emphasise an initial effort of making the animal tame and would thereafter appear to allow the interest to continue, whilst the initial industry is reflected in the return (the return evidences the industry).

9.2.3.2.4. Natural Instinct

There appears to be no decision of a common law jurisdiction directly on this issue, though there is an extensive discussion as to whether the instinct needs to be that induced by artificial means, arise out of natural instinct alone or a combination of them in the Fur Seal Arbitration (1893). Whilst not a decision of a common law court, it involved two common law jurisdictions which submitted that the common law was the appropriate legal regime to be applied in the particular situation. It was a dispute between Great Britain and the United States arising out of an attempt by the United States to prevent vessels usually originating from the Canadian Pacific coast from engaging in pelagic fur sealing. The United States contended that the fur seals taken in the Pacific Northwest originated from the Pribyloff Islands in the Bering Sea and because of their propensity to return to those islands remained within the dominion or control of the United States. They went so far as to assert proprietorship.

The United States arrested and condemned a number of English vessels, causing considerable tension between the two countries. A treaty between them to refer the matter to international arbitration avoided an escalation of the dispute. The arbitration was convened in Paris in 1890 before a tribunal of seven members. The United States appointed two members: one was the Honourable J. Morgan, a senator of the United States Congress, and the other the Honourable Mr Justice J. Harlan, a judge of the Supreme Court. The United Kingdom appointed two members: one was Lord Hannen and the other the Honourable Sir J. Thompson the Minister for Justice and Attorney-General for Canada. The remaining three members were Baron de Courcel, Senator and Ambassador for France, Marquis Venosta, former Minister for Foreign Affairs and a Senator for Italy, and a Mr G. Gram, Minister of State for Sweden and Norway. The President was Baron de Courcel.

The tribunal found by a majority of five (the United States appointees dissenting) in favour of the United Kingdom, on most aspects. It found that the fur seals originating from the Pribyloff Islands were ferae naturae and the United States retained no interest once those fur seals departed from those islands and left the territorial waters. The seizure of vessels engaging in pelagic fur sealing by the United States was illegal. The tribunal recognised that conservation measures
were required, as argued by the United States. The law relating to *ferae naturae* with *animus revertendi* in the United Kingdom, the United States and under the civil law was discussed at length. The arguments provide a level of support for a number of views or contentions considered in this thesis. There are findings of the majority but no reasons; it is therefore necessary to look to the submissions and the dissenting opinions for much of the consideration.

The *Fur Seal Arbitration* (1893) discusses the uncertainty and extent of the industry that may be required, how *animus revertendi* may be induced to exhibit itself and how it may be distinguished from that occurring naturally. The issue is not whether *animus revertendi* continues to exist and how it is evinced, but rather its source or basis. Even that induced by artificial means relies on a level of natural instinct or propensity. It becomes a matter of degree. Clearly, the provision of feed, housing and an element of protection works on those instincts. In the case of bees, this is more difficult to assert, for one is not sure whether what is important is the ownership of the swarm or individual bees. The individual bee appears to return to the hive more by instinct than inducements, but the swarm is induced to remain in the hive (see appendix two). In this respect the view of Blackstone (1765-1770) that the interest in bees is *ratione soli* (a view that would avoid the problem) does not appear to be supported by the more recent decisions (even if supported by Bracton (1250), who alternatively might have been saying it arose out of captivity). Blackstone (1765-1770) looked to the Charter of the Forest (Chapter 13) for support, but that did nothing more than recognise that every freeperson is entitled to the honey and other produce found on their own land. Clearly, the modern law would adopt the view that a wild hive on a person's land is the landowner's, *ratione soli*. In the case of bees housed, it is suggested that the interest is more appropriately *per industria* (see discussion in appendix two).

The view of some would appear to suggest that, provided there has been occupation of an area, then the habit of animals of continuing to return to that area is sufficient. It enables humans to harvest and manage the stock. It enables a certain and continuous control (*Fur Seal Arbitration* 1893, dissenting opinion of Mr Justice Harlan). The more commonly held view is that a person must act on the instinct. Occupation and instinct are insufficient. There must be something more; there must be the provision of food, shelter and the ability to control the departure of the animal, the closing of the dove house or the confinement of the deer.

As already discussed, pigeons reared to return to a dovecote for feed and shelter are encompassed (*Hamps v Darby; Dewell v Saunders*). They return because they are reared to return and have inducements for doing so. The art and industry of humans is involved. There is likely to be a long list of different attributes or inducements that contribute to this reaction in a class or group of animals and the affected individual animals. The strength of those inducements is also likely to vary. It unfortunately is to be determined on a case-by-case basis.
The decision of the majority in the Fur Seal Arbitration (1893) included a finding that the animus revertendi of migratory animals returning to the same place is by itself insufficient to satisfy the requirements for the retention of property. Migratory animals, according to some are those that go and return. Is the length of time between the return relevant? What difference is it if the animal is away six hours, six days, six weeks, six months or six years? The issue is whether the animal intends to return, as evinced by its return. The period of absence is only one of the matters of evidence as to whether the animal has the intention to return (Fur Seal Arbitration 1893, E. Phelps in argument). Yet the English argument adopted the contrary view in the Fur Seal Arbitration (1893): if the animal spends time in one place and time in another then animus revertendi has no place (Fur Seal Arbitration 1893, Sir Charles Russell). The issue is not whether the animal spends time on one place or another but whether the art and industry of people induces an animal to return.

There was also a suggestion that it makes no difference how far or where the animals go. The example of carrier pigeons was used (Fur Seal Arbitration 1893, E. Phelps). Yet Blackstone (1765-1770) limited the interest in swans to those straying from the neighbourhood, as did East (1803) (possibly reflecting the writings of Blackstone). Again, swans can be distinguished and the applicability of these rules to them questioned (see appendix two).

In summary, clearly reliance on instinct by itself to gain a qualified interest is insufficient. If the instinct is acted upon or utilised by a person, by the art and industry of the person, then the position changes. Then it becomes a matter of degree as to whether there has been sufficient art or industry. The nature and extent will be different with different populations, bees merely require hiving whilst pigeons require dovecotes, feeding and a greater level of control over their coming and going.

9.2.3.2.5. Class or Animal

Once the animal is identified as a member of a population ferae naturae it is then a matter of evidence as to whether the individual animal has the intention to return (Ulery v Jones; Hamps v Darby). So long as the animal in fact retains its animus revertendi to the proprietor’s premises it remains the proprietor’s property.

It may not always be the intention of the individual animal that is relevant. With bees, which may foster another exception, the position is different. It is said that the bees have lost the intention of returning once swarming (Harris v Elder, (1893) 57 J.P. 553). This can be characterised both ways. On one view it can be said that the individual bee has the intention of returning until and unless it joins a swarm. The other view emphasises the swarm and the fact that the individual bees are not the factor, but the swarm as a whole (see discussion in appendix two).
Bracton (1250, 2:f.9) clearly considered that *animus revertendi* applied to all *ferae naturae*:

> if wild animals have been tamed, and they by habit go out and return, fly away and fly back, such as deer, swans, seafowls, and doves and such like, another rule has been approved, that they are so long considered as ours, as long as they have the disposition to return; for if they have no disposition to return, they cease to be ours.

Blackstone (1765-1770) did not limit its application to any particular class of *ferae naturae*. He described it in terms of a notional possession and his examples were few. Nothing in the cases appears expressly to suggest anything to the contrary, with the possible exception of vermin, though this unlikely to be the modern position (see section 9.6).

**9.2.3.2.6. Status Whilst at Large**

In *YB* (1476) 16 Edw. 4, 7 it is queried whether an action in trespass lies for taking pigeons that are at large with no marks. Haughton J. subsequently questioned the basis for this query. In *Dewell v Saunders* he said that whilst they are out of the pigeon house the owner has no property in them. Further, he said that it was shown to be a common custom throughout England that a person may kill pigeons about the land of the person and that they have always been treated as *bona nullius*. Crooke J. adopted the same view.

In the case of pigeons, it is now clearly affirmed that whilst at large with *animus revertendi* the animal remains the property of the proprietor. The proprietor may maintain an action in trespass against anybody killing the pigeon unless it is causing damage (*Dewell v Saunders; Hamps v Darby*). The same has been said of bees in *Tutton v A.D. Walter Ltd*, [1986] 1 Q.B. 61. Those principles will be applicable to all *ferae naturae per industriam* with *animus revertendi*.

*Ferae naturae* that are usually the subject of food in the community may also be the subjects of larceny even if they are at large and it is known that they are reclaimed (*R v Cheafor*, (1851) 21 L.J.Mag 43; *Taylor v Newman*). The older views to the contrary may now be doubted (*Commonwealth v Chace; R v Brooks*, (1829) 4 Car. & P. 131, 172 E.R. 639).

If the animals are causing damage, they are characterised as tame in scienter terms and have no known mischievous habits, then the rules applicable to killing them are those based on *Cresswell v Sirl*, [1948] 1 K.B. 241. In the case of bees these rules may be inapplicable, their killing may never be justified (*Tutton v A.D. Walter Ltd*).
9.2.3.2.7. Identification

The lack of ability to identify that a reclaimed animal is reclaimed has long been a concern in the common law (YB (1476) 16 Edw. 4, 7). So initially it was raised as a reason for not granting property interests in them (Lyster v Home) or querying them (YB (1476) 16 Edw. 4, 7), but once larceny and property separated it ceased to be such a concern (see discussion in sections 5.5.5, 5.5.6 and ten).

9.2.4. Released

In one United States decision, the issue was whether a person retained any property in ducks regarded as ferae naturae that had been purchased and released. The owner fed and cared for them in a manner more akin to pets than wildlife (In Re Oriental Republic Uruguay (Commando General De La Armanda and Servicio De Bugues Auxiliares) as Owner and Operator of the M/V Presidente Rivera for exoneration from or limitation of liability, 821 F. Supp. 950, 953 (1993)). The court said:

In the case at bar, although Grant's allegation that he “purchased” these ducks is undisputed, it is undisputed as well that Grant “released” the ducks, which clearly are animals ferae naturae, “into the marshlands surrounding the [Boatyard and Restaurant] facility” several years prior to their alleged death. (See D.I. 178 at A-4). Thus, while Grant may have had a “qualified” property interest in these ducks at the time he acquired them, the instant he “released” them back into the wild and “they depart[ed] into [another] liberty this qualified property cease[d].” See State v Niles, supra. The Court accordingly concludes that Grant did not, at the time of their alleged death have a property interest in the flock of ducks which he released into the marshlands...

There is some similarity between the state of these birds and the Canada geese in Kastaniuk v Sarsons, though in this later case whilst free to swim on the lake they had animus revertendi. They were raised in captivity and reflected a level of art and industry. They were held not to be in a state of nature. Animals released and clearly in a state of nature with no animus revertendi will not be the subject of property.

9.3. Animals Ferae Naturae Propter Privilegium and the Interest of the Crown

9.3.1. Introduction

Certain populations of animals about franchises, at least for some period, provide another example of the common law recognising a property interest in ferae naturae because of the efforts, industry and expenses of the owner of the franchise. The animals of the franchise and about the franchise are in notional
possession and the proprietor of the franchise has an interest as large as that in any domitae naturae whilst they are about the franchise. The interest is qualified because it is defeated by the departure of the animal of its own free will.

This discussion highlights that the common law developed another form of notional possession to protect and preserve effort and investment in ferae naturae. The common law did so in a manner that avoided a responsibility for the acts of the animal, once it departed from the franchise. This was a convenient device, one that avoided the need to characterise the population as domitae naturae. It founded the right on a grant from the Crown or a presumed grant from the Crown. The reason and basis for this grant is not so easily discerned. It may be based on the concept that the Crown was the proprietor of all ferae naturae, a contentious view (see appendix one). The early decisions may reflect this view. The more modern cases suggest the interest is founded on the efforts and outlay of the proprietor (see section 9.3.3).

Franchises ceased to be of significance in England by the time of Blackstone. More recently, the Wild Creatures and Forest Laws Act 1971 (UK) abolished them in England. The concept apparently never made the journey to the colonies, at least not to Australia (Yanner v Eaton and discussion in section 8.4 and appendix 5).

9.3.2. Creation

The common law recognised certain places that were franchised for the preservation of certain animals by grant from the Crown. They are regularly described as franchises. There were four such franchises: the forest, chase, park and free warren. A franchise is described as a royal privilege, or branch of the royal prerogative, subsisting in the hands of a subject by grant from the Crown. A forest was the highest franchise (embracing the others), the next was a free chase, a park and lastly a free warren. Exceptionally, breaches of the forest law were within the jurisdiction of the courts of the forest and not the common law. Each of the franchises had their allocated animals, without which the franchise did not subsist (Chitty 1812; Manwood 1615).

A franchise could also be claimed by prescription. Twenty years undisturbed exercise of a claim of free warren or park afforded presumptive evidence of a grant of a right in the party enjoying it (Chitty 1812). The franchise created was clearly a separate species of property. It co-existed with the fee simple. The owner of the fee simple was liable in trespass for hunting about the fee if the land was the subject of a franchise in favour of another (YB (1492) 7 Hen. 7, 13).
9.3.3. Rights in Respect of *Ferae Naturae Propter Privilegium*

Bracton (1250) did not mention the concept of *ferae naturae propter privilegium*. Notwithstanding that, the early decisions highlight (though they are one hundred and fifty years later) that, in respect of the franchises, the property in the hares and beasts of the warren (and the other franchises) is not in the owner of the warren (and other franchises), except by reason of the warren (and the other franchises). If animals leave the warren (and other franchises) of their own free accord, anybody may take them (*Henry Archbishop of Canterbury v W.T.*, *YB* (1425) 3 Hen. 6, Bro. Abr Trespass pl 10); they cease to be in possession of the owner of the franchise on leaving. This implies that in the franchises they are in possession (*L'Abbe de Dieu v J S.*, (1429) 7 Hen. 6, 2 Chitty 731; Coke 1641c), possibly a notional possession. Though generally those decisions recognise that the interest in the animal the subject of a franchise is something different from the interest in an animal *ferae naturae* about land (*YB* (1495) 10 Hen. 7, 6). Brian J. in *YB* (1478) 18 Edw. 4, 18 distinguished between the interest that a person has because of the nature of the animal and those that a person has because of the nature of the property (eg deer in a park).

In *YB* (1521) 12 Hen. 8, 9 Pollard J. declared that the proprietor of a forest or park has a greater interest in the beasts than a person who does not have a park or forest. A proprietor of land merely had a remedy in trespass to the land, but no possession of the animals. Pollard J. also declared that in a forest, however, there are foresters and anybody hunting may be punished by statute and so the owner of a forest has a greater interest. Eliot J. expressed the view that when the beast is in the forest it is in the possession of the forester, and it is not lawful for anyone to take it.

Brudnel J. appeared to take a more conservative view, stating that “the property in those which are *ferae naturae*, is in no one; for if a person has a warren with rabbits or pheasants, and a stranger takes them, he cannot say, *quare warrenam suam fregit et cuniculos aut phasianos suos cepit* &c, for a man may have a right in a thing, and yet no property; as a common well in a town,” (*YB* (1521) 12 Hen. 8, 9; Chitty 1812, 2:810). It is possible that the notional possession of animals about a franchise was initially limited to those of the forest, chase and park and only later extended to the free warren (though why there should be such a distinction is not obvious). The interest may give a greater right to pursue an animal from the franchise and whilst being pursued it may remain the property of the owner of the franchise (Pollard J., in *YB* (1521) 12 Hen. 8, 9) so long as it is identifiable (Brundel J. in *YB* (1521) 12 Hen. 8, 9).

The nature of this interest was further clarified in *The Case of Swans*, (1592) 7 Co. 15b, 17b, 77 E.R. 435, 438 (albeit possibly obiter):

> *But when a man hath savage beasts ratione privilegii, as by reason of a park, warren, etc. he hath not any property in the deer, or connies, or*
pheasants, or partridges; and therefore in an action, quaere parcum warrenum, etc. fregit et intrav, et 3 damas, lepores, cuniculos, phasianos, perdices, cepit et asportavit, he shall not say (suos) for he hath no property in them, but they do belong to him ratione privilegii for his game and pleasure, so long as they remain in the privileged place;

But clearly, from the foregoing, the interest is still very limited.

In Child v Greenhill it was held in respect of deer in a park or rabbits in a warren that the owner has a special property as long as they are in the warren or park. This is to be distinguished from deer or rabbits outside a park that are domestic, for then they are regarded as owned per industrium. The nature of the special property right is not explained, but the distinction is clear. A contrary view may be found in Mallocke v Eastly, but it can be distinguished; the park involved was not a franchised park but a so-called park. In the same year a court refused to quash an indictment claiming deer taken from a park were goods and chattels (The King v Foot), so implying a recognition of the special property rights.

This special property appears to be fully confirmed in Sutton v Moody, when Holt C.J. laid down that if a person starts a hare in a forest and hunts and kills it in another’s land, the property is in the owner of the forest. The property remains all the while in the proprietor of the forest, because the franchise continues. The differences were noted by Willes C.J., when he said that the court does not always observe the rule that a person bringing an action for chasing and taking deer, hares, rabbits, etc. may not say they belonged to the franchisee, because the franchisee had them only for the franchisee’s game and pleasure by reason of the franchise whilst they are in a park, warren, etc. (Davies v Powell). Willes C.J. may be interpreted as suggesting that this extended possession was wrong or inappropriate, emphasising a more limited interest.

The distinction between the nature of the interest in an animal about fee simple land and a franchise is also brought out by the difference in the available actions; an action in trespass to the land rather than action in trespass to the warren (Carrill v Pack & Baker, (1613) 2 Bulst. 115, 80 E.R. 996; also see explanation in Fitz-Herbert 1652).

In Duke of Devonshire v Lodge, (1827) 7 B. & C. 36, 108 E.R. 638 Lord Tenterden expressed the view that the scope of these ancient franchises should not be extended. They give property in wild animals to the owner of the franchise, to the exclusion of the owner of the land, where the interests are not concurrent. They also allow the owner of the franchise to pursue the animals of the franchise into the land of another and whilst doing so the property in them remains with the owner of the franchise. If the animals leave the franchise of their own free will, then they may be taken like any other ferae naturae; the interest ceases.
9.4. Animals *Ferae Naturae* and the Owner of the Land

9.4.1. Introduction

It is unclear from the authorities why the common law departed from the Roman law principles and created the interests *ratione soli* and *ratione impotentiae*. Both accrue to the landowner. Both interests are not recognised by Bracton (1250). The interest *ratione soli* appeared to wane after some centuries. The law continues to recognise it, though in practice it may be very hard to adequately describe. The interest *ratione impotentiae* does not suffer the same fate, though it appears to rarely arise in practice.

9.4.2. *Ratione Soli*

Either interest is difficult to justify in personal property terms unless the concept of notional possession is extended considerably. The concept of notional possession was probably influenced by a view that real property interests are paramount, or, as others have observed, the right appears to stem from a confusion of thought between rights in respect of land and property in respect of animals (Morgan 1967). The interest was most likely influenced by the development of rights in respect of franchises (some of the early decisions do consider both in the one discussion e.g. *YB* (1495) 10 Hen. 7, 6). The courts clearly had to grapple with the issue of when an animal is in captivity or simply about land. A deer in the house or garden of a person belongs to that person, and no one may lawfully take it (Brook J., *YB* (1521) 12 Hen. 8, 9). When does the garden or yard become so big that the *ferae naturae* cease to be in captivity and the interest becomes one *ratione soli*? Most likely when the animal cannot be readily taken, that is when the means required to recapture the animal is similar to that required for an animal at large (see later discussion). It may be different if the animal is tame.

A further ground that is mentioned on a number of occasions is that a trespasser should not be permitted to benefit from the wrong committed by the trespass. The trespasser should not profit from hunting on somebody else’s grounds. This becomes mixed up with the rights of the landowner to exclusive possession and the exclusive right to take the *ferae naturae* about the land, a special right as an incident of the land. In the words of counsel in *YB* (1495) 10 Hen. 7, 6 (Chitty 1812, 2:782) “when the deer are in my close no one had any right of profit from it, on account of my being nearer the possession of the beast than any other person.” This is emphasised more strongly later. The landowner has the interest by reason of the soil and they are “casual profits” of the soil.

Yet, there is a problem. *Ferae naturae* are regarded as chattels when in possession. For there to be property in chattels, possession or a notional possession is required, but these animals are not in possession either real or
arguably notional. The landowner does not know of their individual existence even if it is acknowledged that the landowner is aware of their possible collective existence.

This controversy is not confined to animals. It has arisen in connection with seaweed about the foreshore. In R v Clinton the defendant was held not liable in larceny for taking seaweed between high and low watermark which had been cast onto the shore, yet a few years later in another Irish decision the defendant was held liable in trover for taking seaweed between high and low watermark. The basis for that and the difference in treatment between inanimate and animate objects is highlighted in this later case of Brew v Haren, (1877) Ir.R. 11 Ex.Ch. 198, 217 by the following quote from May J.:

but I do not think the case of seaweed cast by the action of the sea upon the foreshore and that of animals ferae naturae are analogous. Wild animals in a state of nature have powers of motion and volition, over which the owner of the land on which they are found can exercise no control or dominion; when they have lost those characteristics, and become inanimate, they belong to the owners of the land which nurtures them, and on which they are found when dead. Seaweed is an inanimate vegetable production; if the natural agency of the winds and waves cast it upon the foreshore, and it is there left, it seems to me that it should be regarded as an increment or accretion to the land on which it is found, and that it should follow the ownership of such land.

The foregoing would appear to suggest that it is unnecessary to take possession of the seaweed or the inanimate object about the land, and in that respect seaweed is distinguishable from ferae naturae. Though even more recently it has been said “[n]or is there anything unusual in a person having property in an object of which the person is unaware. The common law has long recognised that a person may have property in an object although the person was unaware of its existence” (McHugh J., Yanner v Eaton, (1999) 201 C.L.R. 351, 377-378).

Some of the confusion or uncertainty in the early law can be seen in YB (1444) 22 Hen. 6, 9; YB (1478) 18 Edw. 4, 18; and YB (1521) 12 Hen. 8, 9. It is highlighted by the difference in views, in the 1521 decision, where Brook J. said: “For, if I have a deer in my house or garden, it is not lawful for anyone to take it; so, if he kill it in my land, I shall have the body, because it is mine, and in my possession; and it is not lawful for anyone to take it out of possession” (Chitty 1812, 2:806). But the foregoing quote does not say “if it is killed in the garden”; it says “if he kill it in my land ... because it is mine, and in my possession”. Pollard J., in the same decision, recognised that a person holding a franchise of a park has a greater right in the animals. An owner of stags in an enclosed ground has no interest in the stags; the owner has no remedy for a stranger hunting there, but an action of trespass to the land. The owner of the enclosed ground does not have possession of the animals (YB (1521) 12 Hen. 8, 9). The interest of the landowner is merely an exclusive right to take and kill the animals about the land.
Lord Coke was not constrained by those views when some years later he argued that pigeons though *ferae naturae* are reduced to property when they are in one's grounds by reason of the possession that one then has in them (*Coney's Case*, (1587) Godb. 122, 78 E.R. 75). Yet even after these decisions the doubt continued. In *Hadesden v Gryssel*, (1608) Cro. Jac. 195, 79 E.R. 170 the court initially found in an action by a commoner that rabbits were *ferae naturae* belonging to nobody. The court subsequently reversed its initial findings and held that so long as rabbits are about land they are the lord’s property and the lord may say *cuniculos suos* (the rabbits of the lord), but when outside the land the lord has no property in them.

Whatever the reason or influence, a few of the decisions of the seventeenth century suggest a return to the stricter view that the landowner (franchise aside) did not have an interest in the *ferae naturae* about the land. So undomesticated deer or rabbits about land were not the subject of limited property rights (*Child v Greenhill*, *Mallocke v Eastly*). By the close of the century the position that the landowner had an interest in *ferae naturae* about the land appeared to be accepted again. So, as Holt C.J. laid down in the often quoted statement in *Sutton v Moody*, 1 Ld. Raym 250, 251, 91E.R. 1063,1064:

*If A. starts a hare in the ground of B. and hunts it, and there kills it, the property continues all the while in B. But if A. starts a hare in the ground of B. and hunts it into the ground of C. and kills it there, the property is in A. the hunter; but A. is liable to an action of trespass for hunting in the grounds as well of B. as of C. But if A. starts a hare, &c, in a forest or warren of B. and hunts it into the ground of C. and there kills it, the property remains all the while in B. the proprietor of the warren, because the privilege continues.*

Aspects of this statement were approved in *Churchward v Studdy*, (1811) 14 E. 249, 104 E.R. 596 and more fully in *Earl of Lonsdale v Rigg*, (1856) 11 Ex. 654, 156 E.R. 992. In this later case Martin B. expressed the opinion that whilst *ferae naturae* are about a person’s property the person has a possessory property. This is a right which Martin B. acknowledged is very peculiar.

The second example offered by Holt C.J. in *Sutton v Moody*, is of A chasing the animal into the property of C and killing it there. However it is far more difficult to reconcile and it must be acknowledged as anomalous. It blatantly ignores the original wrong. It has been criticised subsequently in *Blades v Higgs*, (1865) 11 H.L. Cas. 621, 11 E.R. 1474. Arnold (1921) has described it as a “peculiar dictum”.

The status of this interest appeared to reach its high point during this period with the decision of *Keeble v Hickeringill*, (1706) 11 Mod. 74, 75, 88 E.R 898. In this decision, wild ducks in a person’s decoy pond were held to be the subject of property, Powell J. stating, “Every one has a property of things *ferae naturae ratione soli*.” It was applied again in *Carrington v Taylor*. 
Notwithstanding the width of *Keeble v Hickeringill* and its subsequent application, similar rights were not found to apply in respect of rooks, despite the plaintiff deriving considerable income from taking the young (*Hannam v Mocket*). They were not used for food (though in prior centuries they were (see Sebohm 1927): but were now effectively regarded as vermin (a matter recognised by statute), which everybody was permitted to kill. The situation was distinguished from *Keeble v Hickeringill* on the basis that wild ducks were good for food, protected by statute or the subject of property, and it was a mode of employing land in a profitable way. The plaintiff had no right to insist on rooks being in the trees about the plaintiff’s land. The claim was not based on *ratio soli*, *ratio impotentiae* or because of any art or industry of the plaintiff but his custom or use. It is possible that the decision would have been differently decided if based on *ratio soli* or *ratio impotentiae*.

Whatever the extent of the interest *ratio soli*, it does not prevent an adjoining landowner from enticing *ferae naturae* from the land of the adjoining owner without incurring any liability and the adjoining owner may only deter that by providing strong inducements for the animals to stay. The adjoining landowner may not use fireworks and like devices to deter the animals from departing from the land for that of the enticer (*ibotson v Peat*, (1865) 3 H. & C. 644, 159 E.R. 684; there was no consideration of the nature of the property interest), but it appears the landowner may fence or otherwise adopt more usual means to retain them.

The interest *ratio soli* persisted in the 1800s with Lord Campbell in *Ewart v Graham*, (1859) 7 H.L. Cas. 331, 11 E.R. 132, 344 stating “The property in animals, *ferae naturae*, while they are on the soil, belongs to the owner of the soil.” Thereafter it started to wane again, being described by the Privy Council as the exclusive right of killing or taking all game, beasts of chase and animals which are properly called *ferae naturae* on the landowner’s land (*The Falkland Islands Company Case*). Two years later Lord Westbury in *Blades v Higgs*, (1865) 11 H.L. Cas. 621, 631, 11 E.R. 1474, 1478, described it as “no more than the exclusive right to catch, kill and appropriate such animals which is sometimes called by the law a reduction of them into possession”. This description may be interpreted either way. Attempts at the time to prosecute poachers on the basis of that interest also failed (*R v Townley; R v Read; R v Petch*). These latter decisions were the subject of some criticism by *Anon.* (1878).

The decline of this interest continued in the 1900s in *Gott v Measures*, [1948] 1 K.B. 234, 239, where Lord Goddard C.J. said in respect of a person holding a right to hunt on the land of another:

>This case is one in which it seems to me that the respondent had no property in anything. *He had the sporting rights*. *He*, either by leave or license or by virtue of a grant, was entitled to go on the land for the purpose of hunting game, *but he had no property in the game*. *He had no property in the land*
and he had no property in the game until he had reduced the game into possession. Neither a person owning the sporting rights nor the landowner has any property in wild game. He has no property in a covey of partridges or in wild pheasants. If he has the pheasants in breeding pens, that is another matter, because they are in the same position as domestic fowls, but he has no property in a hare unless and until he has shot the hare and got it.

This may not fully accord with some more recent views such as Mason v Clark, [1955] 1 All E.R. 914 or possibly of McTiernan J. in Burnside and Marrakai Ltd v F.C.T., where the right to take ferae naturae within the boundaries of the property was regarded as a qualified property right.

The right ratione soli, whatever it may have been, is now a right that is an incident of the possession of the land. “The right to catch and kill is not a right of property in wild animals but an incident of the ownership of the soil”, a right in respect of the animals that is a “qualified property ratione soli in them for the time being whilst they are on that owner’s land” (Walden v Hensley, (1987) 163 C.L.R. 561, 566).

The right passes to the tenant unless it is the subject of a reservation in favour of the grantor (YB (1523) 14 Hen. 8, 1; Sutton v Moody; Pochin v Smith, (1888) 52 J.P. 4). The same applies to the right of fishing in a river when the land through which the river flows is the subject of a lease (Jones v Davies, [1902] K.B. 86). The reservation does not convert the interest into a franchise. The warrener is not in possession of the land; it remains with the grantee, but, no doubt, a right to enter and traverse the land for the purpose of taking the rabbits is expressly or impliedly reserved. Possession in the usual sense has been lost (Sutton v Moody).

The right to take ferae naturae may be the subject of a grant to another (Ewart v Graham; Read v Edwards, (1864) 17 C.B.N.S. 245, 144 E.R. 99). A number of earlier decisions support the grant of such licences (YB (1444) 22 Hen. 6, 52; YB (1444) 22 Hen. 6, 9; YB (1478) 18 Edw. 4, 18). In modern times it has been described as a profit à prendre, implying that it is the fruit of the land, a view consistent with that of the Lord Chancellor in Blades v Higgs. As will be seen, the right ratione soli may not extend to animals classified by the law as vermin (see section 9.6).

Some of the decisions in the United States courts may be stronger in this area than Gott v Measures, in United States of America v Oranna Bumgarner Felter, 546 F. Supp. 1002, 1020 (1985) it was said:

_Within the sphere of overall state regulatory authority a landowner has the exclusive right to take fish and game that is found upon his property; “the owner of the soil would have a qualified, but substantial, property interest in the fish upon his own land, with the exclusive right to reduce it to possession_
superior to that of others, and subject only to regulation by the state as a sovereign and under its police powers.”

9.4.3. Ratione Impotentiae

Again Bracton (1250) made no mention of a special or distinct property in the young of ferae naturae. It may be derived from Chapter 13 of the Charter of the Forest, which provides for the ownership of certain birds in the nest. If, as Lord Coke (1641b) suggests, the Charter of the Forest merely reflected the common law, then Chapter 13 suggests such a right was recognised by the common law. Like the interest ratione soli it appears to confuse the interest in land and in animals.

The remedy initially was merely in trespass to the land. Entering a close and removing six young goshawks in the nest was not claimed to give rise to a remedy in trespass for the young goshawks because the owner of the land had no interest in the young goshawks about the land and the same was said of young rabbits in a warren and deer in a park (YB (1444) 22 Hen. 6, 9). The writ in the decision was held to be good to the extent that it sought a declaration for trespass.

The position soon changed. An indictment was sustained for feloniously taking young pigeons that could neither leave nor fly on the basis that property in those pigeons was in the owner of the dovecote. As they could not escape the owner could take them at the owner’s pleasure (YB (1478) 18 Edw. 4, 18). This case can be justified on other grounds; the pigeons were in a dovecote, a place of captivity. However the report went on to suggest that it applied to young goshawks in a park, and taken at pleasure. It was affirmed by Brudel J. in YB (1521) 12 Hen. 8, 9; as animal’s in that person’s possession they cannot escape. In Anon., (1527) Jenk. 204, 18 Hen. 8, 2 it was held that the stealing of young hawks in the nests is larceny. Nevertheless, the matter clearly remained contentious, as it does not appear to be recognised by Fitz-herbert and Inglefield J.J. in YB (1528) 19 Hen. 8, 2.

In The Case of Swans, (1592) 7 Co. 15b, 17b, 77 E.R. 435, 438, the second method mentioned for acquiring an interest in animals ferae naturae is:

ratione impotentiae et loci: as if a man has young shovelers or goshawks, or the like, which are ferae naturae, and they build in my land, I have possessory property in them, for if one takes them when they cannot fly, the owner of the soil shall have an action of trespass.

Further, in Blackstone (1765-1770, 2:394), there is the following comment on the rights ratione impotentiae:

I have a qualified property in those young ones till such time as they can fly or run away, and then my property expires, Carta de Forest, 9 H 3, c13; but,
till then, it is in some cases trespass and in others felony, for a stranger to take them away.

Lord Westbury in *Blades v Higgs*, (1865) 11 H.L. Cas. 621, 631, 11 E.R. 1474, 1478, mentioned the right and made the curious observation that this rule relating to animals *ratione impotentiae* does not apply to animals "which are not in the proper sense *ferae naturae*". His Lordship’s comment was obiter. The effect of that was not explained, and the comment may be questioned because it applies to the young of all *ferae naturae* that are unable to leave the nursery.

This interest *ratione impotentiae* is rarely mentioned in any detail in more modern texts and articles. It is not mentioned in Ingham (1900) or Morgan (1967). In Trotter (1903) it is mentioned, but only in the terms of the description used by Lord Westbury in *Blades v Higgs*, without comment. The interest *ratione impotentiae* is mentioned in Halsbury’s *Laws of England* (1907, 1931, 1959, 1991), in all editions, though the authorities for the proposition have altered over each edition.

9.5. Progeny and Produce of *Ferae Naturae*

The general rule that the owner of the female is entitled to the offspring applies equally to those *ferae naturae* the subject to a limited interest as it does to *domitae naturae* (*The Case of Swans*). It is a right that is an incident of ownership.

As already discussed, the landowner also has a significant interest in the young *ferae naturae* about the land, but the status of the eggs and other produce of *ferae naturae* about land is not so clear, even though they are inanimate objects. They are about the land and cannot leave so should be treated like the young of *ferae naturae* (*Blades v Higgs* may provide support for this view). *Blades v Higgs* specifically mentions the eggs of rooks, but without discussing their status. The situation has also been highlighted in *Brew v Haren*. Eggs should be regarded as an increment or accretion to the land, effectively no different to seaweed (see section 9.4).

Aspects of the law relating to the eggs of a number of birds was addressed by statute at a relatively early stage, at least in the Crown’s lands (11 Hen. 7, c. 17 and later 31 Hen. 8, c. 12 and 32 Hen. 8, c. 11). There appear to be few decisions relating to them or comments in the texts.

Coke (1641b), Hale (1736) and East (1803) were of the view that larceny could not be committed of swans or hawks eggs and possibly other eggs of *ferae naturae*. A likely explanation is that the statute dealing specifically with such matters had excluded the common law, and this is the view expressed by East (1803). Hawkins (1716) questioned the position, but appeared to accept it.
The few more modern decisions are equally contradictory. In *R v Cox*, (1844) 1 Car. & K. 494, 174 E.R. 908, on an indictment for stealing three eggs, an acquittal was directed on the ground that the indictment did not disclose the nature of the eggs. They may have been eggs of adders or some other species in respect of which larceny could not be committed. The case was distinguished in *R v Allen*, (1844) 1 Car. & K. 495, 174 E.R. 908. It was effectively overruled by the Court of Appeal in *R v Stride and Millard*.

Consistent with the view that one has a possessory right to inanimate objects about one's land, a lessee of an island recovered damages from a fisher for taking sea-gull's eggs, for the lessee was held to have a possessory right to any wild bird which was on or over the land, and this extended to the eggs (*Anon.*, (1888) 22 Ir. L.T. 438). To the extent that this view was based on the possessory right to the wild birds, it may be doubted in view of the discussion in respect of *ferae naturae ratione soli*.

The right to inanimate objects on one's land is also consistent with *Elwes v Brigg Gas Company*, (1886) 33 Ch.D. 562 (the prehistoric boat case), and *McKee v Gratz*, in which the owner of the land had lawful possession of eggs (also see Theobald (1929) and the cases cited by him: *Lewis v Branthwaite*, (1831) 2 B. & Ad. 437, 109 E.R. 1205 and *Keyse v Powell*, (1853) 2 E. & B. 132, 118 E.R. 718). This interest is good against the whole world, other than a person in possession (*Hannah v Peel*, [1945] 1 K.B. 509). St. German (1523, f.13a) appears to quite clearly assert that such eggs belong to the owner of the ground:

*Nevertheless the eggs of hawks [herons] or such other as build in the ground of any person be adjudged by the seyd lawes to belonge [to hym that oweth the grounde] although they be outside of forests, chaees, parks or warrens.*

He said that this was the general law of England (it is likely to be attributable to Chapter 13 of the Charter of the Forest). The contrary position appears to have been adopted in Scotland, where it was held that a boy could not be charged with larceny of seagull's eggs taken from near a private artificial loch. It was said that there was no property in them until appropriation of the wild birds and their eggs (*Anon.*, (1892) 1 S.L.T. 6). This case may have no application in England as the Scottish law adopted more fully and faithfully the Roman law. However, Lord Alverstone C.J. in *R v Stride and Millard*, although obiter, said that the taking of bird's eggs directly from wild nests does not amount to larceny.

Honey in a hive is another case of an inanimate object about land. If it is regarded as the property of the landowner, then this view is consistent with the Charter of the Forest (chap 13), which affirms that the produce of wild bees belongs to the owner of the soil. The early United States decision of *Goff v Kitls* suggests a more qualified and appropriate view, namely, that the property of the produce of bees is with the owner of the bees notwithstanding it is on the land of a third party (enforceable against the whole world). The earlier decisions of *Wallis v Mease*, 3
Binn. (Pa.) 546 (1811) and Rexroth v Coon, 15 R.I. 35, 28 A. 37 (1885) may suggest to the contrary, but both must be doubted. The former contains a discussion of the issue but appears to be at odds with the other authorities mentioned in this thesis. The latter is the subject of an adverse note in Anon. (1898-1899) (also see Ingham 1900 and Merrils v Goodwin, 1 Root. (Conn.) 209 (1790), adopting a similar approach to Goff v Kitts). The property should be in the owner of the bees even if the owner of the land may be entitled to hold the hive, the bees and the honey distress damage feasant. The latter is only security for the damages suffered by the trespass.

9.6. Vermin

During at least one period, the common law clearly created another distinction in its treatment of ferae naturae, distinguishing between those that it regarded as vermin and the others. Vermin were different from animals of a base character, though some of a base character may have been regarded as vermin at times (Wadhurst v Damme, (1604) Cro. Jac. 45, 79 E.R. 37). Why and when the distinction came to be made is not clear from the cases. Brooke J., in YB (1521) 12 Hen. 8, 9, said that entry onto land to kill a fox, a gray or an otter, whilst a trespass, would not be punished at common law; no penalty would be assessed. It was in the common interest for such animals to be destroyed, as they were beasts against the common good.

In Wadhurst v Damme, it was also said that it was common in England to kill dogs in all warrens, as any vermin (the direction was primarily concerned with the right to kill dogs and cats in a warren). This right was re-affirmed by Dodderidge, J., with some qualifications, after first stating that it is not lawful for anyone to hunt for pleasure, or for profit, on the land of another, other than where it is for the good of the commonwealth (Gedge v Minne, (1614) 2 Bulst. 60, 80 E.R. 958). Where a person enters another’s land to find vermin, without consent, it is a trespass, but when in pursuit it is not necessary to obtain the consent, because it is justifiable. A person entering the land may not dig for the vermin without committing trespass (Gedge v Minne).

A little later, a pursuit of a fox into another’s land that started in the person’s own land was permitted “because it is a ‘noisome beast’ and the same for a wolf, as an outlaw, as Bracton says, everyone may pursue him” (Mitten v Fawdrey, (1624) Pop. 161, 163, 79 E.R. 1259, 1260). Again in 1786 it was said by the court in Gundry v Feltham, (1786) 1 T.R. 334, 99 E.R. 1125 that trespass could be justified when following a fox with hounds over the ground of another, if the person in pursuit did nothing more than was necessary to kill the fox. The basis of the right to pursue a noxious animal was doubted in Earl of Essex v Capel, (1809) 2 Chitty 1381.

The right to pursue animals onto the land of another was more recently restricted in Kearry v Pattinson (see discussion in section 9.2.3). The court did not wish to
comment on *Gedge v Minne*, but to the extent that it did, it saw no reason to extend the right. There is no principle of law that justifies trespassing on the land of others for fox hunting for sport (*Paul v Summerhayes*, (1878) 4 Q.B.D. 9).

It may be asserted therefore, that there was no interest in vermin as animals *ratione soli*. If the law regarded them as noxious and effectively a trespass was permitted to kill them, it was unlikely to protect them or regard the owner as having a sufficient interest (similar to the view expressed in *Blades v Higgs*), though it may have been different if they were in captivity. So a commoner was not justified in destroying rabbits, a right the commoner would have if they were vermin, "for a cony is a beast of the warren and as profitable as deer and are not to be compared to vermin" (*Bell v Langdon*, (1600) Cro. Eliz. 876, 78 E.R. 1100).

A similar view, at least in respect of foxes, was adopted by some in the United States (see Livingston, J. (dissenting) in *Pierson v Post* where he said it was meritorious and to the public benefit to put foxes to death).

9.7. Alien Animals

An alien animal is one of a population not naturally found nor introduced and now feral. The issue can only arise in respect of *ferae naturae*. If the alien animal is regarded as *domitae naturae* then there is no issue. The current trend of decisions in England, Canada and Australia on the rights of property in animals does not show any indication of adopting criteria that would allow absolute property rights to subsist in alien animals wandering at large. They are distinguishable and anybody finding such an animal would be on notice that it is only likely to be free because it has escaped. Some support for the concept that they are *ferae naturae* can be found in the comment of Blackstone (1765-1770; 2:391-92):

*But however well this motion may be founded, abstractedly considered, our law apprehends the most obvious distinction to be, between such animals as we generally see tame, and are therefore seldom, if ever, found wandering at large, which it calls domitae naturae: and such creatures as are usually found at liberty, which are therefore supposed to be more emphatically ferae naturae.*

This view has been expressed occasionally in United States decisions (eg *E. A. Stephens & Co v Albers*). In Canada, which adopted a Criminal Code based on the report of the Royal Commissioners in England in 1879 (Royal Commissioners on the Criminal Code 1879), a distinction was recognised between those *ferae naturae* commonly found at large in the jurisdiction and those that are not. In the latter case theft is committed if the animal is taken with the requisite intent whilst at large.

The absurdity of the situation is highlighted by an escaped lion. A lion is *ferae naturae* in all communities. A lion wandering at large in South Australia would
on general concepts be regarded as open to the first taker (see section 9.2.3.1). In the Fur Seal Arbitration (1893), Lord Hannon said if you give a foreign bird its freedom, then English law would not regard it as the property of the person who allows it to fly freely, but subject to the general law applicable to wild birds (Fur Seal Arbitration 1893).

It is even more absurd in those jurisdictions that have adopted the Criminal Code approach suggested by the Royal Commissioners on the Criminal Code (Royal Commissioners on the Criminal Code 1879; Canada did, but has now repealed these provisions, the former section 322(5) of the Canadian Criminal Code (R.S. 1985, c.46): Crankshaw 1894 and see discussion in section 5.5.4.) In those jurisdictions there is no property in the lion at large but anybody taking the animal, with the intention of keeping it, commits larceny, notwithstanding that property has been lost at common law. The criminal law creates a notional property interest, an interest that is not a property interest that may be protected by a private remedy but an interest protected by the criminal law. It is another example of the individuation of the common law.

The problem of alien animals was also discussed in E. A. Stephens & Co v Albers, 256 P. 15, 18 (1927):

\[ \text{We are loath to believe that a man may capture a grizzly bear in the environs of New York or Chicago, or a seal in a millpond in Massachusetts, or an elephant in a cornfield in Iowa, or a silver fox on a ranch in Morgan county, Iowa and snap his fingers in the face of its former owner whose title had been acquired by a considerable expenditure of time, labour, and money.} \]

The absurdity of the situation is further highlighted in liability terms by the lion at large. The effect of the law of torts (under a number of different heads) is likely to be that if a person is possessed of an animal regarded as wild by nature and it escapes and does damage, then the person in possession immediately prior to its escape will be liable for the damage. Once another person takes possession of the lion, the person formerly in possession of the lion is likely to cease to be liable for any further damage it causes. The person taking possession intending to keep it does not commit larceny (statutory intervention aside), but will thereafter become liable for its acts (see Anon. 1891-92 for a discussion of aspects of this and E. A. Stephens & Co v Albers for a contrary view and for a similar discussion in respect of an escaping rattlesnake).

If the animal remains clearly identifiable, why should the original possessor lose that person's interest? The animal is identifiable and distinguishable, it is not normally found wandering at large in that community, and anybody finding it should be on notice that such an animal belongs to somebody. One difficulty in this context may be that anybody killing the animal may be liable to the former possessor (the rules relating to animals doing damage, or to the reasonable
apprehension of them doing damage, should exonerate that person; see Cresswell v Sirl; also see Hannah 2001 for a suggestion that in some jurisdictions there may not be a remedy).

In summary a *ferae naturae* that is an alien animal and escapes without *animus revertendi* becomes a *res nullius* and belongs to the first taker at common law, notwithstanding its unusual or distinguishable characteristics. The former owner loses any interest. Larceny cannot be committed at common law (but may be committed under statute in some jurisdictions) by taking the animal and there is unlikely to be liability in tort for the acts of the animal if it is regarded as tame in scienter terms (unless it has some history or possibly propensity to do wrong). The former owner of a *ferae naturae* that is also regarded as wild for scienter purposes or has a propensity to do wrong (depending on the applicable rules in the jurisdiction) is in the same position, save that the former owner remains liable for the damage that the animal causes until, most likely, someone else takes possession of the animal.

### 9.8. Some Other Situations that Impact on the Proprietorship of *Ferae Naturae*

#### 9.8.1. Game Laws and Enclosure

It is not possible in this thesis to consider the impact of the many game laws adopted in England or the enclosure legislation (either private or public). The thesis simply recognises that they have had an effect.

Whatever the justification of those laws, they appear to have avoided the necessity of applying the criminal law to animals about land. The game laws soon extended their limitations and penalties widely, so the importance of some aspects of the rights to take *ferae naturae* became even less relevant. The Roman law concept that a wild animal could be taken by anybody soon had little relevance. The jurists soon offered a justification for these laws (Puffendorf 1672; Blackstone 1765-1770).

This was furthered in England by the process of enclosure (Munsche 1981). Enclosure not only broke up the common land into private ownership but also indirectly allocated most *ferae naturae* to those landowners. On the view of Munsche (1981), it extended the rights *ratione soli*, it excluded the commoners, whatever their rights may have been, and it made the rights of the landowner more secure.

After enclosure, in some cases the *ferae naturae* were bred and nourished, and more generally hunted and killed at the landowner’s pleasure. They therefore ceased to be wild, though arguably never domesticated (assuming that domestication means living in the company of humans). The common subject
was prevented from taking the *ferae naturae* so enclosed by trespass and in some cases by the provisions of the criminal law, both directly and indirectly (though as already mentioned this may have been very limited). They were protected for the benefit of the landowner (see section 9.4 for the changing nature of this protection). Therefore, as Munsche (1981) says, as a “result of enclosure, they had become a type of private property and were entitled to protection as such”, though based on the views expressed in this thesis he may be overstating the position.

### 9.8.2. Statutes Vesting Ownership of Wild Animals in the State

A more recent development that has affected the proprietorship of *ferae naturae*, in many jurisdictions, is the introduction of legislation vesting the ownership of *ferae naturae* of the jurisdiction in the state. Most of these provisions are conservation measures. They are an alternative to the more conservative approach of simply prohibiting the taking of certain animals. In many cases, the provisions only apply to wildlife prescribed by regulations, proclamations or orders in council. In some cases, no-one can acquire a right of property in wildlife taken (whether dead or alive) unless the holder of a permit. This is a curtailment of the interest *ratione soli* (including *ratione impotentiae*). The scope and nature of such provisions vary widely. Examples of that type of legislation can be found in Western Australia, the Northern Territory, Queensland, British Columbia and Alberta.

The approach is reminiscent of the claim that the ownership of all *ferae naturae* is in the Crown (see appendix one). The interest of the state is a proprietary interest (*Yanner v Eaton*); the statute implies a notional possession, if such statutory rights need such a foundation. The statute creates more than mere dominion.

There are parallels in the United States where state ownership and control of *ferae naturae* is accepted and has been variously based on the police powers and public trust concepts, though the nature of the latter interest is very limited and does not amount to a usual property interest (*Commonwealth v Agway*, 210 P. Super 150, 232 A. 2d 69 (1967)). This is more fully discussed in Favre and Loring (1986) and the various materials described in that text, including the uncertainty of the continued application of the public trust concept.

### 9.9. Summary of Qualified Property Rights in *Ferae Naturae*

In conclusion, *ferae naturae* are animals that are not members of populations of animals *domitae naturae* (with the possible exception of molluscs). A proprietary interest may be obtained in *ferae naturae*, but the interest is qualified; it may be brought to an end by the exercise by the animal of its power of locomotion. The common law has recognised that a number of interests may be obtained in *ferae naturae*, the extent and nature of which differ. Some recognise the efforts and
economic involvement of a person with the animal; others recognise an interest because of an interest in land, which is a confusion of concepts.

The most significant of those interests and the one with the most practical relevance is characterised as *per industriam*. This interest embraces animals in captivity, the clearest indication of a claim to property, and those *ferae naturae* that are free to come and go as they please with *animus revertendi* by reason of the art and industry of a person. Each type of interest has its issues, such as defining captivity and when instinct is subsumed by the efforts of a person. Rabbits on a seven hundred acre farm are unlikely to be in captivity in the sense contemplated by this situation. If the animal has the ability to come and go and habitually returns because of the efforts of the person through the provision of housing, food or training it has *animus revertendi* and the law imputes a notional possession. It must be more than instinct. Animals the subject of an interest *per industriam* are the subject of a qualified property, an interest as large as that in *domitae naturae*, so long as the animal is in possession or notional possession.

From sometime in the Middle Ages a further interest based on the efforts and economic involvement of a person, is that *propter privilegium*, or at least that is how a notional possession is justified, in animals about the land the subject of a franchise. Prior to that, it most likely was based on the claims of the Crown to have dominion, if not ownership, of all *ferae naturae*. It is on the fringe of being confused with an interest arising out of a fee simple interest in land. The interest is limited to the classes of animals to which it applies. Whilst the animals are about the franchise a qualified property, an interest as large as that in *domitae naturae*, subsists in the animals. The use of the concept helps to explain why some populations of animals did not need to be re-characterised as *domitae naturae*. This concept never made the journey to some of the colonies and for most practical purposes it is obsolete in England.

Finally, there are interests that arise because of the ownership of land. The interest *ratione impotentiae* is as large as any interest in any inanimate object about the land, until the young have the ability to depart the nest. It then becomes nothing more than an interest *ratione soli*. This interest may have been nearly as large as that *propter privilegium*, but now, it is nothing more than the exclusive right of the landowner (subject to any reservations or grants to the contrary) to hunt on the land of the landowner (with the possible exception of fisheries, as discussed in section twelve and appendix five). This interest may be of little practical value or significance in those jurisdictions where property in wildlife is vested in the state by statute, assuming the expressions "wildlife" and "ferae naturae" are the same in most respects.

Other developments over much of the period considered have affected the nature of the interests in *ferae naturae*. They have included the impact of the process of enclosure, the game laws, the development of new industries and activities in the colonies, and various claims by the Crown (whether by reason of the supremacy
of the Crown or more recently by statute) to ownership of ferae naturae. They all have their applications in various ways to fish.

10. Brands and Marks

10.1. Introduction

Clearly, marks on cattle have been used as a means of identification since humans first started treating individual animals as the subject of property. By the seventh century, there was a practice in England of branding and marking swine before their release into the forests in autumn and winter to feed on beech and mast (Seebohm 1927). There is little reference to the use of brands as a means of identification in the dooms, though identification and the use of witnesses to vouch ownership was an important procedure (see the Ordinance respecting the Dun–Setas, section 1, Thorpe 1840 for a specific reference to the identification of cattle by marks).

The use of marks was common for much of the time under consideration in this chapter. There appears to be little authority in the cases, and where it exists it may be regarded as inconclusive, as will be discussed later in this section. There is little in the early statutes as to their use. There is no issue where brands and marks are used in connection with domitae naturae. The issue here is whether brands or marks may be used to extend the duration of the qualified property rights in ferae naturae. This is clearly contentious, but particularly relevant to this discussion. If a brand is nothing more than an evidentiary aid to prove ownership, then allowing it to be used to retain a proprietary interest in ferae naturae will significantly extend that limited role.

However, some authorities on the use of brands and marks on swans, falcons and hawks may suggest that their use may be effective to retain ownership of ferae naturae. The authority is very much of the Middle Ages. Most modern statutes relating to brands and marks deal with their use on domitae naturae and it is only in some very recent statutes that their use may be extended to all animals.

10.2. Early History of Use and Developments in the Common Law

As already stated the use of marks was common for much of the time under consideration in this chapter. The landed proprietors, whether lords of manors or heads of religious or other houses, in medieval times each had their own mark or marks, which they used to indicate the ownership of their stock. The same custom prevailed amongst the yeoman class and right down through most grades of society. Each person had a family mark. It was placed upon the house, the cattle and other animals, whether domitae naturae or most likely ferae naturae. The use of swan marks can be identified as far back as 1230 (Ticehurst 1957).
The first statute in England that can be identified as formally controlling the use of brands and marks is one of 1482, the statute 22 Edw. 4, c. 6, relating to swan marks (fully discussed in appendix two). Notwithstanding the introduction of such early legislation to control the use of marks there appears to be no further substantive statutory development regarding their use on other animals in England.

This is not to suggest that the use of marks on livestock was not sometimes regulated or controlled. One example of such regulation can be found in the first article of the Code of Fen Laws or Orders for regulating the use of common right and pasturage passed by the Court of the Duchy of Lancaster and by the Great Inquest of the Soke of Bollingbroke in 1548. It prescribed the brands or marks that each person stocking the fen was required to place upon cattle. Whilst an individual could place any mark of private proprietorship the individual pleased upon the cattle of the individual, in addition it was necessary to place upon each of them the brand of the parish in which the person lived. These town brands were fixed by the inquest of the Soke of Bollingbroke. The “form and fashion” of these brands were regarded as very singular (Thompson 1856).

Some of the European jurists had also turned their attention to the use of such marks as a possible means of identification and more importantly the reclamation and continued assertion of property rights in feræ naturæ. In this, they did not always agree. Grotius (1625) asserted that an animal feræ naturæ once taken and marked remained the property of the person marking the animal. Puffendorf (1672, 581) however resisted this notion, in a qualified way, for the following reasons;

But the opinion of Grotius in the same passage, namely, that by the use of γυαλισματα [tokens] attached to wild animals, or bells, and other marks dominion can be maintained over such animals as have escaped from our custody, and that therefore they do not go to the first person who secures them, can, in my opinion, be accepted only for such as have been domesticated by men, and have lost their native wildness, and which for that reason properly enjoy the right of tame beasts. Therefore, if that deer of Tyrrius in Vergil, Aeneid, Bk. VII [484 ff.], carried such marks, Ascanius surely gave good cause for the consequent commotion ...

But when a mark has been put upon animals that are merely kept in a park, and they afterwards escape into natural liberty, it is nearer the truth to say that they go to the man who secures them. For a strict guard or a perpetual occupancy, as it were, is needed, if an animal is to be retained which has by nature an unlimited power to wander, and which always frets at restraint, there being no mark that can bridle such a nature.
Is there a difference between those that have escaped and those that are released? Blackstone (1765-1770) did not pursue this aspect in his Commentaries, other than for swans in the manner already mentioned, namely that a wild swan taken, marked and set free in a river remains the property of the person taking it so long as the swan remains in the neighbourhood. Williams (1939, 338) briefly discussed the matter in a discussion of ferae naturae reverting to the wild state but in doubting terms:

_It may be doubted, however, whether marks of ownership would really be sufficient to ensure the duration of property – whether, for example, an escaped fox would continue to belong to its captor merely because its tail had been clipped._

The role of brands on domitae naturae has been mentioned. Their effect is briefly described by Hale (1736, 506-07) in the following terms:

_If the sheep of A stray from the flock of A into the flock of B, and B drives them along with his flock, or by pure mistake shears him, this is not a felony, but if he knows it to be another's and marks it with his mark, this is evidence of felony._

The comments of Hale (1736) appear to have been applied in _R v Read_, but not in the context of animals. Ticehurst (1957, 81) recounted an example of a similar but earlier prosecution in connection with the use of marks on domitae naturae:

_“In the Hundred Court of Seaford, Sussex, in 1583-4, the Jury presented John Comber for markying of three duckes of Edward Warwickes and two ducks of Symon Brighte with his owne marke and cutting owt of theire markes.”_

The recitals in the statute 22 Edw. 4, c. 6 relating to swan marks would also suggest that even prior to statutory intervention, at least in the case of swans, the effect of the application of the mark was unequivocal. The recital reads:

_Where as well our said sovereign lord the king, as other lords, knights, esquires, and other noble men of this noble realm of England, have heretofore greatly stored of marks and games of swans in divers parts of this realm of England, until of late that divers keepers of swans have bought and made to them marks and games in the fens and marshes, and other places, and under colour of the same, and surveying and search for swans and cygnets for their lords and masters, have stolen cygnets, and put upon them their own mark, by which unlawful means the substance of the swans be in the hands and possession of yeomen and husbandmen, and other persons of little reputation._

Two implications may be drawn from this recital. The first is that by the use of the marks it was possible to appropriate and acquire property in cygnets afresh and without anything more. If swans were indeed ferae naturae (see appendix
two), then the implication is that *ferae naturae* may be taken and property retained by the use of marks. The second is that before the statute, anybody may have marked an animal and gained property in it without anything more (but this may be doubted, at least after the decision in *YB* (1405-6) 7 Hen. 4, 9).

Another view is that the statute merely added a property requirement to the existing requirement of a grant from the Crown (the other merely included for completeness) to limit those who may acquire an interest either by prescription or assignment. Ticehurst (1957) suggested that, at least since the decision in *YB* (1405-6) 7 Hen. 4, 9, no subject could have property in swans at large on a public river except by grant from the Crown (or by prescription) and the provision of a swan mark.

*The Case of Swans,* (1592) 7 Co. 15b, 17a, 77 E.R. 435, 438 expressly acknowledged that a marked swan remained the property of the owner notwithstanding that the swan was "swimming in open and common rivers lawfully marked". This was justified on the basis of "ratione privilegii", apparently because of the requirement of a grant from the Crown and a sufficient tenement to sustain the holding of a swan mark on pain of forfeiture under the statute 22 Ed. 4, c. 6 or by prescription. This suggests that the peculiar nature of the interest arises out of a franchise or peculiar custom and cannot or should not be extended. However, as has already been described, the use of the mark appears to have become a matter of privilege with the introduction of that statute.

The view that swans should be treated differently from other animals is supported by the comment in *The Case of Swans,* (1592) 7 Co. 15b, 17a, 77 E.R. 435, 437 that swans are regarded as different from "kine, or other brute beasts", namely different from both *domitae naturae* and *ferae naturae* (citing *YB* (1405-6) 7 Hen. 4, 9). Whether swans were regarded at the time as *ferae naturae* or *domitae naturae* is a matter discussed in appendix two. The appendix highlights that there are some dangers in relying on decisions relating to swans.

In *Athill v Corbett,* (1615) Cro. Jac. 463, 79 E.R. 396, an action for trespass for a greyhound with a collar that was coursing a hare on the defendant's land, the court held that replevin would lay for the greyhound as it did for a ferret. Apparently, the owner was not present, but that is not stated, so the fact of the collar was significant as a matter of identification. As discussed elsewhere, during much of this time, dogs were regarded as *ferae naturae* though some property interests were recognised. The decision suggests that collars therefore did preserve property rights in respect of dogs and more importantly, by implication, *ferae naturae.*

There are also a number of decisions about hawks, again an animal of a somewhat special status (see Blackstone 1765-1770 and some early statutes, 34 Edw. 3, c. 12 and 37 Edw. 3, c. 19, governing the taking of lost hawks). These decisions focus
on the question of identification or reclamation by the use of marks or other devices. So an action for trespass for striking and killing a hawk without more was sustained on the basis of possession. The court distinguished it from *Spencer's Case*, (1572) 3 Dy. 306, 73 E.R. 692, for it was an action for trover and conversion, which only lay for a reclaimed hawk. A hawk could be reclaimed by varvels, bells, or by some other mark indicating that it was owned (*Vincent v Lesney*).

A few years later in an action for trover and conversion of a hawk called a rammish falcon it was contended by the defendant's counsel that the declaration did not show that the hawk was made tame nor that she had bells or varvels to show who was her owner (*Lyster v Home*). The reporter was not of that view, but two of the other judges apparently were prepared to adopt it. The reporter was of the view that this was not relevant, as the defendant knew the bird belonged to the plaintiff. There are no suggestions that hawks were ever regarded as other than *ferae naturae* (though they could be the subject of larceny according to Blackstone 1765-1770, suggesting some special treatment). So once reclaimed, it appears that the existence of ownership and the identity of the owner could be displayed by the use of marks, collars or other devices.

Blackstone (1765-1770, 2:392) said of the use of marks:

> But if a deer, or any wild animal reclaimed, hath a collar, or other mark put upon him, and goes and returns at his pleasure; or if a wild swan is taken, and marked, and turned loose into the river, the owner's property in him still continues, and it is not lawful for anyone to take him, but otherwise, if the deer has long been absent without returning or the swan leaves the neighbourhood.

The quotation suggests three principles. The first is that a brand can be used effectively on *ferae naturae*. The property only subsists in *ferae naturae* if the owner retains some connection with the animal, such as *animus revertendi* or the animal remains in the neighbourhood. In practice, the mark adds little where there is *animus revertendi*. A more contentious and uncertain proposition is put forward for swans though. In the first place, it is unclear whether it is illustrative of the principle applicable to all *ferae naturae* or limited to swans. In the first place, it is unclear whether it is illustrative of the principle applicable to all *ferae naturae* or limited to swans.

The generality of the quotation appears to support the more contentious proposition that the taking of a *ferae naturae* and marking it is a sufficient act of appropriation, at least so long as it remains in the neighbourhood, even without *animus revertendi*. Whatever "the neighbourhood" may mean, it is clearly a limited area of the community. The authorities offered by Blackstone (1765-1770) for the foregoing are "The Case of Swans*, (1592) 7 Co. 15b" and "Compt. of Courts 167". In an immediately succeeding footnote there is a reference to Puffendorf (1672) but no reference to the view of Grotius (1625).
There are other comments in a few decisions to the effect that a particular *ferae naturae* had no marks to indicate ownership, implying that if it had been marked or collared then the situation may have been different. One such comment is in *YB* (1476) 16 Edw. 4, 7, where an issue arose as to whether a writ should be issued by the Chancery for a trespass to doves, since the doves were flying and had no marks by which they might be known. The implication from the decision is that if they were marked so that ownership could be known, then property in the pigeons would have been retained (though other decisions up to *Dewell v Saunders* suggest to the contrary in relation to pigeons).

In the United States decision of *Atkinson v City and County of Denver*, 118 Colo. 322, 195 P. 2d 977 (1948) the plaintiff claimed ownership of unconfined squirrels, the inferior court finding that the plaintiff had made pets of squirrels, fed them and raised some. But none of the squirrels that the plaintiff claimed were confined or kept on the premises of the plaintiff. The plaintiff claimed to own some eighteen or twenty squirrels that roamed the neighbourhood for blocks around without any mark of identification. They were therefore incapable of identification, except possibly by the plaintiff. In *Koop v United States*, a case involving mallard ducks, it was noted that no-one could distinguish between the mallards raised on the ponds and those that visited, other than for two tame and distinguishable birds.

In a few of the decisions relating to deer already mentioned the fact that as a matter of course young deer were marked for identification and breeding was noted, but nothing was made of that fact in deciding the nature or status of those animals (*Morgan v The Earl of Abergavenny*, discussed in *Brady v Warren*, [1900] 2 I.R. 632). In *Brady v Warren* the court commented that certain deer that strayed out of a demesne were not marked. They could not be identified (apparently in connection with the suggestion that they were *ferae naturae*). In response to that suggestion Johnson J. (who dissented in part), said that it did not make any difference. The deer do not change their nature or character as “domesticated animals”. It is the same as sheep or cattle who are unmarked or who lose their marks. This point was made again in *Reeve v Wardle*.

In the *Fur Seal Arbitration* (1893, 4:533-34), Sir Richard Webster for the United Kingdom described the position:

*Now, I would point out that if they were marked, or branded, it would make no difference on the question of property. If I mark my pheasants, those actually hatched by me, and reared by me, and fed by me, and they fly out to other people's land, they have a perfect right to shoot them. Suppose I should mark every young rabbit .... If a rabbit went out on my neighbor's property, he would have a right to shoot it. The only case, as I endeavored to point out to the tribunal on the last occasion, in which property is given in such animals, is when possession is taken; and possession is not taken by marking a wild animal and letting it go.*
This is oversimplifying the situation at least in respect of those animals with *animus revertendi*, as can be seen from *Hamps v Darby* and ignores the comments in *The Case of Swans* and of Blackstone (1765-1770).

Animals that bear the same brand cannot conclusively be held to be the property of the same person (*Uhr v Stevens*, (1886) 27 S.A.L.R. 127). Also, property in unbranded animals running wild with animals bearing a brand will not be affected by the presence of the branded animals (*Uhr v Stevens*). There is to be no implication from the association.

On the basis of the foregoing, an animal *ferae naturae* taken and marked without anything more may remain the property of the person marking the animal, at least within the neighbourhood (accepting the limitations in *The Case of Swans* and Blackstone 1765-1770).

10.3. Identification, its Role and Intermingling

The matter of identification in the context of the applicability of criminal law and commingling has been discussed in relation to identification and property rights. A brand or mark on *domitae naturae* is nothing more (unless the statute or custom is to the contrary) than an aid to prove ownership, a matter of identification (*Reeve v Wardle*), and a factor to be considered in connection with all the evidence of ownership (*Yarborough v Kilbee*, 307 So. 2d 223 (1975)).

In the case of *ferae naturae* the brand may serve two purposes. The first is to demonstrate a claim to ownership and, if that is recognised, the second purpose is evidence of ownership. The matter of identification is significant from a public policy perspective, as already discussed in section 5.5.5.

The basis of the distinction is again the issue. Animals naturally wandering at large is a convenient shorthand description of animals that may be taken (conservation and game laws aside). But there are other factors now. There are now restrictions on taking many animals, and the community has come to accept this. Most people would accept that if an animal has a brand, collar or discernible mark somebody claims an interest in the animal. It is claimed to be owned, even if *ferae naturae*.

The difficulty this creates may be more readily dealt with by differences in the remedies, as the common law appears to have adopted in other situations (e.g. dogs and cats). Namely, taking animals wandering at large that the community expects to find freely available merely gives rise to a civil not a criminal remedy. So if an animal, not being within the class accepted by the community as *domitae naturae*, is marked in a manner that indicates a claim to proprietorship, which would not be discernible prior to its taking, then its taking is not criminal but may still give rise to a civil remedy. Once taken however and the claim is discernible
from an examination of the animal, there should be no difference in consequences in respect of subsequent acts. The risk for the community is wholesale appropriation of *ferae naturae* of any value. Some aspects of this problem and its impact in Canada were considered in *Campbell v Hedley*.

Very much associated with the matter of identification is the question of legal rights where property has been mixed or confused, so that the individual items can no longer be discerned. Fish released as part of sea ranching or escaping from an aquaculture site may, without appropriate means of identification, become mixed and confused with their wild cousins. In the more usual situations, the problem arises where two or more indistinguishable items are mixed and once mixed cannot be separated into the original constituent parts. The classic situation is where the grain or oil of two persons are mixed. Again the common law is borrowed from the Roman law.

Mixing by agreement, accident or unauthorised act of a third party gives rise to ownership in the respective shares of the proprietors. If it occurs through the wilful act or omission of one person then the rule is said to be that the person committing the wrong suffers the loss. The whole belongs to the person wronged (Vaines 1962). Vaines (1962) also suggests that it is doubtful that these fundamental rules will be invariably applied in cases where they would lead to a substantial injustice. This latter comment would appear to be a basis for accepting some of the Canadian decisions that apply the principles somewhat differently. In the case of logs and pelts wrongly taken and mixed, the person wronged is permitted to take from the collective mass that number of items that have been wrongly mixed of a like grade to those of which that person has been deprived (“M.V. Polar Star” v Arsenault (1964) 43 D.L.R. 2d 354; McDonald v Lane, (1882) 7 Can. Sup. Ct. 462).

If property rights persist in released animals and they become confused with other animals, as they are likely to be, then this issue will arise. It is likely that the approach that will be adopted is not the principles relating to intermixture, but one that subordinates the interest of the person releasing the animals to the general community interest. The issue has been considered in a number of decisions in respect of molluscs in the United States and in most situations the owner of the oyster plat succeeds with the court recognising that if planted oysters are indistinguishable from naturally occurring oysters, the owner of the plat should not succeed. In *Fleet v Hegeman*, 14 Wend. (N.Y.) 42, 46 (1835) where oysters, artificially planted in a bed clearly separated and marked out for the purpose of retaining them, were held to be the subject of property and a person taking them without the permission of the owner was liable in trespass, the court said:

*The right of the plaintiff to the oysters is within the reason of these principles. They have been reclaimed and are as entirely within his possession and control as his swans or other water fowl that may float*
habitually in the bay. They were distinctly designated according to usage: and besides the defendants had actual information of the ownership and they can set up no greater right to take them because found in their native element than tame pigeons in the air or a domesticated deer upon the mountain. If the bed interfered with the exercise of the common right of fishing, or if the oysters were undistinguished among others belonging to the public waters, the interest of the owner in them would undoubtedly be subservient to the enjoyment of the public use.

Similar views were expressed in State v Taylor, 27 N.J.L. 117, 122-23 (1858):

Now this case finds that the oysters in question could readily be identified; that no oysters grew naturally where they were planted, and that the spot where they were planted was designated. The subject of the property, having itself no power of locomotion, and being planted where no other oysters naturally grew, it was (as in the case of deer in a forest) put without power of the owner, nor thrown into the common stock, from which it could not be distinguished... But admitting, as may be done, that the planting of the oysters in the public waters was a clear case of nuisance and encroachment upon the public right, it could give the defendant no right to steal them or appropriate them to his own use.

In Lowndes v Dickerson, 34 Barb. (N.Y.) 586, 589 (1861) the subservience of the interest of the person laying out the oysters, where there may be confusion, was emphasised: "the bed shall not interfere with the exercise of the common right of fishing; for if the oysters were mingled with and undistinguishable from others of natural growth in the public waters, the interest of the person planting them would be subservient to the public use".

Some of the preceding United States views were approved obiter by Fletcher Moulton L.J. in Foster v Urban Council of Warblington. These decisions highlight that interference with the public right to fish is the principle difficulty rather than the identification problems. Notwithstanding that, Fletcher Moulton L.J. was prepared to accept some interference with the public right to fish where the activity is for the benefit of the community as a whole. He said, Foster v Urban Council of Warblington, [1906] 1 K.B. 648, 684:

I have no doubt that this is a mode of utilizing the foreshore which works for the general benefit of the realm, that is to say, which adds to the industries of the realm, that would have been, and in fact was, viewed in the middle ages as being perfectly legitimate, and which has been largely carried on both then and since.

The foregoing would suggest that, where the released animals cannot be properly and adequately identified, the rights of the person who released or lost the animals will be made subservient to the general right to take them. If they are identifiable,
there may still be an argument that it is an interference with the public right to fish to require the return to the water of the animal identifiable as owned. In the case of commercial fishing, in many jurisdictions there is no longer any public right to undertake commercial fishing. It has been abrogated by statutory prohibitions. The right to undertake commercial fishing is subject to obtaining a licence and more recently in some areas a quota, subject to any area and gear restrictions imposed by that licence. Further there is also an obligation to sort and return certain animals to the sea.


Much of the older legislation in the common law jurisdictions dealing with the branding of animals (apart from those designed for disease control) is limited to specific *domitae naturae*. An example is the Northern Territory Brands Act, which only applies to stock (which by definition includes cattle, buffaloes, camels, horses, sheep and swine (section 4)). Similar schemes can be found in many of the states of the United States of America. Much of this legislation simply seeks to regulate and control the use of brands. It does not seek to extend or alter the role of brands.

The more modern legislation usually includes a definition of stock, which may be extended by regulation. Under the New South Wales Rural Protection Act 1997, the regulations may make provisions relating to the branding and earmarking of stock. This is expressed to include cattle, horses, sheep, goats, camels, alpacas, llamas, pigs, deer, ostriches and emus or, in relation to any specified provision or provisions of the Act, any other kind of animal declared by the regulations to be stock for the purposes of those provisions. The Western Australian Stock (Identification and Movement) Act 1970 adopts much the same approach as does the Livestock Identification Act (R.S.B.C. 1996, c. 271) of British Columbia.

The South Australian Livestock Act 1997 (the aspects that will repeal the Brands Act 1933 had not been brought into effect as at 1 October 2001) has gone much further. Its definition of livestock includes animals kept or usually kept in a domestic or captive state, including poultry, fish or crustaceans kept or usually kept at a fish farm or in an aquarium, and bees for which a hive is kept (section 3). It applies to any animal in a domestic or captive state. The emphasis appears to be on members of the population being usually kept rather than on individual animals. So once members of a particular population are usually “kept” then the population is within the definition. A Register of Brands is only required in respect of prescribed classes of livestock (which are yet to be prescribed). Subject to that, a brand may be registered for use in connection with such a population notwithstanding the existence of their wild cousins. There is however no attempt to address the underlying ownership question or status of such an animal at large (it is simply used as a means by which the owner may identify the animal; it does
not create a presumption of ownership). In this respect the legislation may be regarded as deficient.

The definition of a brand is also expanding. The South Australian Livestock Act 1997 uses an inclusive definition, but with a more traditional listing, which includes a paint or firebrand, earmark or tattoo. The definition of a brand in the British Columbian Livestock Identification Act (R.S.B.C. 1996, c. 271), whilst an exclusive definition, includes an identification impressed or affixed on or within the body of livestock to indicate ownership, and clearly contemplates a non-external mark (section 1). That provision is more likely to accommodate both otolith and genetic marking.

Few jurisdictions create any presumption of ownership arising from the use of a brand. One example of where that does occur is in section 29A of the Northern Territory Brands Act, in the following terms:

_In any proceedings, proof that an animal is branded in accordance with the provisions of this Act with a registered brand is prima facie proof that the animal is the property of the owner of the registered brand._

A combination of the South Australian definition of stock with the British Columbian definition of brand and a presumption of ownership could create a regime for the ownership of _ferae naturae_, even when outside the control of the owner.

10.5. Conclusion

As has already been demonstrated the common law has shown a very marked reluctance to allow property rights to subsist in animals that cannot be readily identified as being the subject of ownership. The class _domitae naturae_ facilitates identification, and _ferae naturae_ in captivity and enclosures are in modern times also usually adequately addressed, but _ferae naturae_ at large have until more recent times required an obvious external sign of ownership. Whilst there is authority to support the view that proprietorship may be maintained by the use of marks on _ferae naturae per industriam_, it is not without its doubts. Without legislative intervention or the acceptance of the proposition in section 10.3 that marks may preserve ownership of _ferae naturae_, a mark only assists in providing evidence. Once ownership ceases by operation of law, there is no ownership to prove, notwithstanding the mark.

Applying this to fish regarded as _ferae naturae_ is even more contentious where the fish have been raised from egg to fingerling and marks are proposed as a means of retaining proprietorship. In this situation, there has been a level of industry, and once the animal is released the mark clearly evidences an intention to retain a qualified property right in the _ferae naturae_. There is no intention to abandon the animals or to leave them to nature.
Further, as the mark is intended to perpetuate the property that arises from industry and without 
*animus revertendi*, then it will be likely that the courts will require that the mark is discernible. Permitting such interests to prevail should not cause the community too much consternation, particularly as the right to take fish becomes further proscribed by legislation and the benefits of enhancement to the community are realised. This is especially so where the interests are of a competing commercial nature. It should be generally accepted that a commercial fisher taking a released and identifiable fish should pay damages to the proprietor. At a practical level, any such proprietor is likely, for the time being, to have considerable difficulty in collecting the necessary evidence for such an action.

11. **A Summary and Classification**

This chapter has sought to describe the development and formulation of the rules that determine the nature of the interests attainable in animals in the common law. It has demonstrated how the basic principles were taken from the Roman law, some possibly introduced by Bracton (1250), and thereafter developed over the ensuing centuries to the modern day.

The chapter has sought to describe the modern rules for distinguishing between *domitae naturae* and *ferae naturae*. In doing so, it has suggested that the law emphasises the existence of a population of animals distinguishable by a community as such a population. It recognises that a population of animals that is tame, as a population, and that either has a history of association with the community or has been subjected to significant or consistent exploitation in a manner recognised in that community (other than by hunting or gathering) is to be regarded as *domitae naturae*. A series of criteria have been suggested and a combination of some of them is required to show that there is consistent exploitation. This latter aspect recognises the economic investment of the community in that population and that the needs of the community are met from that population and by that investment. The test requires that the population is recognisable, not in a species sense but by some distinguishing aspect, a matter that may create difficulties in some situations.

In animals that are *domitae naturae* a person has an absolute property; they remain the property of the owner wherever they may be, unless the person has abandoned them. All other animals are to be regarded as *ferae naturae*. In those animals, a person has a lesser interest, a qualified property. The extent of the interest is dependent on the characterisation of the nature of the relationship with the animal. The common law developed four such characterisations, though in practical terms only one is now significant. That interest may be described as *per industriam*, a characterisation that embraces both *ferae naturae* in captivity and those that have *animus revertendi* because of the art and industry of a person. The interest recognises the economic investment of a person in those animals. It is an
interest as large as that attainable in domitae naturae, save that the interest may be defeated by the actions of the animals. The interest is lost if the animal leaves with no intention of returning. The other interests are characterised as propter privilegium, ratione soli and ratione impotentiae. The interest propter privilegium is now effectively obsolete in those jurisdictions where it may have once been found. The latter two arise from the ownership of land. The interest ratione soli may now be nothing more than the exclusive right to hunt on a person’s own land. The interest ratione impotentiae, while far more extensive, is in practice of little significance.

Ferae naturae with animus revertendi are the subject of property (reflecting the industry and effort) and the marking of such an animal adds nothing to the status of the property; it helps to identify that the animal is owned and provides evidence of who may be the owner. Ferae nature the subject of industry and marked but without animus revertendi may remain the property of the person marking the animal, at least within the neighbourhood. Outside that it may be lost. A ferae naturae taken and marked without anything more may remain the property of the person marking the animal but that appears far less likely. Again, it may be limited to the neighbourhood.

This chapter has sought to provide a test for the determination of the status of an animal from many different decisions over many centuries involving many different areas of the law in various jurisdictions. It has also sought to demonstrate that generally there is little direct relationship between the classifications and considerations of science in this area and the common law. The latter forms its own views based on the needs and requirements of the community, having appropriate regard to the explanations and assistance that science may provide.

Clearly, the common law had minimal interest in the scientific basis for the classification and timing of domestication of a population. As has been described in section 8.5.5 it was concerned with the efforts of the community and association with humans, but not with the source of tameness once the population was classified as domitae naturae.

Aspects of the foregoing are also demonstrated in table 6, which compares the ecological and legal status of various animals and the period in which their status may have altered. Where possible their legal status in England is also described in general terms.
Table 6
Classification of Some Animals

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<th>Animal</th>
<th>Period and Commentators on the Ecological Status</th>
<th>Classification in the Common Law</th>
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<tr>
<td>Ass</td>
<td>May have penetrated Britain by the late Pleistocene period. They were domesticated in Egypt by the time of the protodynastic period (Zeuner 1963) or the fourth millennium B.C. (Epstein 1984). It is also suggested that asses were not adopted in Northern Europe until the Middle Ages. Another view is that they arrived in Britain with the Roman occupation (Williams 1939; Seebohm 1927).</td>
<td>Classified as aver (Williams 1939) and therefore <em>domitae naturae</em>. Its part offspring, the mule, is regarded as <em>domitae naturae</em> (Patterson v Devlin).</td>
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<tr>
<td>Bees</td>
<td>Domesticated by Neolithic humans (Williams 1939). The usual tests are difficult to apply, though in modern beekeeping queens are reared from eggs that are the progeny of a selected breeder queen and artificial selection is now pursued (Crane 1984). This is usually a reference to the honey bee <em>Apis mellifera</em>.</td>
<td>Regarded as <em>ferae naturae</em> up until possibly <em>O’Gorman v O’Gorman</em>, [1903] 2 I.R. 573 where Kenny J. suggested they were not <em>ferae naturae</em>, which is also adopted in <em>Stormer v Ingram</em>. So possibly <em>domitae naturae</em> in those jurisdictions. Most other decisions regard them as <em>ferae naturae</em>: <em>Kearry v Pattinson</em>, <em>Goff v Kitls</em> and <em>Brown v Eckes et al.</em> The concept may only apply to the swarm not the individuals (<em>R v Nitschke</em>, [1928] S.A.S.R. 229).</td>
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<tr>
<td>Camels</td>
<td>Domestication of the dromedary was probably achieved in the fourth millennium B.C. and the bacterin by the first half of the first millennium B.C. (Zeuner 1963), whilst others place the occurrence earlier, namely 25000 to 1000 B.C. and prior to 2500 B.C. respectively (Mason 1984).</td>
<td>Regarded as <em>domitae naturae</em> for liability purposes in England in <em>McQuaker v Goddard</em> and in Western Australia in <em>Nada Shah v Sleeman</em>. It was also said obiter in <em>Nada Shah v Sleeman</em> that may be the subject of cattle trespass and thus <em>domitae naturae</em> for ownership purposes.</td>
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<tr>
<td>Cattle</td>
<td>Domesticated prior to the fourth millennium B.C. (Zeuner 1963), possibly by about 5500 B.C. (Epstein &amp; Mason 1984), whilst others suggest by the neolithic community (Williams 1939; Seebohm 1927; Galton 1864).</td>
<td>Classified as aver (Williams 1939). Mentioned regularly in the dooms. Clear from <em>YB</em> (1478) 18 Edw. 4, 18; <em>YB</em> (1498) 13 Hen. 7, 16; <em>(Anon., 1498)</em> Keil. 30, 13 Hen. 7 and <em>Reeve v Wardle</em> that their status was <em>domitae naturae</em>. Though there are suggestions in <em>The Falkland Islands Company Case</em> that there may be cattle <em>ferae naturae</em>.</td>
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<tr>
<td>Cats</td>
<td>Most likely domesticated prior to the sixth century B.C. Introduced to Britain by the Romans (Zeuner 1963). Another view is that domesticated in Egypt between 2000 and 1000 B.C. and introduced to Britain by about 400 A.D. (Robinson 1984).</td>
<td>Property in them recognised in <em>The Case of Swans</em>, Coke (1641a), Hale (1736) or possibly earlier, but much like dogs were regarded as <em>ferae naturae</em> until more recently. Whilst doubtful, there may be some support in <em>Nye v Niblett</em> that they are <em>domitae naturae</em>.</td>
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<td>Crustacea</td>
<td>None regarded as domesticated (Wickins 1984). Recent advances in the understanding and the level of production of crawfish (<em>Procambarus clarkii</em>) and the tiger prawn (<em>Penaeus monodon</em>) in aquaculture may cause this view to be questioned (see Avault 1996 for examples of these advances).</td>
<td>A saltwater crayfish was regarded as a fish in <em>Caygill v Thwaite</em>, (1885) 49 J.P. 614 without further consideration of its status. Accordingly the situation appears to be that they are regarded like most fish, as <em>ferae naturae</em>. The decision is questioned in <em>Leavett v Clark</em>, [1915] 3 K.B. 9, but followed. A closer examination of the extent of the culture and its effect on a few crustacea may suggest a change in status.</td>
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<td>Deer</td>
<td>Fletcher (1984) is ambiguous as to the timing of the domestication of fallow deer, possibly implying their domestication by the Bronze Age. There is uncertainty as to their original presence in England, with the possibility that they may have been reintroduced in Norman times (Fletcher 1984). The same commentator makes no suggestion as to the domestication of red deer, simply noting humans exploited them in a selective way and they, with fallow deer, were the principal occupants of deer parks in medieval Europe.</td>
<td>Long regarded as <em>ferae naturae</em> (<em>YB</em> (1495) 10 Hen. 7, 6; <em>Davies v Powell</em>) but more recently appear to be regarded as <em>domitae naturae</em> (<em>Morgan v The Earl of Abergavenny; Ford v Tynte and Brady v Warren</em>). Williams (1939) doubts the change of status from <em>ferae naturae</em> to <em>domitae naturae</em>.</td>
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<td>Animal</td>
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<td>Dogs</td>
<td>The origins of the domestic dog are uncertain (Zeuner 1963). It was probably domesticated prior to Mesolithic times (Zeuner 1963) and clearly by ten thousand years ago (Clutton-Brock 1981).</td>
<td>In the 1300s absolute property appeared to subsist (Williams 1939; YB (R.S.) (1294) 21 &amp; 22 Edw. 1, 527; De La More v Thwing, (1308-1309) YB (S.S. 17) 1 &amp; 2 Edw. 2, 176). During much of the subsequent period they are regarded as <em>ferae naturae</em>, with a fresh or possible continuing recognition of property interest (<em>The Case of Swans</em>; Coke 1641b; Hale 1736; Anon., (1527) Jenk. 204, 18 Hen. 8, 2). Trover allowed in respect of dogs (or some breeds) in <em>Ireland v Higgins</em> (1588) Ow. 93, 74 E.R. 925, citing the court roll 13 Hen. 7, Rot. 35. Subsequently recognised as <em>domitae naturae</em>, albeit obiter, in <em>Hamps v Darby</em>. Dogs have been said to be goods in <em>The Queen v Slade</em>, (1883) 21 Q.B.D. 433. The United States decisions are confusing (Ingham 1900). Not all members of the family <em>canis</em> are regarded as <em>mansuetae naturae</em> for liability purposes and most likely property purposes (see <em>Fischer v Stuart</em>, holding that dingos are <em>ferae naturae</em>; <em>Temple v Elvery</em>, where a cross between a great dane and prairie wolf was <em>ferae naturae</em> whilst a cross between a husky, hound and wolf was held <em>domitae naturae</em> in <em>Sparvier v MacMillan</em>).</td>
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<th>Animal</th>
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<tr>
<td>Ducks</td>
<td>Introduced to England, not generally kept until the latter half of the thirteenth century (Williams 1939; Seebohm 1927), but no suggestion as to when domesticated (Williams 1939; Seebohm 1927; Zeuner 1963). Later suggestion that not domesticated in Europe until the Middle Ages (Clayton 1984). The domestic duck is derived from the green-headed mallard and hybridisation can occur relatively easily (Clayton 1984).</td>
<td>Classified as aver (Williams 1939). Were held to be the subject of a writ of rescue in <em>Westley v Fulewelle</em> and thus to be regarded as <em>domitae naturae</em>. It may be assumed that the determination is limited in some manner to a distinguishable population of domestic ducks.</td>
</tr>
<tr>
<td>Ferrets</td>
<td>Domesticated prior to the fourth century B.C. There is uncertainty as to the time of arrival in Britain (Zeuner 1963) but it appears to have occurred early in the thirteenth century (Owen 1984).</td>
<td>Property in them recognised clearly in <em>Athill v Corbet</em>, or possibly earlier (Anon., (1527) Jenk. 204, 18 Hen. 8, 2) but there is nothing to suggest that they are not still regarded as <em>ferae naturae</em>.</td>
</tr>
<tr>
<td>Fowl</td>
<td>Domesticated by about the second millennium B.C. (Zeuner 1963). Arrived in England most likely before Caesar (Zeuner 1963), domesticated possibly from about the seventh century in England (Williams 1939; Seebohm 1927; Thrupp 1865).</td>
<td>Classified as aver (Williams 1939). Also, comment in <em>Pomelesburne v Bishop of Ely</em> <em>YB</em> (S.S.) (1312) 6 Edw. 2, 34, 125 that all beasts can be put into a common and this includes chickens, thus <em>domitae naturae</em> (though aspects of this may be doubted, later authority confirms status – also see geese and turkey).</td>
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<tr>
<td>Foxes</td>
<td>Generally not kept by humans. Some have been, though not usually regarded as being fully domesticated, as they preserve the main characteristics of the wild animals (Belyaev 1984 et al.).</td>
<td>Regarded as <em>domitae naturae</em> in a few jurisdictions and <em>ferae naturae</em> in most others (<em>Reese v Hughes; Campbell v Hedley; Ebers v MacEachern; E. A. Stephens &amp; Co v Albers</em>).</td>
</tr>
</tbody>
</table>
| Geese  | Kept by humans from Neolithic times and possibly domesticated by the Greeks (Zeuner 1963). Arrived in Ancient Britain before Caesar, domesticated in Britain possibly from about the seventh century (Williams 1939; Seebohm 1927; Thrupp 1865). | Classified as aver (Williams 1939). Replevin was sought of an ox and forty geese in 1309, having been distrained damage feasant. No question as to appropriateness for both (*Westley v Fulewelde*). Also may be the subject of a writ of rescue and aver accordingly. Also comment in *Pomelesburne v Bishop of Ely* that all beasts can be put into a common and this includes geese (Williams 1939 says incorrectly translated as ewes). Thus regarded as *domitae naturae*.
| Goats  | Domesticated by neolithic humans and possibly the first of the ruminants to be domesticated (Zeuner 1963; Williams 1939; Seebohm 1927; Galton 1864). Another view is that it occurred over 7000 years ago. | Classified as aver and regarded as *domitae naturae* (Williams 1939). In *Pomelesburne v Bishop of Ely*, replevin was granted for goats taken distress damage feasant. A comment in argument was that goats and swine are not “beasts”, however the editor added “beasts of common.” Appear to be regarded as *domitae naturae* and clearly regarded as so in *The Queen v Drinkwater*, though may only be obiter. |

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<tr>
<td>Guinea Fowl</td>
<td>Introduced to England about 1530 possibly through Portugal, but no suggestion as to when domesticated (Williams 1939).</td>
<td>Classified as aver (Williams 1939), apparently on the basis that similar to any other fowl and therefore to be regarded as <em>domitae naturae</em> (see fowl above).</td>
</tr>
<tr>
<td>Falcons and Hawks</td>
<td>Not regarded as domesticated in the strict sense (Zeuner 1963).</td>
<td>Regarded as <em>ferae naturae</em> YB (1521) 12 Hen. 8, 3, though larceny may be committed (possibly because of early statutes), Blackstone (1765-1770) appears to suggest because of common law. If marked with bells or varvels then property interest may be retained (<em>Lyster v Home</em>; <em>Vincent v Lesney</em>).</td>
</tr>
<tr>
<td>Horses</td>
<td>One view is that horses were domesticated somewhere prior to 2500 B.C. (Zeuner 1963). Another view is domesticated to some extent by neolithic humans (Williams 1939; Seebohm 1927; Galton 1864) and completed sometime later, though this latter view may be limited to England (Williams 1939; Seebohm 1927; Galton 1864).</td>
<td>Classified as aver (Williams 1939). In <em>Ireland v Higgins</em>, the plaintiff described horses together with cattle and other animals serving humans as the same. Regarded as <em>domitae naturae</em>.</td>
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<tr>
<td>Molluscs</td>
<td>Some molluscs are described as domesticated by Yonge (1984) based on cultivation but not control of spawning.</td>
<td>Regarded as <em>ferae naturae</em>, but may be differentiated, because of lack of locomotion, once settled. Some suggestions that they should be regarded as more like domesticated animals or inanimate objects (<em>Foster v Urban Council of Warblington</em>; <em>Fleet v Hegeman</em>, <em>State v Taylor</em>; <em>Lowndes v Dickerson</em>). Some (e.g. oysters) may be <em>domitae naturae</em> (<em>Myler v Commissioner of Land Tax</em>). In <em>Leavett v Clark</em> winkles were held to be fish but not without doubts being expressed.</td>
</tr>
<tr>
<td>Peacocks</td>
<td>Introduced to England after the Conquest but no suggestion as to when domesticated (Williams 1939; Seebohm 1927), possibly domesticated on their arrival (Zeuner 1963).</td>
<td>Classified as <em>avcr</em> (Williams 1939) and regarded as <em>domitae naturae</em> in <em>YB</em> (1528) 19 Hen. 8, 2.</td>
</tr>
<tr>
<td>Pheasant</td>
<td>Romans were breeding them and spread them to all parts of the empire. The suggestion is that never completely domesticated until recent times (Zeuner 1963).</td>
<td>Regarded as <em>ferae naturae</em> (<em>YB</em> (1365) 38 Edw. 3, 10; <em>Anon.</em>, (1527) <em>Jenk.</em> 204, 18 Hen. 8, 2; <em>The King v Rough; Earl of Normanton v Giles</em>).</td>
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<tr>
<td>Pigeons</td>
<td>Likely to have been domesticated in Neolithic times but evidence scanty. Known in Mesopotamia, Etruscans and Roman periods (Zeuner 1963). Some regard this animal as self-domesticating (Hawes 1984). Hawes (1984) places the timing of domestication between 1500 and 600 B.C.</td>
<td>Long and still regarded as <em>ferae naturae</em> (<em>Dewell v Saunders</em> and <em>Hamps v Darby</em>).</td>
</tr>
<tr>
<td>Pigs</td>
<td>The modern preferred view is that early domestication was of local wild pigs in Neolithic times, followed by turbary pigs and then domesticated <em>Sus scrofa</em> (Zeuner 1963). Another view suggests that it occurred about 7000 B.C. (Epstein &amp; Bichard 1984). An older view is that the turbary pigs were domesticated by neolithic humans (Williams 1939; Seebohm 1927; Galton 1864) and followed by more modern varieties in the ninth century (Williams 1939; Seebohm 1927; Thrupp 1865).</td>
<td>Mentioned in dooms. Classified as aver (<em>YB</em> (R.S.) (1344) 18 &amp; 19 Edw. 3, 233 per Willoughby I; <em>Smith v Feverell</em>, (1674-75) 2 Mod. 6, 86 E.R. 909) and regarded as <em>domitae naturae</em>.</td>
</tr>
<tr>
<td>Rabbits</td>
<td>Domesticated in the Middle Ages (Zeuner 1963; Robinson 1984).</td>
<td>Always been regarded as <em>ferae naturae</em> (<em>YB</em> (1521) 12 Hen. 8, 9; <em>Coney's Case; Brady v Warren</em>, and Williams 1939) and more recently affirmed (<em>Pratt v Young</em>, (1952) 69 W.N. (N.S.W.) 214).</td>
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</thead>
<tbody>
<tr>
<td>Rats</td>
<td>Rats are regarded as <em>ferae naturae</em> but there are suggestions that some level of semi-domestication can occur (Grandin &amp; Deesing 1998) though in <em>Sprague-Dawley, Inc v Moore</em> it was asserted that the albino rat was known only as a domesticated strain.</td>
<td>Regarded as <em>ferae naturae</em> (<em>Ebbhardt v Safeway Stores Inc</em> and <em>Stearn v Prentice Bros Ltd</em>). More recently white rats raised for experimental purposes were held not to be wildlife and therefore may be <em>domitae naturae</em> in some communities (<em>Sprague-Dawley, Inc v Moore</em>).</td>
</tr>
<tr>
<td>Sheep</td>
<td>Probably domesticated by Neolithic humans, arriving much later in Britain (Zeuner 1963; Williams 1939; Seebom 1927; Galton 1864). Another view suggests it occurred by the end of the Mesolithic Age and they arrived in Britain by about 5000 B.C. (Ryder 1984).</td>
<td>Classified as aver (Williams 1939). Sheep are regarded as within the expression cattle (<em>Topladye v Stalye</em>, (1649) Sty. 165, 82 E.R. 615). It is customary to pay tithes in kind for sheep (<em>Weeden v Harden</em>, (1642) March N.C. 79, 82 E.R. 420). Regarded as <em>domitae naturae</em>.</td>
</tr>
<tr>
<td>Swans</td>
<td>Humans appear never to have taken them into full captivity but did protect them and harvest them. Accordingly only a degree of semi-domestication is regarded as occurring (Ogilvie 1984). The mute swan was kept as a domestic or semi-domestic animal (Ticehurst 1957).</td>
<td>In <em>The Case of Swans</em> it appears that swans were regarded as <em>ferae naturae</em>. Swans had been regarded as estrays and were the only bird so regarded. Estrays are said by Theobald (1929) to be any valuable animal domesticated; others suggested it applied to any animal in which property subsists. If the former there is an implication that at some point swans were regarded as domesticated (i.e. <em>domitae naturae</em>). Asserted that the ownership of almost every swan in England was known in the fifteenth century (Ogilvie 1984; Ticehurst 1957).</td>
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<tr>
<td>Swans cont.</td>
<td>Swans create confusion, unless they are regarded as an exception. If they were regarded as <em>domitae naturae</em> in England, it is unlikely that they are now regarded as <em>domitae naturae</em> and so they may be an example of a population that has moved from <em>domitae naturae</em> to <em>ferae naturae</em>, contrary to the suggestion of some authorities that this cannot occur. On the other hand if they were and are regarded as <em>ferae naturae</em> then they provide an example of marks being used in England to appropriate <em>ferae naturae</em> and more importantly that the property interest may be retained by their use, though that may only subsist whilst they are in the neighbourhood (see appendix two).</td>
<td></td>
</tr>
<tr>
<td>Turkeys</td>
<td>Introduced to England in about 1537, and appeared to be regarded as domesticated on its introduction (Williams 1939; Seebohm 1927), having been domesticated in the Americas (Zeuner 1963). Probably domesticated between 700 and 900 A.D. (Crawford 1984). Crawford (1984) also suggests introduced into England in 1541.</td>
<td>Classified as aver (Williams 1939). In <em>Fettiplace v Bates</em> they were held to be avers in an action relating to trespass for breaking a close and trampling down the grass. However in <em>Hugton v Prince</em> they were still regarded as <em>ferae naturae</em> and to be regarded as like partridges. They were not tithable, but that altered in <em>Carleton v Brightwell</em>. Regarded as <em>domitae naturae</em>.</td>
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</thead>
<tbody>
<tr>
<td>Turkeys cont.</td>
<td>More recently it was said that turkeys may be seized distress damage feasant (<em>Kelly v Nufer</em>, [1918] Q.W.N. 13). In two American decisions turkeys were held to be domesticated animals (<em>State v Turner</em> and <em>The King v Manu</em>), even though in this latter case they had gone wild on the Hawaiian Islands.</td>
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**Note:** The foregoing does not consider fish or the impact of feral animals.
Chapter Three

Proprietorship of Fish

12. Specific Developments in Respect of Fish

12.1. Introduction

The preceding chapter discussed the law relating to the proprietorship of animals. It highlighted the development of and the distinctions between *ferae naturae* and *domitae naturae*. It described the impact that franchises had on the development and application of the law in this area and in particular the movement of further animals into the class *domitae naturae*. The chapter put forward a modern view of the tests for determining whether a population of animals is *domitae naturae* or *ferae naturae*.

The developments in relation to fish and fishing have a number of differences from those applicable to terrestrial animals. It is therefore necessary to consider those aspects and differences before attempting to apply the proposition that has been developed for animals generally to fish. In most respects, those developments parallel those applicable to terrestrial animals. They do not alter the proposition proposed in the preceding chapter.

Whilst the changing nature of the right to fish was one of the catalysts for this thesis, it is not discussed here (however see appendix five for a discussion of the right to fish). However, this change, emphasises that the sea is no longer inexhaustible and freely available to all. As mentioned, the nature of the proprietary interest in fish is, in most aspects, similar to that applicable to terrestrial animals. This is briefly discussed in the next part of this section, which considers the nature and extent of the pond required for the fish to be in captivity rather than at large though the pond may be fully enclosed. The debate is similar to that considered earlier in connection with captivity of terrestrial animals.

The chapter then describes the information available in respect of five populations of fish. Four of those populations are the subject of significant culture worldwide; the fifth has been cultured in a few countries, and its culture is expanding. The chapter seeks to provide the information required to satisfy the tests formulated in this thesis by providing as much of the information as is common to the communities to be considered. It briefly describes the exploitation of the fish population by humans, the impact of that exploitation, the culture process, the scientific and practical literature available and details of the production on a worldwide basis as well as the method of culture of those populations. The description then details the nature and extent of the production in four
predominantly common law countries. With that information, it considers whether any of the chosen populations are likely to be regarded as *domitae naturae*, in terms of the test formulated in this thesis, in the chosen communities. Finally, it summarises the status of those populations on that basis in section fifteen.

12.2. Nature of Property in Fish

The rules applicable to the determination of the nature of a proprietary interest in fish are very much an application of those applicable to *domitae naturae* and *ferae naturae*. The nature of the proprietary interest in fish within private fisheries (the franchises) has also changed and developed, much like the interest in a terrestrial animal within a franchise. The issues with fish in ponds resemble the problems described in respect of interests *ratione soli* and those as to when an animal is in captivity rather than at large about one's property. Fish in a pond, tank or stew generally are regarded as in captivity much like terrestrial animals in a cage or yard. However, when does the pond become so large that it no longer resembles the cage?

12.2.1. Fish at Large

In 1903 it was asserted that there is no property or right in fish with their natural liberty (Moore & Moore 1903). In *Halsbury's Laws of England* (1907, 1:365), all fish are classified as *ferae naturae*, as appears from the following:

> 796 The common law follows the civil law in classifying animals in two divisions, as follows;
> (2) Wild (*ferae naturae*), and not classed as domestic or tame. This class includes not only lions, tigers, eagles, and other animals of an undoubtedly savage nature, but also deer, foxes, hares, rabbits, game of all kinds, rooks, pigeons, wild fowl and the like, and all fishes, reptiles and insects.

Fish at large were, from the very earliest comments, regarded as *ferae naturae* (*YB* (1345) 18 Edw. 3, 8). Brook J. in *YB* (1521) 12 Hen. 8, 9 (Chitty 1812, 2:810) makes reference to the nature of the rights in respect of fish in the following terms:

> So a man may have possession but not property in those things which are *ferae naturae*...So of fish which come down with the water...

Fish in the sea or great rivers are *ferae naturae* (*Grimes v Shack*, (1624) Cro. Car. 264, 79 E.R. 226). Those in a river are generally owned by no-one (*YB* (1345) 18 Edw. 3, 8; *Attorney-General for British Columbia v Attorney-General for Canada*, [1914] A.C. 153). An interest in fish is lost when they regain their liberty (*Purcell v Minister for Finance*, [1939] I.R. 115). Subject to custom and the rights in private fisheries, property in fish in the sea is not acquired until the

No subject however was entitled to take whales or sturgeon in English waters without a special grant of the king, as they were royal fish (The Case of the Royal Piscary of Banne, (1611) Davies 55, 80 E.R. 540; 17 Edw. 2, c.l 1). The property in royal fish remained in the Crown wherever they were in the jurisdiction (that is within England), as they were royal animals by reason of the statutes relating to the prerogative (Dewell v Saunders). However a right to take royal fish within a certain place could arise by prescription, because it may have had a lawful beginning (YB (1366) 39 Edw. 3, 35; The Case of Swans). It may have been the subject of a lawful grant.

Those fish in a piscary were initially clearly regarded as still at large and no-one’s property until taken (YB (1322) 15 Edw. 2, 453; YB (1496) 11 Hen. 7, 19). Some change in this view started to appear by the Middle Ages, much like any other ferae naturae about a franchise. It was an uncertain move. By 1630 the limited right of the landowner, or the holder of a franchise or privilege, to take at least certain animals including fish was held to be sufficient to create a limited interest in those animals. So the plaintiff in an action for trespass for fishing and taking one hundred eels from a several fishery was entitled to succeed on the claim that the eels were the property of the plaintiff. No-one else was entitled to take them (Child v Greenhill; Nicholls v Ely Beet Sugar Factory Ltd, [1936] 1 Ch. 343). That there was uncertainty can be found in the apparently contradictory reports of Barnish v Killick, (1676) Free. Report 407, 89 E.R. 302, 3 Keb. 507, 84 E.R. 848, 1 Vent 272, 86 E.R. 182, though Hale C.J. in Freeman’s Report appeared to accept that there could be trespass to a fishery and the ownership of the fish taken.

The contrary could be construed from the equally confusing case of Pollexfen & Ashford v Crispin. Such a view may also be found in Upton v Dawkins, (1685) 3 Mod. 97, 87 E.R. 62, which involved a claim by a plaintiff for the taking of one hundred trout from a several fishery that was the property of the plaintiff. There was a suggestion that trespass could be maintained where there is constructive, as well as an actual possession (see Smith v Miles, (1780) 1 Term. 475, 99 E.R. 1205; Ward v Mcauley, (1791) 4 Term. 489, 100 E.R. 1135).

A few years later Holt C.J. held that the holder of an interest in a free fishery also had property in the fish and could bring a possessory action in respect of them (Smith v Kemp, (1693) 2 Salk. 637, 91 E.R. 537). Gibbs v Woolliscott, (1696) 3 Salk. 290, 91 E.R. 290 suggests that it is then necessary to say that they are one’s fish even when they are taken as part of a trespass to the land.
Trotter (1903) suggested that the interest arising *ratione soli* and *ratione privilegi* was extended to fish in a several fishery, so that a person who had an exclusive right of fishing was regarded as the proprietor of the fish. He further suggested that this was established at an early date (*YB* (R.S.) (1293) 21 & 22 Edw. 1, 206; *YB* (1322) 15 Edw. 2, 453; *YB* (1331) 4 Edw. 3, 48; *YB* (1373) 46 Edw. 3, 28; *Anons.*, Court Baron (S.S.) 37, 54, 75, 131 and 132). So, much like animals that are the subject of a franchise, fish in a several fishery were in the possession (hence ownership) of the owner of the fishery. There was a notional possession, by reason of the franchise, though there is no apparent justification on the basis that the fish are in the possession of persons similar to foresters.

12.2.2. Fish in Ponds

Clearly fish in a trunk (*YB* (1345) 18 Edw. 3, 8), some narrow place (*Grey v Bartholomew*) or a stew (*YB* (1345) 18 Edw. 3, 8; *Pollexfen & Ashford v Crispin*) were in captivity and the property of the owner of the trunk, narrow place or stew. They could be taken at will or pleasure (*YB* (1345) 18 Edw. 3, 8). The same was also said of a close pond; because they could not swim away, the property could not be lost (*R v Steer* (1702) 6 Mod. 183, 87 E.R. 939). This is something more than *ratione soli* in the terrestrial sense; it is akin to the cage. A person has a special property in fish about a spot (*Dewell v Saunders*).

Fish in ponds and lakes however caused more difficulty. Initially there was some difference. In *Anon.*, (1527) Jenk. 204, 18 Hen. 8, 2, fish in a private lake or pond were regarded as the same as tame peacocks, tame pigeons and young hawks in the nest and were the subjects of a qualified interest. This view was not followed in succession cases where fish were regarded as *ferae naturae* when in ponds about the land. They passed with the land rather than to the executors as the personal property of the deceased, notwithstanding the deceased had “purchase[d] divers fishes, viz. carps, tenches, trout, &c. and put them into his pond for store, and then died” (*Grey v Bartholomew*).

In much the same way, the owner of a weir had not only the weir but also any fish in the weir, so if the owner leased the weir, then the fish passed to the lessee (*Pollard J., YB* (1523) 14 Hen. 8, 1). On the other hand Brudnel J. expressed the view that if the lessor, on making a grant to another, reserves to the lessor the right to the fish, then the lessor has the fish because it arises out of the lessor’s original interest. If the lessor excepts a weir, the lessor has the fish; the weir is nothing more than a device for taking fish (*YB* (1523) 14 Hen. 8, 1). Consistent with that approach, waste lay for breaking down the banks of a fishpond, so that the water and fish escaped (*Moyle v Moyle*, (1598) Ow. 66, 74 E.R. 905).

So a distinction was drawn between ponds and close ponds, the latter being equated with trunks because the fish could not swim away.
In *R v Hundsdon*, (1781) 2 East P.C. 611, a decision informally reported by East (1803), the defendant was charged with unlawfully entering a garden adjoining a dwelling house in which there was a pond used for keeping fish and with a net stealing and taking the fish contrary to the statute 5 Geo. 3, c. 14. The entry was made without the consent of the proprietor. On the evidence it appears that the pond was about twenty yards in length and ten yards wide. The owner of the land usually took the fish with a hook and line. The defendant objected to the prosecution on the ground that the fish were in an open pond and were *ferae naturae*, unreclaimed and not the property of any person. The court held the indictment good and within the statute, without the allegation that the fish were the goods of the landowner. However, if the indictment had been at common law, some of the judges were of the opinion that the indictment should have described the sort of pond it was, so that on the face of the indictment it was clear that the taking of the fish was a felony. The fish were the property of the landowner.

Earlier in his treatise, East (1803) commented that it has been doubted whether at common law larceny can be committed of fish in a pond. He suggested that larceny may be committed if the fish are confined in a trunk or a net. In that situation they are “restrained of their natural liberty” (East 1803, 610). East (1803) further suggested that it is difficult not to extend the application of the same principle to fish in a pond in private property where the fish are liable to be taken at any time according to the pleasure of the owner.

One of the more difficult United States decisions for modern fish farmers is that of *Sollers v Sollers*, 77 Md. 148, 20 L.R.A. 94 (1893), where fish that had been caught and placed in a cove within the ebb and flow of the tide were confined by a wire fence extending across its mouth. The court held that this gave insufficient rights of property to support an action of trespass, against a person who caught the fish and appropriated them to their own use. The court said, *Sollers v Sollers*, 77 Md. 148, 20 L.R.A. 94, 95 (1893):

*Now, to complete the right of property in fish, an actual appropriation or “mancupation” must be made. The possession must be complete; and if, when taken, they are voluntarily restored to their native element, so that they can only be regained in a like manner to that by which they were originally taken the right of property is lost.*

Ingham (1900) suggested in a footnote that, in general, if fish that have been taken are restored to their native element so that they can be regained only in a similar manner to that by which they were originally taken, the right of property is lost, no doubt in reliance on *Sollers v Sollers*. In contrast, in *State v Shaw*, 67 Oh. St. 157, 65 N.E. 875 (1902) fish entered a private net or trap through a tunnel. The owner of the net was not present and did not have the physical power to exclude anyone. It was possible for the fish to escape in the same way as they entered, for the opening was always left. The court felt that the law does not require absolute
security against the possibility of escape, but that a person who confines *ferae naturae* so that they may use them at their pleasure and maintains reasonable measures to prevent their escape has a qualified property. The decision in *Sollers v Sollers* must therefore be doubted as good law. If the fish are in captivity and may be taken at the will and pleasure of the owner, the manner in which the owner may take them is no longer the relevant test.

In *R v Revu Pothadu*, (1882) Ind. L.R. 5 Madras 390 the defendant was prosecuted for theft of fish from a creek that the government had leased out to others with the right to capture fish. This was one of a number of cases involving convictions for stealing fish from open government irrigation tanks. So the question was whether fish in tanks of this description were in possession, in such a sense, as to render their capture and removal theft. The court held that it was not, any remedy being merely of a civil nature. Once again a distinction was drawn between when criminal and civil remedies may be available.

13. Nature and Extent of Domestication in Fish Husbandry in Some Fish Populations

13.1. Introduction

It is now very difficult to draw parallels between domestication in biological terms of common animals and the more recent efforts of humans. Neolithic humans domesticated most of the modern *domitae naturae*, about 14,000 years ago (see table 6) and there is a limited understanding of the manner of its occurrence. It has and continues to attract the attention of many scholars (e.g. Galton 1864; Thrupp 1865; Sauer 1952; Jarman 1972; Jarman 1976; Jarman & Wilkinson 1972; as does the possibility of new domestications Ucko & Dimbleby 1969).

In the earlier discussion the concept of domestication has been considered from a number of perspectives, both scientific and legal. The following discussion will, after describing certain aspects of the culture practices in connection with the chosen species, examine the application of those principles from a legal perspective, on the basis of the tests put forward in chapter two, in each of four jurisdictions.

Each discussion of each population will first describe in general terms the nature and extent of the production of those populations in worldwide terms, some of the history of the development of those populations, their development and distinguishing aspects and the extent of the literature and other information available on their development and production. Those sections may also mention the literature suggesting that there is possible domestication from a biological perspective. It will then turn to each of the four countries and consider those
matters in the context of those countries. In the following section it will then seek to apply the tests developed in chapter two. Of the five populations four involve significant worldwide production and the fifth is in the developmental stage. It will also be seen that the production of these populations differs significantly between the countries. In some countries there is no production of the particular population and accordingly the discussion will be minimal.

It must be reiterated that in the following discussion, when it is suggested that a population is distinguishable, this refers to the fact that there are a group of animals recognisable as a population that is distinguishable in that community. It is distinguishable from its wild cousins by some attributes (e.g. colour, other physical attributes or marks), some of which may not be apparent to all members of the community.

This does not mean that you can identify the owner or determine whether the animal has been abandoned. A person catching an Atlantic salmon off the coast of South Australia will recognise that it comes from a fish farm and belongs to somebody (Atlantic salmon are not found naturally in the wild in South Australia, at least at the moment), but the person catching the salmon may not be able to say who the owner is or determine whether the animal has been abandoned.

13.2. Salmonids

The natural range of rainbow trout is the North Pacific from the Kuskokwim River in Alaska south through British Columbia to Baja in California (Sedgwick 1995; Froese & Pauly 2001), though Dore (1990) suggests they are found from the Aleutian Islands to Mexico and along the Asian coast to the estuary of the Amur River and Moccia and Bevan (1991) describe the range as the eastern Pacific Ocean and the freshwater drainage basins mainly west of the Rocky Mountains extending from Mexico to Alaska. They are also found in the headwaters of the Peace River in British Columbia, the Athabasca River in Alberta and in the Rio Casa Grandes in the Mexican province of Chihuahua. Steelheads are the migratory seagoing population; the non-migratory populations remain in the rivers and lakes (Sedgwick 1995; Dore 1990). Rainbow trout have been introduced throughout the world (Dore 1990; Moccia & Bevan 1991; Froese & Pauly 2001) and there are now various domesticated strains found throughout the world (Purdom 1995).

The original wild distribution of Atlantic salmon on the North American side of the Atlantic Ocean was from approximately the Connecticut River to Ungava Bay, Quebec (Dore 1990; Rodger 1991; Froese & Pauly 2001). On the European side it was found from the west coast of Russia south to Portugal. The areas of greatest abundance were eastern Canada, the United Kingdom and Scandinavia.
They have disappeared from most of their original range through overfishing, pollution and obstructions in the rivers (Dore 1990; Rodger 1991). Prior to predation and habitat alteration by humans, it is suggested that the wild population was likely to have been 10 to 24 million adult individuals (50,000 to 100,000 tonnes). In the last fifty years it is unlikely to have exceeded 5 to 8 million adults (25,000 to 35,000 tonnes) (Gross 1998).

The production of salmonids worldwide from aquaculture, predominantly Atlantic salmon and rainbow trout, is now very significant. The production of each from aquaculture now outstrips the catch from capture fisheries many times over. In the years 1991 to 1998 the production of each was significant in both value and quantity. The farming of Pacific salmon (excluding enhancement activities and the Alaska Private Non-Profit Hatchery operations discussed in appendix four) has been far less significant and is not discussed here. In each case the number of animals in the wild populations is likely to be a small part of the total worldwide population.

It has been estimated that in 1995, 94 per cent of the worldwide adult population of Atlantic salmon was in aquaculture. Their distribution has also significantly altered, with more than two farmed animals in the southern hemisphere for every wild animal in the native northern hemisphere and three farmed animals in the Pacific drainage for every one wild animal in the Atlantic drainage (Gross 1998).

Table 7 details the weight and value of Atlantic salmon and rainbow trout production from aquaculture and the weight of each from capture fisheries for the years from 1991 to 1998. It highlights that worldwide the production of these animals from capture fisheries is now insignificant, with it contributing in 1997 only .86 per cent of the total Atlantic salmon production and .78 per cent of the total rainbow trout production.

The earliest documented trout incubation and artificial reproduction occurred in the mid 1700s and apparently further attempts occurred after that (Boghen 1995; Hansen & Jonsson 1994). By the later part of the 1800s there was considerable traffic in salmonids.

Various species of salmonid were introduced into the waters of many parts of the world by the 1800s (e.g. Australasia, India, Asia and Africa). Much of the development of hatcheries in North America and to a lesser extent Europe during the late 1800s and early 1900s was focused on salmonids (Moccia & Bevan 1991).
Table 7
Atlantic Salmon and Rainbow Trout Production

<table>
<thead>
<tr>
<th>Year</th>
<th>Atlantic Salmon</th>
<th></th>
<th></th>
<th>Rainbow Trout</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Capture</td>
<td>Weight</td>
<td>Aquaculture</td>
<td>Weight</td>
<td>Aquaculture</td>
<td>Weight</td>
</tr>
<tr>
<td>1991</td>
<td>9,793</td>
<td>266,032</td>
<td>1,220.8</td>
<td>4,272</td>
<td>283,047</td>
<td>971.8</td>
</tr>
<tr>
<td>1992</td>
<td>9,198</td>
<td>253,329</td>
<td>1,273.0</td>
<td>4,515</td>
<td>299,306</td>
<td>1,048.4</td>
</tr>
<tr>
<td>1993</td>
<td>8,161</td>
<td>312,868</td>
<td>1,372.9</td>
<td>3,627</td>
<td>316,678</td>
<td>1,058.3</td>
</tr>
<tr>
<td>1994</td>
<td>7,231</td>
<td>372,414</td>
<td>14515.5</td>
<td>2,986</td>
<td>334,348</td>
<td>1,084.0</td>
</tr>
<tr>
<td>1995</td>
<td>6,894</td>
<td>465,240</td>
<td>1,782.4</td>
<td>4,339</td>
<td>365,610</td>
<td>1,223.5</td>
</tr>
<tr>
<td>1996</td>
<td>6,506</td>
<td>551,838</td>
<td>1,857.7</td>
<td>4,406</td>
<td>384,530</td>
<td>1,267.1</td>
</tr>
<tr>
<td>1997</td>
<td>5,576</td>
<td>646,513</td>
<td>2,142.2</td>
<td>3,378</td>
<td>427,338</td>
<td>1,348.7</td>
</tr>
<tr>
<td>1998</td>
<td>5,178</td>
<td>687,906</td>
<td>2,203.3</td>
<td>3,178</td>
<td>438,013</td>
<td>1,364.5</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Note: Weight in tonnes and value in millions of United States dollars.

The early earthen aquaculture ponds for the raising of rainbow trout were established before the turn of the twentieth century. Some commentators have already indicated that they consider salmonids ordinary farm animals that should be improved by the same means as have successfully been applied to other domesticated species (Gjedrem 1976; Dore 1990).

Towle (1980) draws parallels between the raising of some salmonids and long-domesticated land creatures. Salmon are valuable and scarce. The knowledge of the life cycle, control of migration, selective breeding, transplanting and hybridisation of sub-races and species is the means by which people came to replace nature in the perpetuation of domestic stock. The same mechanisms are altering salmon populations. Towle suggests that there is a temptation to interpret this alteration as the beginning of an inevitable biotechnical process leading to ever-increasing human control.

In many of the Atlantic salmon regions humans are indeed taking control of the populations. In the Danish salmon fishery most animals are attributable to hatcheries. On the salmon feeding grounds in the Northeast Atlantic Ocean from 25 to 48 per cent of individuals are escapees from fish farms, in Norwegian rivers 20 to 30 per cent of the breeding adults are escapees and in the Magaguadavic River in New Brunswick from 51 to 68 per cent of the smolts migrating to the ocean are losses from three hatcheries (Gross 1998).
The literature on the raising of salmonids is extensive. Table 8 sets out the number of abstracts and the issues identified as significant in those abstracts. Much of the literature is of a practical nature.

Table 8
Literature on Rainbow Trout and Atlantic Salmon

<table>
<thead>
<tr>
<th>Nature of Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Trout</td>
</tr>
<tr>
<td>Country reviews or emphasis, water bodies, continents, the farming potential</td>
<td>11.0</td>
</tr>
<tr>
<td>Domestication and population aspects</td>
<td>.0</td>
</tr>
<tr>
<td>Environmental impact and translocation</td>
<td>7.5</td>
</tr>
<tr>
<td>Economics of their culture</td>
<td>.6</td>
</tr>
<tr>
<td>Feeds, protein requirements and effects, and taste effects</td>
<td>8.7</td>
</tr>
<tr>
<td>Fish health</td>
<td>37.6</td>
</tr>
<tr>
<td>Genetics, improvements, manipulation and sterility</td>
<td>11.6</td>
</tr>
<tr>
<td>Hatchery, nursery and broodstock aspects</td>
<td>6.9</td>
</tr>
<tr>
<td>History of raising</td>
<td>.6</td>
</tr>
<tr>
<td>Production methods and improvement (including stocking rates), predation and off flavour</td>
<td>8.7</td>
</tr>
<tr>
<td>Pacific salmon, other farming opportunities and fisheries management</td>
<td>5.2</td>
</tr>
<tr>
<td>Other</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Note: The table is computed from an online search of the CSA Aquatic Sciences & Fisheries Abstracts Database as at 25 January 2001 for the period 1981 to the search date. The search for salmon produced 15,768 abstracts. It did not distinguish between Atlantic and Pacific salmon. With a refinement for those that also mention fish farming or aquaculture, the number was reduced to 2,844. The number mentioning trout was 1,148. A review of fifteen per cent of those abstracts (recognising the simplicity of the process used to select those abstracts) produced the foregoing per centages. The foregoing ignores that many general texts on fisheries and aquaculture also discuss various facets of the culturing of those populations. The same approach has been adopted in each of the subsequent similar literature tables and analysis.

From that literature it can be quickly seen that humans now intervene or have the potential to intervene in every stage of the life cycle of salmonids. In the culture of salmonids the culturists manipulate the reproductive cycle by the use of photoperiod adjustment and in some cases by the use of hormones; they strip the gametes from both male and female animals whether hatchery reared or captured wild fish; they select either deliberately or inadvertently for certain traits and
engage in various breeding practices to improve or alter the traits; they incubate those eggs that they have manually fertilised and stripped; they manipulate or alter their sex; they alter their genetic structure to render them sterile or may feminise the males; they control the period of development of hatching by the manipulation of the water temperature; and they inhibit the growth of fungi and other deleterious pathogens by the treatment of the water during this process.

After hatching they are careful to ensure that the fry have the proper opportunity to inflate their swim bladder. They provide high-quality feed in controlled quantities at regular times; they grade and select the fry to minimise cannibalism and other unwanted aspects; and they continue to raise them until they are selected for their desired purpose. They will take them through smoltification in a manner and process that suits their objectives. They may select them for release as part of an enhancement programme, a ranching programme, for pond culture, tank culture, for brood stock or for net, pen and cage farming. In many of those cases they will continue to feed the animals until they are selected for slaughter at a time suitable for the market or optimising profitability. During this process they will endeavour to control the water quality and quantity, and they will continue to control the quality and quantity of the feed and the feeding times. They will protect the animals from predation and seek to minimise the incidence of disease. When disease occurs they will attempt to treat the animals using chemicals and an array of other methods. They will again select the brood stock, provide special feeding regimes in preparation for stripping and repeat the cycle.

So it is not unexpected to find that there is now a very broad body of evidence as to the effect humans have had on all stages of the life cycle of salmonids. There is no doubt that the hatchery rearing of salmonids, and for that matter most fish species, will lead to a level of domestication in biological terms. In some cases, humans are merely an agent of adaptation rather than domestication (Towle 1980). This may differ with some populations and in some areas. The domestication will occur in some areas earlier than others.

Substantial research has demonstrated that domestication of anadromous salmonids results in divergence of phenotypes from wild founder populations for a host of biological characters (Berajikian et al. 1996). Generations of breeding in hatcheries have led to a loss of wildness and an inability to adapt to the ecological conditions in the wild (Fraser 1989). This has been evidenced in many ways. The poor survival in the wild of domestic strains of trout in North America has been documented.

The failure in one case of hatchery-reared brook trout was attributed to either insufficient numbers surviving to spawn, or, more importantly for this discussion, from the lack of the capability to spawn naturally in suitable spawning grounds. With more than twenty generations of hatchery raisings in this case, their progenitors have been denied the opportunity to mate naturally (Fraser 1989).
Hemmer (1983) has described the inability of many domestic terrestrial animals to survive in the wild or breed with wild populations.

Table 9 further highlights these differences between cultured and wild Atlantic salmon, distinguishing between those aspects that have been confirmed and those suspected. A taxonomic picture has also been described by Gross (1998) in the form of figure 4, which highlights aspects of the foregoing and supports the assertion that it may now be appropriate to recognise a new biological population *Salmo domesticus* and regard it as an exotic species when it escapes into the wild.

In the case of trout some of the findings include that domesticated trout (both rainbow trout *Oncorhynchus mykiss* and cutthroat trout *Oncorhynchus clarkii*) are much more susceptible to angling than are wild strains (Dwyer 1990; Dwyer & Piper 1984). They become accustomed to humans or have an inhibited prey response. Other evidence suggests that naturally produced progeny of wild steelhead trout populations survive better than the offspring of locally derived domesticated populations (Berajikian et al. 1996). Differences in selection regimes between hatchery and natural environments and environmental stimuli, among other factors, have caused differences in predator avoidance ability between hatchery and wild steelhead trout fry. Domestication may increase risk-taking behaviour and susceptibility to predation (Berajikian et al. 1996).

Others have found that fry from populations that have been cultured for several generations are more aggressive than fry from geographically proximate wild populations. The agonistic behaviour has a heritable component. Notwithstanding this advantage another study has demonstrated that naturally spawned domestic steelhead suffer greater mortality at all life stages (Berajikian et al. 1996).

Further studies demonstrate that the body morphology of wild and sea-ranched adult sea trout differ. A more recent study shows that on average sea-ranched fish are larger than the wild ones, despite being the same age and given the same food per total mass of fish in each rearing container. This is possibly a reflection of the fact that sea-ranched fish have been selected for growth. Such a trait may be disadvantageous in the wild, requiring more extensive foraging and greater risk of being the subject of predation. The two strains also had significant different slopes for two variables, body depth and base depth of the anal fin. The reasons for this difference are still to be investigated (Petersson & Jaervi 1995).

Recognising that many of the studies have been of differing populations across much of the world and in many cases there may only be one or two studies on some aspects, it is still possible to summarise those changes, in broad terms. In the case of Atlantic salmon it may now be appropriate to recognise *salmo domesticus* in taxonomic and biological terms. Whilst the situation with rainbow trout may not be as stark, it is very similar.
Table 9
Genetic and Developmental Differences between Cultured and Wild Atlantic Salmon

<table>
<thead>
<tr>
<th>Genetic</th>
<th>Developmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmed</td>
<td>Suspected</td>
</tr>
<tr>
<td>Increased growth rate</td>
<td>No ejaculation</td>
</tr>
<tr>
<td>Increased age of maturity</td>
<td>Reduced male courtship</td>
</tr>
<tr>
<td>Increased weight</td>
<td>Higher hatchery survival</td>
</tr>
<tr>
<td>Increased disease resistance</td>
<td>Higher temperature tolerance</td>
</tr>
<tr>
<td>Decreased stress response</td>
<td>Shallow depth preference</td>
</tr>
<tr>
<td>Lower genetic diversity</td>
<td>Larger testes</td>
</tr>
<tr>
<td>Allele frequency change</td>
<td>Juvenile colour</td>
</tr>
<tr>
<td>Malic enzyme allele change</td>
<td>Adult colour</td>
</tr>
<tr>
<td>Reduced predator response</td>
<td>Distorted jaw on adult</td>
</tr>
<tr>
<td>Increased juvenile aggression</td>
<td>Longer head on adult</td>
</tr>
<tr>
<td>Increased tameness</td>
<td>Longer adipose fin on adult</td>
</tr>
<tr>
<td>Lower survival in the wild</td>
<td>Smaller hearts in females</td>
</tr>
<tr>
<td></td>
<td>Decreased juvenile colour</td>
</tr>
<tr>
<td></td>
<td>Decreased adult colour</td>
</tr>
</tbody>
</table>

Source: Gross (1998)
So in some populations of salmonids the shape of the animal has changed; they are larger in many cases than their wild cousins; they grow more quickly; they mature earlier; they are less risk adverse; their survival in the wild may be poorer; they are more aggressive; they reproduce poorly in the wild if at all; and they are more readily caught. Humans have manipulated them for their purposes; they have become more accustomed to humans. In some cases humans have eliminated the wild populations.

13.2.1. England

In England in 1999 there were 218 trout farms producing 6,350 tonnes of rainbow trout (Keith Crane 2000-2001, personal communication). Capture fisheries provided 100 tonnes in 1999 for the whole of the United Kingdom (FAO 2000b). Rainbow trout were introduced into England from the United States in 1884 and almost every winter from 1888 to 1905 thereafter and are distributed over the British Isles. Whilst rainbow trout breed naturally in a number of places, only five self-sustaining populations have been recorded (Lever 1996; Froese & Pauly 2001).

In England in 1999 there were 16 Atlantic salmon farms and they produced 6.6 million fry (Keith Crane 2000-2001, personal communication). Capture fisheries provided 403 tonnes in 1999 for the whole of the United Kingdom (FAO 2000b). Information as to the size of the farms by reference to their number and the average value of their production is not available (Keith Crane 2000, personal communication). Atlantic salmon is indigenous to England.
13.2.2. Australia

In Australia in 1999 there were approximately 90 rainbow trout farms (see table 10) producing rainbow trout to the value of USD 7.5 million from a production of 1,646 tonnes (FAO 2000b). There is a sports fishery but no commercial capture fishery (FAO 2000b; Kailola et al. 1993; Froese & Pauly 2001). Most production occurs in New South Wales, Victoria and Tasmania.

Rainbow trout were introduced into Australia in 1864 primarily to stock a number of rivers for sports fishing (Kailola et al. 1993; Froese & Pauly 2001). They were raised for many years in government hatcheries and provided by those hatcheries for restocking. In the early 1960s a rainbow trout farm was established on the side of the Hume Weir on the Murray River and thereafter a number of trout farms were established in southern New South Wales, Victoria and Tasmania. A few farms are operated in other States. In the main, rainbow trout do not reproduce in most Australian rivers and streams and depend for their continued existence in such rivers and streams on continued restocking, though there are occasional isolated reproducing populations. The latter tend to occur in the higher altitude waters of New South Wales and Victoria and more generally in Tasmania (Kailola et al. 1993; Froese & Pauly 2001). There are isolated populations of sea-run trout in Tasmania and Victoria (Kailola et al. 1993; Froese & Pauly 2001; Anthony Forster 2000, personal communication in respect of Victoria).

Atlantic salmon eggs were included with rainbow trout eggs on their introduction into Australia in 1864 but the introductions into New South Wales, Victoria and Tasmania were unsuccessful at that time. They were again introduced into New South Wales in 1963 and somewhat later into Tasmania and more recently Victoria and South Australia. There are reports of populations in Lake Jindabyne in New South Wales and Tasmania (Kailola et al. 1993; Froese & Pauly 2001) though a recent communication from the Tasmanian fisheries authorities suggests there are no wild reproducing populations in Tasmania and attempts to establish wild populations last century failed (Roger Hall 2000, personal communication). There is no commercial fishery (FAO 2000b; Kailola et al. 1993; Froese & Pauly 2001).

The information from the Australian states as to the number of farms and the value of the production by farm from aquaculture does not exist in a consolidated or on a consistent basis. It was sought from each state. In one case a response was not received and in most cases the information was provided on a different basis to that requested. In many cases the activity is quite small and for reasons of confidentiality the information is not available or is only available in an aggregated form. The information provided is set out in Table 10, it highlights the small number of producers in each state.
Table 10
State Production Details of Salmonoids

<table>
<thead>
<tr>
<th>State</th>
<th>Producers</th>
<th>Weight</th>
<th>Value</th>
<th>Area</th>
<th>Other comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>32</td>
<td>336</td>
<td>1.841</td>
<td></td>
<td>Rainbow trout production.</td>
</tr>
<tr>
<td>Victoria</td>
<td>31</td>
<td>1616</td>
<td>11.278</td>
<td></td>
<td>Mostly rainbow trout with a few innovative Atlantic salmon.</td>
</tr>
<tr>
<td>Queensland South Australia</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td></td>
<td>Anecdotal information suggests 4 or 5 rainbow trout producers of up to 50 tonnes each. One producer of 15 tonnes of Atlantic salmon more recently.</td>
</tr>
<tr>
<td>Western Australia</td>
<td>5</td>
<td>8</td>
<td>N/A</td>
<td></td>
<td>Rainbow trout production.</td>
</tr>
<tr>
<td>Tasmania</td>
<td>63</td>
<td>N/A</td>
<td>61.6</td>
<td>600</td>
<td>In 1997 there were 41 licensed Atlantic salmon and 21 rainbow trout producers, though 3 dominate. 9180 tonnes of Atlantic salmon was produced in 1999.</td>
</tr>
</tbody>
</table>


*Notes:* The weight is expressed in tonnes, value in millions of Australian dollars and area in hectares and is approximate only. The information is for the year ending 30 June 1997 unless otherwise indicated.

13.2.3. Canada

In Canada in 1997, excluding Quebec, there were approximately 500 rainbow trout farms (the number is the sum of those described in the succeeding paragraphs recognising that the information is vague and for different years) producing 6,856 tonnes with a value of CAD 33 million (DFO 2000). Capture fisheries provided 1 tonne in 1997 (FAO 2000b). The extent of that production on a province basis is set out in table 11.
Most transfers of rainbow trout outside their natural range in Canada occurred in the late 1800s and early 1900s (Moccia & Bevan 1991). There are naturally reproducing populations in British Columbia where it is indigenous. In few of the other provinces there are populations reproducing in the wild (e.g. Prince Edward Island and Saskatchewan), though in Saskatchewan it is very limited.

Table 11
1997 Canadian Trout Production by Province

<table>
<thead>
<tr>
<th>Province</th>
<th>Weight</th>
<th>Value</th>
<th>Province</th>
<th>Weight</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newfoundland</td>
<td>339</td>
<td>1.56</td>
<td>New Brunswick</td>
<td>550</td>
<td>6.00</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>624</td>
<td>2.84</td>
<td>Ontario</td>
<td>3,725</td>
<td>15.90</td>
</tr>
<tr>
<td>Quebec</td>
<td>647</td>
<td>2.76</td>
<td>Saskatchewan</td>
<td>721</td>
<td>3.18</td>
</tr>
<tr>
<td>Manitoba</td>
<td>5</td>
<td>.23</td>
<td>British Columbia</td>
<td>212</td>
<td>.82</td>
</tr>
<tr>
<td>Alberta</td>
<td>3</td>
<td>.12</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: DFO (2000)
Notes: Weight is in tonnes and value in millions of Canadian dollars. No data was available for Prince Edward Island.

Like Australia the information from the provinces as to the number of farms and the value of aquaculture production by farm does not exist on a consolidated or consistent basis. The same information was sought from each province. A response was not received from Quebec or Ontario, though in the later case much of the information was available from a couple of publications. In most cases the information was provided on a different basis to that requested. Much like Australia the activity is small on many farms and for reasons of confidentiality the information in many cases is only available in an aggregated form. The number of producers on a province basis is set out in tables 12 and 13. Table 12 highlights that whilst there are producers of up to twenty species most are producing rainbow trout.

On the east coast of Canada natural Atlantic salmon runs exist, but many have been adversely affected by the activities of humans (Dore 1990). They are however an introduced animal on the west coast, where they are extensively cultured. Early attempts in the 1900s by the federal government to transplant Atlantic salmon to the west coast failed (Ellis 1996).

In Canada in 1997 there were approximately 160 Atlantic salmon farms (from table 12) producing CAD 324 million (including some Pacific salmon) from a production of 56,755 tonnes (including some Pacific salmon that it has not been possible to identify) (DFO 2000). Capture fisheries provided 77 tonnes in 1997 (FAO 2000b).
Table 12
Province Aquaculture Non Salmon Production

<table>
<thead>
<tr>
<th>Province</th>
<th>Producers</th>
<th>Value</th>
<th>Other production details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>95</td>
<td>11</td>
<td>Produced 17 species in 2000.</td>
</tr>
<tr>
<td>British Columbia</td>
<td>12</td>
<td>N/A</td>
<td>All were producers of rainbow trout. 6 produced in excess of $25,000 and 6 less than that value.</td>
</tr>
<tr>
<td>Manitoba</td>
<td>30</td>
<td>14.5</td>
<td>Rainbow trout with some production of Arctic char and brook trout.</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>25</td>
<td>N/A</td>
<td>Half produced in the range of $24,000 to $49,000 and the other half in the range of $50,000 to $99,000.</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>32</td>
<td>1.6</td>
<td>Mainly steelhead rainbow trout.</td>
</tr>
<tr>
<td>Nova Scotia</td>
<td>87</td>
<td>21.1</td>
<td>Mainly rainbow trout with a few producing Arctic char, cod and halibut. 13 sites produced less than $25,000, 2 in the range of $25,000 to $100,000, 11 between $100,000 and $499,000, 4 between $500,000 and $999,999 and 2 in excess of $1 million.</td>
</tr>
<tr>
<td>Ontario</td>
<td>198</td>
<td>N/A</td>
<td>Mainly producing rainbow trout with a few producing other species including tilapia, brook trout, largemouth and smallmouth bass, Arctic char, Atlantic salmon and cyprinid baitfish. 74 produced in excess of 5 tonnes for 93% of the provincial production of food fish, 8 farms accounted for 74% and 5 farms 62% of the total production. The remaining 124 farms accounted for 2,170 tonnes of production.</td>
</tr>
<tr>
<td>Prince Edward Is.</td>
<td>9</td>
<td>.817</td>
<td>7 produce rainbow trout and two produce Atlantic salmon or Arctic char.</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>27</td>
<td>N/A</td>
<td>Rainbow trout predominates with one producing in excess of 1,000 tonnes of rainbow trout per year of the value of $4.5 million, 20 or so less than $25,000 and the others less than $500,000.</td>
</tr>
</tbody>
</table>

Continued on next Page
Table 12 Continued


Notes: The weight is expressed in tonnes, value in millions of Canadian dollars and area in hectares and is approximate only. For most provinces the information is either for the years 1999 or 2000, Ontario 1997, Manitoba 1998 and Newfoundland 1997. N/A indicates that it was not available from the information provided.

The production and producers of Atlantic salmon on a province basis is set out in table 13.

Table 13
Province Atlantic and Pacific Salmon Production

<table>
<thead>
<tr>
<th>Province</th>
<th>Producers</th>
<th>Value</th>
<th>Weight</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alberta</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>British Columbia</td>
<td>48</td>
<td>179.94</td>
<td>36,465</td>
<td>Most produced more than $1 million, 6 in excess of $500,000 and less than $1 million and 4 produced less than $500,000. The anecdotal suggestions were most were producing Atlantic salmon but that was changing.</td>
</tr>
<tr>
<td>New Brunswick</td>
<td>113</td>
<td>139.02</td>
<td>18,585</td>
<td>26 hatcheries and 87 sea cage sites, with the average farm producing 600-800 tonnes and few 1000 tonnes.</td>
</tr>
<tr>
<td>Newfoundland</td>
<td>16</td>
<td>2.714</td>
<td>613</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next Page
Table 13 Continued

<table>
<thead>
<tr>
<th>Province</th>
<th>Producers</th>
<th>Value</th>
<th>Weight</th>
<th>Other Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nova Scotia</td>
<td>54</td>
<td>7.022</td>
<td>790</td>
<td>13 active producers in 1999, 4 produced less than $500,000, 5 between $500,000 and $1 million and 4 in excess $1 million.</td>
</tr>
<tr>
<td>Ontario</td>
<td>min.</td>
<td>min.</td>
<td>min.</td>
<td>Minimal production, see table 12.</td>
</tr>
<tr>
<td>Prince Edward Is.</td>
<td>min.</td>
<td>min.</td>
<td>min.</td>
<td>Minimal production, see table 12.</td>
</tr>
<tr>
<td>Saskatchewan</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>


Notes: The weight is expressed in tonnes, value in millions of Canadian dollars and area in hectares. Each is approximate only. For most provinces the information is for the years 1997, Nova Scotia 2000. Min. indicates minimal information and N/A indicates that it was not available from the information provided or available.

In table 14 details from the British Columbia Salmon Aquaculture Review (British Columbia Salmon Aquaculture Review Committee 1997) of the number of companies and farms engaged in this activity is set out (including possible fallow sites; the number of farms may be less than the number of licences issued).

Table 14
Salmon Farming Companies and Grow-Out Sites in British Columbia

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Salmon Farming Companies</td>
<td>101</td>
<td>17</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Number of Active Grow-Outs</td>
<td>118</td>
<td>88</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Average Number of Sites per Company</td>
<td>1.16</td>
<td>2.27</td>
<td>5.18</td>
<td>4.94</td>
</tr>
</tbody>
</table>

Source: British Columbia Salmon Aquaculture Review Committee (1997)
The production by weight from Pacific salmon and Atlantic salmon in British Columbia for 1993 and 1996 is set out in table 15.

Table 15
Farmed Salmon Production in British Columbia

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1996</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacific</td>
<td>11,435</td>
<td>8,450</td>
</tr>
<tr>
<td>Atlantic</td>
<td>11,300</td>
<td>17,050</td>
</tr>
<tr>
<td>Total</td>
<td>22,735</td>
<td>25,500</td>
</tr>
</tbody>
</table>

Source: British Columbia Salmon Aquaculture Review Committee (1997)

13.2.4. The United States of America

In the United States in 1997 there were 561 trout farms producing trout to the value of USD 72.473 million from a production of 26,688 tonnes (NASS 1998) with rainbow trout constituting 25,719 tonnes of that production (FAO 2000b). Capture fisheries provided 137 tonnes of rainbow trout in 1997 (FAO 2000b).

The size of the farms by reference to their number, the average value of their trout production (in $000s) and the percentage that each group contributed to the total is set out in table 16. The number of trout farms on a regional and state basis is set out in table 17. As can be seen from that table, each region has a reasonable number of trout farms. In seven states the number of trout farms exceeds thirty (NASS 1998) (more significantly, most are not from the states bordering the Pacific Ocean).

Table 16
US Trout Production by Farms

<table>
<thead>
<tr>
<th></th>
<th>$0 to $24.9</th>
<th>$25 to $49.9</th>
<th>$50 to $99.9</th>
<th>$100 to $499.9</th>
<th>$500 to $999.9</th>
<th>$1,000+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Farms</td>
<td>333</td>
<td>56</td>
<td>64</td>
<td>82</td>
<td>17</td>
<td>9</td>
<td>561</td>
</tr>
<tr>
<td>$ Value</td>
<td>8.0</td>
<td>35.7</td>
<td>73.9</td>
<td>203.7</td>
<td>751.5</td>
<td>3,732.6</td>
<td>129.2</td>
</tr>
<tr>
<td>Percentage</td>
<td>4</td>
<td>3</td>
<td>7</td>
<td>23</td>
<td>18</td>
<td>45</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: NASS (1998)

Notes: The amount ranges and dollar values are in thousands of United States dollars.

The production of Atlantic salmon was quite small, with an approximate weight of 13,381 tonnes and a value of approximately USD 66 million (NASS 1998). In
calculating the foregoing figures it has been assumed that salmon produced in the
states regarded as part of the eastern region is Atlantic salmon and that produced
in the western regions is Pacific salmon. It has also been necessary to undertake
some extrapolation to determine the value of the Atlantic salmon produced. There
was no capture fisheries production of Atlantic salmon in 1997 (FAO 2000b).

Table 17
US Regional and State Trout Farms

<table>
<thead>
<tr>
<th>Northeast Region</th>
<th>132</th>
<th>Southern Region</th>
<th>136</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecticut</td>
<td>6</td>
<td>Alabama</td>
<td>0</td>
</tr>
<tr>
<td>Delaware</td>
<td>0</td>
<td>Arkansas</td>
<td>1</td>
</tr>
<tr>
<td>Maine</td>
<td>9</td>
<td>Florida</td>
<td>1</td>
</tr>
<tr>
<td>Maryland</td>
<td>4</td>
<td>Georgia</td>
<td>11</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>8</td>
<td>Kentucky</td>
<td>3</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>5</td>
<td>Louisiana</td>
<td>0</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2</td>
<td>Mississippi</td>
<td>1</td>
</tr>
<tr>
<td>New York</td>
<td>30</td>
<td>North Carolina</td>
<td>70</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>38</td>
<td>Oklahoma</td>
<td>1</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>0</td>
<td>South Carolina</td>
<td>0</td>
</tr>
<tr>
<td>Vermont</td>
<td>7</td>
<td>Tennessee</td>
<td>12</td>
</tr>
<tr>
<td>West Virginia</td>
<td>23</td>
<td>Texas</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Virginia</td>
<td>35</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>North Central</th>
<th>137</th>
<th>Western Region</th>
<th>156</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>3</td>
<td>Alaska</td>
<td>0</td>
</tr>
<tr>
<td>Indiana</td>
<td>3</td>
<td>Arizona</td>
<td>4</td>
</tr>
<tr>
<td>Iowa</td>
<td>2</td>
<td>California</td>
<td>22</td>
</tr>
<tr>
<td>Kansas</td>
<td>2</td>
<td>Colorado</td>
<td>27</td>
</tr>
<tr>
<td>Michigan</td>
<td>34</td>
<td>Idaho</td>
<td>33</td>
</tr>
<tr>
<td>Minnesota</td>
<td>5</td>
<td>Montana</td>
<td>10</td>
</tr>
<tr>
<td>Missouri</td>
<td>10</td>
<td>Nevada</td>
<td>1</td>
</tr>
<tr>
<td>Nebraska</td>
<td>10</td>
<td>New Mexico</td>
<td>1</td>
</tr>
<tr>
<td>North Dakota</td>
<td>0</td>
<td>Oregon</td>
<td>21</td>
</tr>
<tr>
<td>Ohio</td>
<td>8</td>
<td>Utah</td>
<td>15</td>
</tr>
<tr>
<td>South Dakota</td>
<td>5</td>
<td>Washington</td>
<td>16</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>55</td>
<td>Wyoming</td>
<td>6</td>
</tr>
</tbody>
</table>

Source: NASS (1998)

As will be seen from table 18 the number of farms involved in the production of
Atlantic salmon is very small, with nearly all being found in Maine.
Table 18
US State Salmon Farms

<table>
<thead>
<tr>
<th>State</th>
<th>Farms</th>
<th>Tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Maine</td>
<td>12</td>
<td>13,114</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>West Virginia</td>
<td>2</td>
<td>Withheld</td>
</tr>
</tbody>
</table>

Source: NASS (1998)

Notes: It has been assumed that salmon from the western region in the NASS 1998 figures are Pacific salmon and therefore they have been excluded.

13.3. Channel Catfish

Channel catfish (*Ictalurus punctatus*) is native to North America and its natural range is throughout much of North America, east of the Rocky Mountains extending from the Gulf states and the Mississippi Valley north to the Great Lakes and the southern parts of the prairie provinces of Canada (Stickney 1993; Page & Burr 1991; Froese & Pauly 2001). It has been transplanted throughout other parts of North America and 22 other countries around the world (Froese & Pauly 2001).

The industry has only existed since the early 1960s, having started after efforts in Alabama (Stickney 1993). Table 19 details the channel catfish production by weight and value in the years 1991 to 1998. During that period there was no reported capture fishery (FAO 2000b).

Channel catfish does not usually reproduce in grow-out culture ponds. It is, quite easy to spawn and adequate numbers of fry for restocking can be readily obtained. The fish tolerate crowding, adapt well to many commonly used culture systems and survive in a wide range of environments (Tucker 1985).

Early pioneering work is usually attributed to Swingle in the 1950s. The culture developed extensively in the 1970s with changing production methods in the late 1970s and early 1980s. Though there was a decrease in the number of farms in the United States in the early 1980s it was countered by an increase in the size of the remaining farms (Tucker 1985). Channel catfish are nest spawners that breed in spring and most attain sexual maturity at three to six years of age. They typically attain a length of 35 to 50 cm and live 6 to 10 years. They inhabit a wide range of freshwater environments including lakes and running waters. The latter includes muddy low gradient rivers as well as stony streams. They are omnivorous, opportunistic feeders and the larger individuals can be piscivorous. Their diets are also known to include course fish and salmonids (Avault 1996).
Table 19
US Aquaculture Production of Channel Catfish

<table>
<thead>
<tr>
<th>Year</th>
<th>Weight</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>177,373</td>
<td>246.5</td>
</tr>
<tr>
<td>1992</td>
<td>209,478</td>
<td>276.9</td>
</tr>
<tr>
<td>1993</td>
<td>210,126</td>
<td>327.9</td>
</tr>
<tr>
<td>1994</td>
<td>200,628</td>
<td>345.0</td>
</tr>
<tr>
<td>1995</td>
<td>202,883</td>
<td>351.0</td>
</tr>
<tr>
<td>1996</td>
<td>215,503</td>
<td>366.1</td>
</tr>
<tr>
<td>1997</td>
<td>238,234</td>
<td>371.7</td>
</tr>
<tr>
<td>1998</td>
<td>256,129</td>
<td>420.0</td>
</tr>
<tr>
<td>1999</td>
<td>270,629</td>
<td>438.4</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Notes: The weight is in tonnes and value in United States dollars.

The literature on the raising of channel catfish is reasonably extensive and of a practical nature, as described in table 20.

Table 20
Literature on Channel Catfish

<table>
<thead>
<tr>
<th>Nature of Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country reviews or emphasis, water bodies, continents, farming potential</td>
<td>1.9</td>
</tr>
<tr>
<td>Domestication and population aspects</td>
<td>.4</td>
</tr>
<tr>
<td>Environmental impact and translocation</td>
<td>.8</td>
</tr>
<tr>
<td>Economics of their culture</td>
<td>.4</td>
</tr>
<tr>
<td>Feeds, protein requirements and effects, and taste effects</td>
<td>12.4</td>
</tr>
<tr>
<td>Fish health</td>
<td>42.9</td>
</tr>
<tr>
<td>Genetics, improvements, manipulation and sterility</td>
<td>13.1</td>
</tr>
<tr>
<td>Hatchery, nursery and broodstock aspects</td>
<td>4.2</td>
</tr>
<tr>
<td>History of raising</td>
<td>.4</td>
</tr>
<tr>
<td>Production methods and improvement (including stocking rates), predation and off flavour</td>
<td>9.3</td>
</tr>
<tr>
<td>Other</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Notes: The table is computed from an online search of the CSA Aquatic Sciences & Fisheries Abstracts Database as at 28 November 2000 for the period 1981 to the search date under channel catfish. The search produced 1,737 abstracts. Only fifteen per cent were reviewed, as already described.

Again, it can be seen that there is literature to suggest that humans now intervene or have the potential to intervene in every stage of the life cycle of channel catfish.
and they do so. In addition there are a number of texts that are dedicated solely to discussing the culture of channel catfish. In those states where channel catfish culture constitutes a significant activity there is also extensive support from the state extension services, with specialist extension officers dedicated to aquaculture extension and research facilities that are supported by the resources of the local universities.

The channel catfish culturists, adopts a process very similar to their salmonid counterparts. This description emphasises the differences. They may manipulate the reproductive cycle and may hand strip the female and sacrifice the male to obtain and macerate testes over the eggs; they more likely provide spawning containers, more often in spawning ponds or pens with selected males and females in suitable ratios; they mostly recover the egg masses; they may induce further spawning by manipulating the water levels or moving the fish to a recently filled pond that is devoid of other fish; they usually incubate those eggs that they recover and place them in hatching baskets but may use hatching jars; they may pre-treat the water to ensure its suitability; they control its flow rate and in particular its oxygen level; they maintain the water at an optimal temperature for hatching (Tucker 1985).

After hatching, the newly hatched fry may be siphoned off into fry troughs or maintained in the hatching trough. Once they swim up the aquaculturist will provide high-quality manufactured feed in controlled quantities at regular times; they grade and prepare an inventory of them. They transfer them to suitably prepared nursery ponds at a suitable size and the fingerlings are moved to grow-out ponds. They may undertake continuous aeration of the pond; they will be ready to provide emergency supplementary aeration when that is required. They will be aware of the conditions in which emergency supplementary aeration is likely to be required and they will monitor the situation. They will in stocking the ponds have regard to the initial fish size, the desired fish size at harvest, the length of the growing season and the maximum daily feed they are prepared to use (Tucker 1985).

They will most likely use a continuous production strategy in the management of the ponds in an attempt to maintain a consistently higher standing crop and more fully utilise the carrying capacity of the ponds. They may undertake selective seining of the fish as they attain marketable size. They will add suitable sized fingerlings to replace the animals they have removed. They may treat the ponds to reduce the level of algal bloom. They may be forced to flush the ponds when off flavour strikes. When disease occurs they will use a limited number of chemicals available to them (Tucker 1985).

Whilst the foregoing has described a pond grow-out system, the more common method, a number of other methods may be used including tanks and raceways,
cage culture systems and closed systems. Even in pond systems there are many variations, from the uniform levee ponds to the hillside ponds. The water may come from surface waters, run off, streams or groundwater (Tucker 1985).

13.3.1. England

Channel catfish were introduced into this country between 1950 and 1974 for sports fishing. There appears to be little further information as to whether there are any self-sustaining populations in the wild (Welcomme 1988; Froese & Pauly 2001). There is no reported capture fishery (FAO 2000b) or culture system.

13.3.2. Australia

There is no suggestion that channel catfish have been introduced into this country and accordingly that it is being raised here.

13.3.3. Canada

There is no suggestion that channel catfish is being raised in any commercial quantities in this country.

13.3.4. United States of America

As already described the production of channel catfish in the United States is a significant business. The total value of the production of channel catfish amounted to $451 million and to over 46 per cent of the total United States aquaculture production for the year 1997 (NASS 1998). There is no reported capture fishery (FAO 2000b).

Channel catfish is the fifth most popular seafood product, in terms of per capita consumption, in the United States market (NFI 2001). It has had a relatively short history and has grown significantly throughout most of the period, as described earlier.

The number of catfish farms on a regional and state basis is set out in table 21. The table also allocates between the states the total water surface acre usage of 178,321 acres of production in January to June 1999. There is some discrepancy between the number of farms in terms of the water surface acre usage and the number involved in catfish sales and production. In table 21 the number of farms is shown as 1,324 and table 21 the total number of farms is 1,370 (NASS 1998).
Table 21
US Regional and State Catfish Farms and Water Area Usage

<table>
<thead>
<tr>
<th>Region</th>
<th>Farms</th>
<th>Acres</th>
<th>Region</th>
<th>Farms</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast Region</td>
<td>24</td>
<td>107</td>
<td>Southern Region</td>
<td>1,152</td>
<td>173,751</td>
</tr>
<tr>
<td>Connecticut</td>
<td>0</td>
<td>0</td>
<td>Alabama</td>
<td>250</td>
<td>21,016</td>
</tr>
<tr>
<td>Delaware</td>
<td>0</td>
<td>0</td>
<td>Arkansas</td>
<td>156</td>
<td>28,978</td>
</tr>
<tr>
<td>Maine</td>
<td>0</td>
<td>0</td>
<td>Florida</td>
<td>21</td>
<td>305</td>
</tr>
<tr>
<td>Maryland</td>
<td>7</td>
<td>54</td>
<td>Georgia</td>
<td>55</td>
<td>1,042</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>0</td>
<td>0</td>
<td>Kentucky</td>
<td>20</td>
<td>234</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>1</td>
<td>Withheld</td>
<td>Louisiana</td>
<td>100</td>
<td>13,728</td>
</tr>
<tr>
<td>New Jersey</td>
<td>2</td>
<td>Withheld</td>
<td>Mississippi</td>
<td>404</td>
<td>104,250</td>
</tr>
<tr>
<td>New York</td>
<td>4</td>
<td>11</td>
<td>North Carolina</td>
<td>36</td>
<td>1,166</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>5</td>
<td>17</td>
<td>Oklahoma</td>
<td>13</td>
<td>313</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>0</td>
<td>0</td>
<td>South Carolina</td>
<td>13</td>
<td>800</td>
</tr>
<tr>
<td>Vermont</td>
<td>0</td>
<td>0</td>
<td>Tennessee</td>
<td>25</td>
<td>289</td>
</tr>
<tr>
<td>West Virginia</td>
<td>5</td>
<td>Withheld</td>
<td>Texas</td>
<td>51</td>
<td>1,618</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Virginia</td>
<td>8</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>North Central Region</th>
<th>112</th>
<th>2,387</th>
<th>Western Region</th>
<th>66</th>
<th>2,043</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>15</td>
<td>268</td>
<td>Alaska</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Indiana</td>
<td>9</td>
<td>41</td>
<td>Arizona</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>Iowa</td>
<td>5</td>
<td>Withheld</td>
<td>California</td>
<td>51</td>
<td>2,000</td>
</tr>
<tr>
<td>Kansas</td>
<td>14</td>
<td>169</td>
<td>Colorado</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Michigan</td>
<td>12</td>
<td>53</td>
<td>Idaho</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>Minnesota</td>
<td>0</td>
<td>0</td>
<td>Montana</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Missouri</td>
<td>35</td>
<td>1,590</td>
<td>Nevada</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Nebraska</td>
<td>4</td>
<td>6</td>
<td>New Mexico</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>North Dakota</td>
<td>0</td>
<td>0</td>
<td>Oregon</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>Ohio</td>
<td>10</td>
<td>9</td>
<td>Utah</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>South Dakota</td>
<td>1</td>
<td>0</td>
<td>Washington</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>7</td>
<td>Withheld</td>
<td>Wyoming</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: NASS (1998)

Of approximately 1,370 farms producing catfish in 1997, over one-third of them produced less than USD 25,000 worth of catfish. In some states, the production of catfish forms part of the production of mixed farms (NASS 1998). Those farms not uncommonly also grow crops and run various terrestrial stock. As can be seen from table 22, the 1146 smallest producers account for only 22 per cent of the
production by value, whilst the remaining 224 account for 78 per cent of the production (NASS 1998).

Table 22
US Catfish Production by Farms

<table>
<thead>
<tr>
<th></th>
<th>$0 to $24.9</th>
<th>$25 to $49.9</th>
<th>$50 to $99.9</th>
<th>$100 to $499.9</th>
<th>$500 to $999.9</th>
<th>&gt;$1,000</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farms</td>
<td>515</td>
<td>112</td>
<td>165</td>
<td>354</td>
<td>121</td>
<td>103</td>
<td>1,370</td>
</tr>
<tr>
<td>$ Value</td>
<td>3.5</td>
<td>3.9</td>
<td>11.8</td>
<td>78.8</td>
<td>84.1</td>
<td>268.5</td>
<td>450.7</td>
</tr>
<tr>
<td>Percentage</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>17</td>
<td>19</td>
<td>59</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: NASS (1998)

Notes: The amount ranges and dollar values are in thousands of United States dollars.

13.4. Carps

The origins of the common carp and its initial natural range is the subject of differing views. It is variously said to be the temperate regions of Asia, especially China, central Asia and the Caspian sea (Jhingran & Pullin 1988; Balon 1995a, 1995b). It has clearly spread throughout most of the world (Froese & Pauly 2001). The production of carps worldwide from aquaculture is by weight the most significant of all fish populations. This production predominantly occurs in China, Central and Eastern Europe and Israel. For a long time they were the only fish that were recognised as possibly being domesticated (Balon 1995a, 1995b; Stickney 1993).

The extent of production of various carps from 1991 to 1998 in aquaculture is described in tables 23 and 24. Table 25 details by weight carp from capture fisheries. The worldwide capture fishery of these carp only contributed 1.16 per cent of the total worldwide production in 1997.

It is important to draw a distinction between the common European carp, the Chinese carp, (such as grass carp, Ctenopharyngodon idella and silver carp, Hypophthalmichthys molitrix) and Indian carps (Catala, Cirrhina and Labeo) for aspects of this thesis. The common European carp (common carp) appeared in the river Danube about 8000 to 10,000 years ago. It is unlikely that it occurred naturally in the waters of Central and Western Europe outside the river Danube at the beginning of the Christian era. Balon (1995a, 1995b) questions the common assertion that carp reached Rome from China. Balon (1995a, 1995b) suggests that it is possible that domestication of wild carp in China began independently of Europe, and in that case probably involved the East Asian sub species Cyprinus carpio haematopterus.
Table 23
World Carp Aquaculture Production

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass Carp</td>
<td>1,067</td>
<td>1,252</td>
<td>1,497</td>
<td>1,818</td>
<td>2,103</td>
<td>2,438</td>
<td>2,711</td>
<td>2,894</td>
</tr>
<tr>
<td>Silver carp</td>
<td>1,472</td>
<td>1,635</td>
<td>1,904</td>
<td>2,219</td>
<td>2,553</td>
<td>2,878</td>
<td>3,228</td>
<td>3,308</td>
</tr>
<tr>
<td>Common carp</td>
<td>1,026</td>
<td>1,144</td>
<td>1,322</td>
<td>1,535</td>
<td>1,818</td>
<td>2,039</td>
<td>2,230</td>
<td>2,465</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>706</td>
<td>794</td>
<td>924</td>
<td>1,076</td>
<td>1,257</td>
<td>1,418</td>
<td>1,552</td>
<td>1,584</td>
</tr>
<tr>
<td>Crucian carp</td>
<td>222</td>
<td>258</td>
<td>296</td>
<td>390</td>
<td>538</td>
<td>693</td>
<td>863</td>
<td>1,036</td>
</tr>
<tr>
<td>Mrigal carp</td>
<td>189</td>
<td>295</td>
<td>335</td>
<td>346</td>
<td>390</td>
<td>463</td>
<td>516</td>
<td>561</td>
</tr>
<tr>
<td>Mud carp</td>
<td>801</td>
<td>81</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>130</td>
<td>150</td>
<td>160</td>
</tr>
<tr>
<td>Black carp</td>
<td>36</td>
<td>52</td>
<td>67</td>
<td>105</td>
<td>120</td>
<td>137</td>
<td>154</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7,510</td>
<td>7,503</td>
<td>8,428</td>
<td>9,583</td>
<td>10,868</td>
<td>12,175</td>
<td>13,384</td>
<td>14,160</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Notes: Production by weight in thousands of tonnes. The common names are used.

Table 24
Value of World Carp Aquaculture Production

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass carp</td>
<td>1,327</td>
<td>1,427</td>
<td>1,542</td>
<td>1,679</td>
<td>1,844</td>
<td>2,232</td>
<td>2,494</td>
<td>2,655</td>
</tr>
<tr>
<td>Silver carp</td>
<td>1,647</td>
<td>1,808</td>
<td>1,993</td>
<td>2,197</td>
<td>2,365</td>
<td>2,784</td>
<td>3,005</td>
<td>3,086</td>
</tr>
<tr>
<td>Common carp</td>
<td>1,713</td>
<td>1,869</td>
<td>1,947</td>
<td>2,031</td>
<td>2,303</td>
<td>2,572</td>
<td>2,695</td>
<td>2,828</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>749</td>
<td>833</td>
<td>908</td>
<td>998</td>
<td>1,099</td>
<td>1,305</td>
<td>1,422</td>
<td>1,449</td>
</tr>
<tr>
<td>Crucian carp</td>
<td>286</td>
<td>314</td>
<td>330</td>
<td>398</td>
<td>493</td>
<td>666</td>
<td>782</td>
<td>834</td>
</tr>
<tr>
<td>Mrigal carp</td>
<td>257</td>
<td>313</td>
<td>298</td>
<td>317</td>
<td>332</td>
<td>371</td>
<td>476</td>
<td>475</td>
</tr>
<tr>
<td>Mud carp</td>
<td>80</td>
<td>81</td>
<td>90</td>
<td>100</td>
<td>110</td>
<td>137</td>
<td>158</td>
<td>160</td>
</tr>
<tr>
<td>Black carp</td>
<td>65</td>
<td>89</td>
<td>114</td>
<td>174</td>
<td>172</td>
<td>205</td>
<td>236</td>
<td>261</td>
</tr>
<tr>
<td>Total</td>
<td>6,124</td>
<td>6,734</td>
<td>7,222</td>
<td>7,894</td>
<td>8,718</td>
<td>10,272</td>
<td>11,268</td>
<td>11,748</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Notes: The values are rounded millions of United States dollars. The common names are used.

It is usually believed that carp culture has been undertaken in China since around 3000 B.C. and that the Chinese aquaculture of carp is described by Fan Li in his text entitled *Fish breeding* and dated 475 B.C. It illustrates the spawning of captive carp and indicates that fish farming was widely practiced in China at the time. Further texts from 1243 and 1639 also describe the culture of carp (Balon 1995a, 1995b).
Table 25
Carp Fisheries Catch

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass carp</td>
<td>4.42</td>
<td>4.69</td>
<td>5.43</td>
<td>4.67</td>
<td>1.51</td>
<td>20.20</td>
<td>17.31</td>
<td>10.00</td>
</tr>
<tr>
<td>Silver carp</td>
<td>18.25</td>
<td>15.08</td>
<td>12.01</td>
<td>15.56</td>
<td>23.97</td>
<td>24.50</td>
<td>22.56</td>
<td>15.18</td>
</tr>
<tr>
<td>Common carp</td>
<td>71.24</td>
<td>78.78</td>
<td>80.61</td>
<td>80.59</td>
<td>86.52</td>
<td>86.68</td>
<td>80.75</td>
<td>83.82</td>
</tr>
<tr>
<td>Bighead carp</td>
<td>2.39</td>
<td>2.64</td>
<td>2.43</td>
<td>2.43</td>
<td>1.18</td>
<td>2.36</td>
<td>2.04</td>
<td>3.01</td>
</tr>
<tr>
<td>Crucian carp</td>
<td>11.78</td>
<td>11.61</td>
<td>10.04</td>
<td>8.84</td>
<td>9.07</td>
<td>8.63</td>
<td>7.69</td>
<td>7.14</td>
</tr>
<tr>
<td>Mrigal carp</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mud carp</td>
<td>.02</td>
<td>.01</td>
<td>.06</td>
<td>.06</td>
<td>.05</td>
<td>.03</td>
<td>.04</td>
<td>.07</td>
</tr>
<tr>
<td>Black carp</td>
<td>.04</td>
<td>.03</td>
<td>.02</td>
<td>.02</td>
<td>1.65</td>
<td>1.46</td>
<td>1.40</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>108.14</td>
<td>112.84</td>
<td>110.6</td>
<td>111.92</td>
<td>125.14</td>
<td>143.86</td>
<td>131.79</td>
<td>120.47</td>
</tr>
</tbody>
</table>

**Source:** FAO (2000b)

**Notes:** The weight is expressed in thousands of tonnes. The common names are used.

Balon (1995a, 1995b) suggests that carp in China were never truly domesticated, but stocked in a semi-domesticated condition with other fish. He also asserts that there is evidence that European pond carp were introduced to some regions of Eastern Asia and at best introgressed stocks of domesticated European and Asian sub-species of carp may actually be present. Another view is that Central Asia is the original home of the carp and that it was transferred eastward to China and Japan and westward into the whole of Europe by way of Greece and Rome. Notwithstanding the many conflicts, Balon (1995a, 1995b) asserts that the Danubian wild carp may be the purist form. Balon (1995a, 1995b) further suggests that the natural occurrence of the wild carp in Europe is restricted to the stretch in the Danube downstream from the river’s Piedmont zone and that the mistaken belief that the natural distribution went beyond this area has been finally laid to rest.

Linnaeus described only one species of carp from Europe (Balon 1995b, 15). However, three distinct groups of wild carp have been described. The European wild carp are those from the piedmont zone of the river Danube; the East Asian wild carp is from Siberia and China; and the wild carp is from the Central Asian regions. The wild carp from the river Danube is designated as the representative form (Balon 1995a, 1995b). Two sub-populations are identified, the European wild carp *Cyprinus carpio carpio* from the western group and the Asian wild carp *Cyprinus carpio haematopterus*. The number of gill rakers usually distinguishes the two groups, though there are overlaps. There is only one population whose natural range is restricted within Eurasia and two poorly defined sub-groups at the opposite ends of the range. There is a significant incidence of feral carps that are descendants of earlier escapees or introductions, which are regarded as merely confusing the picture (Balon 1995a, 1995b).
The wild carp has an elongated and torpedo-shaped body. It does not have a clear notch or depression between the head and the body dorsum, and the scales are regular and large. The caudal edges are marked by dark pigment, giving the body a mesh-like appearance. They are brown to dark brown on the dorsum, dark golden at the sides and light brown with an orange touch on the ventral part. The leading spines of the anal fin are yellow-orange. Other fins are dark brown (Balon 1995a, 1995b). Large body depth is a clear sign of domestication (Balon 1995a, 1995b).

Domesticated carp are rarely seen or caught with the spawning schools of wild carp, even if they are present in the area. When specimens of domesticated carp are caught, they are immature or not in spawning condition. In spawning the wild carp enter flooded grass flats, which have been recently inundated by the river. The released eggs adhere to grass blades, with each female releasing two or three portions of eggs within 10 to 14 day intervals. Wild carp are regarded as non-guarding, open substratum, egg-scattering, obligatory plant spawners (Balon 1995a, 1995b).

The size of the gape of the mouth can be used to distinguish between wild and domesticated carp. The gape is larger in domesticated carp. This is attributed to changes in feeding habits and is probably a result of artificial selection. Where domesticated carp have been selected to utilise supplementary food added to ponds they were found to grow better when manufactured feed was added. The intestine of wild carp is generally 15 to 25 per cent shorter than that of domesticated carp and the ratio of wet length to gut mass is 2.2 in domesticated and three in wild carp. The body shape of domesticated carp is always much deeper than that of the wild carp and appears to have more flesh, but the calculated ratio of muscle in both is the same. The dressed weight of individual domesticated carp does not increase even though its faster growth rate produces more absolute meat within a given period of time. The posterior swim bladder chamber in domesticated carp is also markedly reduced in size. The faster growth rate of domesticated carp can probably be correlated with a large mouth, the longer intestine and better adaptation for the utilisation of complementary food (Balon 1995a, 1995b).

On the other hand wild carp have greater strength, mobility and viability, which are emphasised by some of the physiological characteristics. Wild carp have 18 to 19 per cent more erythrocytes and haemoglobin than does the domesticated carp. Blood sugar levels are 16 to 26 per cent higher. The wild carp has much lower water content in its muscles and liver and has a greater fat content in individual organs, more glycogen in the liver and more vitamin A in the eyes, intestine and liver. Its muscles are better vascularised and do not fatigue as quickly as that of domesticated carp (Balon 1995a, 1995b).
It is likely that carp were raised in Roman times. By the start of the first millennium the Romans had devised various ponds for at least the storage and more possibly the raising of fish. This is a matter of some controversy. The emphasis during this period was on the raising of saltwater fish. These ponds became known as *piscinae*. They ensured a variety of fresh fish independent of weather conditions and fishing success. Elements of breeding and rearing could be expected, having regard to the Roman skills in other areas (Balon 1995a, 1995b; Higginbotham 1997).

By that time the Romans were also established on the river Danube. Archaeological examination of their ruins along the Danube suggests that carp were consumed more than any other variety of fish. It is on the basis of that familiarity and the existence of *piscinae* that Balon (1995a, 1995b) asserts that the Romans more than likely were engaged in the raising and domestication of carp.

Various records of the keeping of carp from 500 A.D. through to the Middle Ages can also be found. By 1547 articles and simple studies about the rearing of carp and its culture in ponds appeared, but the practices were well known prior to that (Hoffman 1995). Those writings also comment on the raising of carp by the Romans (Balon 1995a, 1995b).

Aspects of the history of the consumption of freshwater fish during the period from 500 A.D. to more recent times in Europe can be found in Hoffman (1995). The need for fish with the spread of Christianity and the requirements of abstinence from meat is regularly cited as one the major reasons for the need for fishponds for the storage and possibly the breeding of fish during much of this period. The growth of the reliance on carp and the development of significant carp pond culture in Czechoslovakia are also mentioned.

In England, after the introduction of carp, its adoption as a fish in the ponds appears to have been somewhat slow. The French records of the thirteenth century knew it as both a domestic pond fish and as a wild river fish (Hoffman 1995; Balon 1995b). There is still extensive production of carp in Europe, though there has been a significant decline since 1990 with overall production in 1997 being less than one-third of that produced in 1990 (FAO 2000b).

Much like salmonids the literature on carps is particularly extensive though possibly of a less practical nature. The extent of the production worldwide emphasises this dissemination of the practical know how of carp culture methods as described in table 26.
Table 26
Literature on Carp

<table>
<thead>
<tr>
<th>Nature of Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country reviews or emphasis, water bodies, continents, farming potential</td>
<td>22.4</td>
</tr>
<tr>
<td>Domestication</td>
<td>.7</td>
</tr>
<tr>
<td>Environmental impact and translocation</td>
<td>1.4</td>
</tr>
<tr>
<td>Economics of their culture</td>
<td>3.1</td>
</tr>
<tr>
<td>Feeds, protein requirements and effects</td>
<td>6.4</td>
</tr>
<tr>
<td>Fish health</td>
<td>11.5</td>
</tr>
<tr>
<td>Genetics, improvements, manipulation and sterility</td>
<td>7.1</td>
</tr>
<tr>
<td>Hatchery, nursery and broodstock aspects</td>
<td>8.5</td>
</tr>
<tr>
<td>History of raising</td>
<td>0</td>
</tr>
<tr>
<td>Production methods and improvement (including stocking rates)</td>
<td>14.9</td>
</tr>
<tr>
<td>Other</td>
<td>24.1</td>
</tr>
</tbody>
</table>

Notes: A search of the CSA Aquatic Sciences & Fisheries Abstracts Database as at 28 November 2000 for the period 1981 to the date of the search under carp produced 7,591 abstracts. When this was further modified to limit it to aquaculture or fish farming it was reduced to 1,806 and only fifteen per cent reviewed on a similar basis to that already described.

Carp are more commonly raised in earthen ponds, though they may also be raised in raceways, cages, rivers, lakes and canal fish culture facilities, and rice paddies. The degree of culture intensity can range from extensive to relatively intensive, the latter involving high-density stocking, fertilisation of the pond, the provision of commercial diets, mechanical aeration and management of the phytoplankton blooms (McGeachin 1993; Jhingran & Pullin 1988). Carp are also raised in polyculture situations (McGeachin 1993; Jhingran & Pullin 1988).

Common carp spawn naturally during the spring when the water temperature reaches 24 degrees Celsius. They are usually spawned in spawning ponds and the egg mats are then usually transferred to fry nursery ponds. After the eggs hatch, the spawning mats are removed and, where the brood fish remain, they are seined from the pond. Prior to spring the sexes are usually segregated into separate ponds to prevent premature spawning (McGeachin 1993).

The techniques for the induction of spawning in common carp are well established. In the case of grass carp, spawning may only be achieved in a hatchery. So, much like other fish culturists, intensive carp culturists may manipulate the reproductive cycle of the fish by the use of hormones or other queues to induce spawning; they may hand strip both the male and female; they
may store the male’s milt in advance; and they may incubate the eggs in hatching containers and treat the eggs with a suitable solution to keep them from clumping (McGeachin 1993; Jhingran & Pullin 1988).

On hatching in a hatchery, the fry may be swept into larval rearing tanks by the water flow from the hatchery troughs. The culturists may assist the fry in ensuring that their swim bladders inflate when they swim up and thereafter they will provide them with a diet of suitable yeast and live feed. After 10 to 14 days they will be removed from the tanks and placed in nursery ponds. The feeding requirements of the various carps and their nutritional requirements have been widely researched and are well documented. The feeds that may be used are quite broad (McGeachin 1993).

Considerable work has been done on the genetics of carp (Jhingran & Pullin 1988). The European carp has been selected over the centuries for fast growth rate, late sexual maturity, ease of capture by seining and scale patterns. The process of domestication of the common carp in Europe has led to the development of highly inbred lines, with concomitant increases in deformities and reduced growth rates. Humans have also sought to manipulate their sex and otherwise produce sterile triploids. This may occur using one of many methods that have been developed for that purpose. In other cases there are attempts to produce various hybrids and crosses to produce sterile triploids (McGeachin 1993).

Again humans now extensively manipulate most parts of the life cycle of carp and in the case of at least common carp have long manipulated and selected them to the point that they are now regarded by some as domesticated.

13.4.1. England

In 1460 the Duke of Norfolk is reported to have included carp in the stocking of his ponds (Hoffman 1995), the first documentary evidence of their introduction to England and contrary to suggestions of earlier introductions. Carp are included in the Privy Purse Expenses of Elizabeth of York in 1502. There are other reports of their introduction, but there is some doubt about their authenticity (Balon 1995a, 1995b; Welcomme 1988, suggesting between 1300 and 1499; Froese & Pauly 2001). It is likely that when they were introduced into England from Europe, carp were domesticated or at least semi-domesticated.

By the time of their introduction, the use of ponds and stews had passed the peak of importance (Hoffman 1995; Dyer 1988; Steane 1989), other than for the nobility and the monasteries (Dyer 1988; Steane 1989; Bond 1988). Also saltwater fish, whether fresh, dried, salted or smoked, was available throughout the British Isles by that time. In most cases it was considerably cheaper than freshwater fish (Dyer 1988), roach and dance being the exceptions. It is likely that, apart from the nobility and the clergy, those that could afford fish would
have obtained better value from saltwater species during most of the period (Dyer 1988).

Whilst common carp are reported as being raised in the United Kingdom prior to 1997 and production in 1989 amounted to 200 tonnes there was apparently no production from aquaculture in 1999 (FAO 2000b). There is no reported capture fishery (FAO 2000b).

13.4.2. Australia

Common carp were introduced into Australia in 1872 and are widespread throughout New South Wales, South Australia and Victoria (Welcomme 1988; Froese & Pauly 2001). They have found their way into various river systems, constitute a significant pest in the Murray River system and are regarded as a noxious fish in some states (Welcomme 1988; Froese & Pauly 2001). They do not exist in the Queensland river systems (Paul Grieve 2000, personal communication), and are relatively rare in Western Australia (Brett Moloney 2000, personal communication).

Apart from very recent production figures for New South Wales (in 1999 there was one commercial operation producing 8 tonnes: Steve Boyd 2000, personal communication) there is no suggestion that carp is being raised in any other part of Australia (FAO 2000b). There is no reported capture fishery (FAO 2000b), though anecdotal evidence suggests there may be a minor one (Welcomme 1988; Froese & Pauly 2001).

13.4.3. Canada

Carp were introduced into Canada in 1880 from the United States and there are now self-sustaining populations in the wild in Quebec, Ontario, Manitoba and British Columbia (Crossman 1984; Froese & Pauly 2001).

Apart from Alberta (Alberta, Duncan Lloyd 2000, personal communication), where grass carp are being raised in small numbers, and British Columbia in 1997 but not 1998 (British Columbia, Carmen Mathews 2000, personal communication), there is no suggestion that carp is being raised in any commercial quantities in the other provinces of this country (FAO 2000b). There was a reported capture fishery in 1999 of 741 tonnes (FAO 2000b).

13.4.4. United States of America

As will be seen from table 27 the number of farms involved in the production of carp is very small, most being found in Arkansas.
Table 27
US Regional and State Carp Farms and Water Area Usage

<table>
<thead>
<tr>
<th>Region</th>
<th>Farms</th>
<th>Value</th>
<th>Region</th>
<th>Farms</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast Region</td>
<td></td>
<td></td>
<td>Southern Region</td>
<td>45</td>
<td>2,136</td>
</tr>
<tr>
<td>Connecticut</td>
<td>3</td>
<td>Withheld</td>
<td>Alabama</td>
<td>8</td>
<td>279</td>
</tr>
<tr>
<td>Delaware</td>
<td>1</td>
<td>Withheld</td>
<td>Arkansas</td>
<td>18</td>
<td>1,282</td>
</tr>
<tr>
<td>Maine</td>
<td></td>
<td></td>
<td>Florida</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>Maryland</td>
<td>1</td>
<td>Withheld</td>
<td>Georgia</td>
<td>4</td>
<td>Withheld</td>
</tr>
<tr>
<td>Massachusetts</td>
<td></td>
<td></td>
<td>Kentucky</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>New Hampshire</td>
<td></td>
<td></td>
<td>Louisiana</td>
<td>6</td>
<td>182</td>
</tr>
<tr>
<td>New Jersey</td>
<td></td>
<td></td>
<td>Mississippi</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>New York</td>
<td>1</td>
<td>Withheld</td>
<td>North Carolina</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td></td>
<td></td>
<td>Oklahoma</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>Rhode Island</td>
<td></td>
<td></td>
<td>South Carolina</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Vermont</td>
<td></td>
<td></td>
<td>Tennessee</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>West Virginia</td>
<td></td>
<td></td>
<td>Texas</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Virginia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Central Region</td>
<td>15</td>
<td>391</td>
<td>Western Region</td>
<td>10</td>
<td>703</td>
</tr>
<tr>
<td>Illinois</td>
<td>1</td>
<td>Withheld</td>
<td>Alaska</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Indiana</td>
<td>1</td>
<td>Withheld</td>
<td>Arizona</td>
<td>6</td>
<td>684</td>
</tr>
<tr>
<td>Iowa</td>
<td>1</td>
<td>Withheld</td>
<td>California</td>
<td>2</td>
<td>Withheld</td>
</tr>
<tr>
<td>Kansas</td>
<td>4</td>
<td>Withheld</td>
<td>Colorado</td>
<td>3</td>
<td>Withheld</td>
</tr>
<tr>
<td>Michigan</td>
<td></td>
<td></td>
<td>Idaho</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minnesota</td>
<td></td>
<td></td>
<td>Montana</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>3</td>
<td>Withheld</td>
<td>Nevada</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nebraska</td>
<td></td>
<td></td>
<td>New Mexico</td>
<td></td>
<td></td>
</tr>
<tr>
<td>North Dakota</td>
<td></td>
<td></td>
<td>Oregon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>5</td>
<td>40</td>
<td>Utah</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Dakota</td>
<td></td>
<td></td>
<td>Washington</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wisconsin</td>
<td></td>
<td></td>
<td>Wyoming</td>
<td>1</td>
<td>Withheld</td>
</tr>
<tr>
<td>Tropical/Hawaii</td>
<td>3</td>
<td>Withheld</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: NASS (1998)

Notes: The values are in thousands of United States dollars.

Common carp were first introduced into North America in 1831 and R. Hessel successfully introduced the first domestic carp in 1877 for the United States Fish Commission. The United States Fish Commission undertook a programme to
rejuvenate the rapidly depleting inland fisheries of the United States by stocking carp in public waters and fishponds on request by private individuals. The first carp were distributed in 1879 and by 1882 some seventy thousand had been stocked in 298 of the 301 congressional districts. By 1896, 2.2 million fingerlings had been distributed throughout the United States and about two hundred and fifty thousand fish stocked directly into public waters. Grass carp were first introduced to the United States in 1963 for evaluation as a biological control of aquatic vegetation (McGeachin 1993). They are now found in every state other than Alaska and generally regarded as a pest in the western states (Lubinski et al. 1986; Froese & Pauly 2001).

The production of carp in the United States is quite small with an approximate weight in food fish sales of 753 tonnes with the value of approximately USD 1.3 million and total sales of USD 3.249 million (NASS 1998). In some places carp are produced as part of a polyculture with channel catfish farming. The carp are used to reduce algal build up caused by excessive nutrients in the water. There is a reported capture fishery in 1999 of a 1,103 tonnes of common carp and 11 tonnes of grass carp (FAO 2000b).

### 13.5. Snapper

Snapper (*Pagrus auratus*) were once considered to be two separate species, *Chrysophrys auratus* (a name still commonly used for them, see Froese & Pauly 2001) and *Pagrus major*. They are now regarded as the one species (Paulin 1990). *Pagrus auratus* has independent and reproductively isolated populations in both hemispheres (PIRSA 2000). They occur around most of southern Australia and New Zealand. In the northern hemisphere they occur in the north-eastern part of the South China Sea northward to Japan (Froese & Pauly 2001).

Snapper are currently raised in quantities in Japan, China, Korea and Taiwan (FAO 2000b). There are fledgling industries in Australia and New Zealand. It is a highly valued fish in those markets. In 1997 aquaculture contributed .1 per cent to the total production of snapper worldwide. Japanese work has demonstrated that snapper can be acoustically trained to respond for feeding after an initial period in netted areas and two months of training (Foscarini 1988). This presents an alternative method for raising them (see section two).

Most research into snapper farming has been conducted in Japan, where the population has been reared experimentally since the turn of the early 1900s and successfully commercially farmed since 1965. The farming of snapper is relatively new in Australia and New Zealand.

Table 28 details the production of snapper in the period 1991 to 1998.
Table 28
Capture and Aquaculture Production of Snapper

<table>
<thead>
<tr>
<th>Year</th>
<th>Capture Weight</th>
<th>Aquaculture Weight</th>
<th>Aquaculture Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>25,628</td>
<td>60,150</td>
<td>520.5</td>
</tr>
<tr>
<td>1992</td>
<td>27,328</td>
<td>66,067</td>
<td>528.7</td>
</tr>
<tr>
<td>1993</td>
<td>27,424</td>
<td>72,914</td>
<td>595.0</td>
</tr>
<tr>
<td>1994</td>
<td>27,193</td>
<td>77,116</td>
<td>772.6</td>
</tr>
<tr>
<td>1995</td>
<td>27,515</td>
<td>72,428</td>
<td>810.5</td>
</tr>
<tr>
<td>1996</td>
<td>29,114</td>
<td>77,878</td>
<td>710.4</td>
</tr>
<tr>
<td>1997</td>
<td>29,618</td>
<td>81,426</td>
<td>618.8</td>
</tr>
<tr>
<td>1998</td>
<td>29,058</td>
<td>83,189</td>
<td>503.4</td>
</tr>
</tbody>
</table>

Source: FAO (2000b)

Notes: Weight is in tonnes and value in millions of United States dollars.
Search undertaken using common name Silver seabream in FAO (2000b).

The literature on the raising of snapper is more limited than that in respect of the other populations discussed in this thesis and is possibly of a less practical nature, as described in table 29.

Again, much like the processes described in respect of the other fish, humans intervene in the full life cycle of these fish. The processes the culturist uses are very similar; they are an adaptation of the same processes already described to fit the life cycle of this particular population. The culturists usually manipulate the reproductive cycle by modifying the water temperature cycle in synchronisation with photoperiod adjustment. They use different brood fish in the different regimes to lengthen the spawning period for overall production. They enhance the brood stock feed in an endeavour to optimise their condition for spawning. They may need to use hormones to finally induce spawning (Foscarini 1988; PIRSA 2000).

They establish facilities to capture the eggs at the surface. The eggs that they capture incubate in larval tanks in the dark. They are likely to recover millions. They hatch quickly, usually within twenty-eight hours after fertilisation, depending on the water temperature. Within six days the culturists need vast amounts of live feed, initially rotifers and then live artemia, in each case suitably enriched with algae of different groups, which they will also culture at their hatchery, in an endeavour to ensure appropriate fatty acid and other nutritional requirements. They provide this live feed regularly to the larval tanks. They may endeavour to use micro-particulate diets rather than the live feeds. They introduce the larvae to inert food after about thirty five days. They initially stock the larval tanks with numbers that minimise the incidence of cannibalism. At a suitable
stage, usually at about twenty days, they seek to grade and move them (Foscarini 1988; PIRSA 2000).

Table 29
Literature on Snapper

<table>
<thead>
<tr>
<th>Nature of Issue</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country reviews or emphasis, water bodies, continents, farming potential</td>
<td>13</td>
</tr>
<tr>
<td>Domestication and population aspects</td>
<td>0</td>
</tr>
<tr>
<td>Environmental impact and translocation</td>
<td>0</td>
</tr>
<tr>
<td>Economics of their culture</td>
<td>0</td>
</tr>
<tr>
<td>Feeds, protein requirements and effects, and taste effects</td>
<td>8</td>
</tr>
<tr>
<td>Fish health</td>
<td>23</td>
</tr>
<tr>
<td>Genetics, improvements, manipulation and sterility</td>
<td>3</td>
</tr>
<tr>
<td>Hatchery, nursery and broodstock aspects</td>
<td>10</td>
</tr>
<tr>
<td>History of raising</td>
<td>0</td>
</tr>
<tr>
<td>Production methods and improvement (including stocking rates), predation and off flavour</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>38</td>
</tr>
</tbody>
</table>

Notes: A search of the CSA Aquatic Sciences & Fisheries Abstracts Database as at 10 December 2000 for the period 1981 to the date of the search under *Pagrus auratus, Chrysophyrs auratus* and *Pagrus major* produced 639 abstracts and a like review to that already described produced the foregoing percentages.

They raise them to either sell as fingerlings or for their own grow out. They move them to sea cages as part of their own grow out. They continue to feed and grade the animals until they are selected for sale, most likely, for the live restaurant trade. They will have little control over the water quality or temperature in the grow out; they may seek to establish the sea cages in the cooling water of a power station to enhance the growth rate; protect the animals from predation and seek to minimise the incidence of disease. When disease occurs they attempt to treat the animals with the use of chemicals and an array of other methods. They again select the brood stock, undertake special feeding regimes for the brood stock in preparation for spawning and repeat the cycle (Foscarini 1988; PIRSA 2000).

13.5.1. England and Canada

There is no suggestion that snapper are being raised in either country. There is no capture fishery (FAO 2000b).

13.5.2. Australia

The capture fishery produced 4,180 tonnes in 1997 (FAO 2000b).
The production of snapper from aquaculture in Australia is minimal. In South Australia there are two hatcheries producing fingerlings for grow out. At least one of those hatcheries also seeks to grow out some of their production. There are also fledgling industries in Western Australia and New South Wales, with two producers in New South Wales supplying fingerlings in 1997 but no grow out (Steve Boyd 2000, personal communication).

13.5.3. United States of America

Whilst there is a categorisation of the production of other food fish in United States on approximately 31 farms that amounted to some USD 3 million in value, there is no suggestion that snapper has been introduced into the United States. There is no capture fishery (FAO 2000b).

14. Application of the Modern Common Law to Selected Teleost Fish

14.1. Introduction

In addition to the information already presented, to apply the tests described in chapter two it will also be necessary to briefly consider the applicable legislative regime and consequent requirements for those undertaking aquaculture in particular jurisdictions. Three of the four countries under consideration are federations involving multiple jurisdictions and consequently multiple legislative regimes. The consideration is broad rather than a detailed examination of those legislative restrictions.

As will be described, in most of the communities there are legislative restrictions on aquaculture including licensing requirements. The nature and extent of those requirements differs significantly in each the communities under consideration. In the discussion as to the status of each population of fish, it will be assumed that those licensing requirements apply, unless indicated to the contrary.

Each of the chosen populations has a power of locomotion and are considered to be tame, as compared to ferocious. In some populations there is evidence of attenuated flight response. However, there is no information to suggest they are shown at shows in any of the countries, though elements of aquaculture are sometimes exhibited at shows in many jurisdictions, and this may include any of the populations cultured in the particular community. So far there appears to be no system of pedigree registration established for populations of fish, though genetic improvement and manipulation of each of the cultured populations is undertaken in each of the countries under consideration where they are cultured and is the subject of considerable literature worldwide. Further there are clearly established and recognised methods of raising, housing and keeping each of the populations.
14.2. General position

The following describes the general position for each of the chosen populations and foreshadows some of the differences to be discussed under each country. The country-by-country discussion only highlights variations from the general position.

14.2.1. Rainbow Trout

Rainbow trout are clearly a population of animals in each of the countries under consideration, and are accepted as such by the communities. Whilst there has been an association with the communities in their natural range, it is likely to have been a hunter-gatherer relationship. Each population has clearly been subjected to significant exploitation in a manner recognised in each of the communities. In each of the communities a sufficient number of the criteria are satisfied, other than to the extent specifically noted in this thesis. The members of each population are clearly capable of being identified as members of that population, but in most communities, other than their native community, they may not be distinguishable from any populations at large. The populations at large, other than in their home range, come from the same stock. Accordingly those being exploited by humans do not appear to have distinguishing characteristics, in their non-native areas, from the enhanced populations and the feral animals that exist at large.

The populations have been bred in each of the jurisdictions for many years; they are bred on a number of farms in some of the communities, as described. Also in some communities they are regarded as having been commonly bred or are to be regarded as much a part of husbandry as cattle, sheep or pigs in those communities.

The animals are valuable. They have developed some social behaviour and habits, for which they have been selected. Their habits have considerably changed under the influence of humans; they are regarded by some as domesticated or semi-domesticated. Usually they are not recognised in legislation as now kept as domestic livestock, though that is now starting to occur and may be specially mentioned in appropriate situations. They have clearly become subservient to humans, as can be seen from the level of production worldwide and in many of the communities, although in many others this is still developing. There is significant written material on their raising and husbandry, and much of it is essentially practical. They are an introduced animal in most of the communities, and outside their native range are distinguishable from any native trout populations. They can survive in the wild and reproduce in the wild, to a varying extent, in the communities to which they have been introduced.
14.2.2. Atlantic Salmon

In most respects in the application of the criteria formulated in this thesis Atlantic salmon are similar to rainbow trout, though there are a few differences. The exploitation of Atlantic salmon is much greater than rainbow trout and the impact of humans on these animals has been much more significant. The escaped domesticated animals, whilst distinguishable, are adversely affecting the wild populations at large in their natural range. They may be forming feral populations outside of that range, animals indistinguishable from the cultured populations, though there is considerable controversy as to whether they are capable of establishing self-sustaining populations outside their natural range.

In most of the communities they have only been cultured for approximately fifteen years and at most cultured effectively elsewhere for up to fifty years. In many respects the culture activities are not altogether different from very extensive feed lot operations for cattle, pigs or battery hens. Most culture facilities are capital intensive and produce relatively large numbers of animals. There are few examples of the small producer, notwithstanding that they may now be regarded in many communities as much a part of husbandry as cattle or pigs.

14.2.3. Channel Catfish

Other than in the United States there is no reason to suggest, on the information available, that in any of the countries under discussion there are any populations of channel catfish in commercial production.

14.2.4. Carp

Carp may be regarded as domesticated worldwide and clearly humans have had a very significant impact on these animals over some thousands of years. It could be assumed that the status of these animals in each of these countries is domitae naturae, however it is more likely that they would be regarded as ferae naturae based on the tests formulated in this thesis. Other than in possibly one of the communities, there is no evidence to suggest that carp as a population are regarded as having been accustomed to associate with the community or society for a significant time. They have been in most of the communities for a little over a hundred years, with the exception of England. In most of the communities there is minimal evidence of exploitation by humans in a recognised manner. Whilst a worldwide approach may suggest otherwise, it appears that will be insufficient to alter their classification.

Evidence of significant or consistent exploitation in these countries is not available. There appears to be no distinguishable populations. There are probably some carp in ponds or tanks and the occasional culture system, however
most of the populations that exist are feral animals. They are mostly derived from domesticated carp that have undergone a transition, an adaptation to the wild in a new environment. They are feral populations.

14.2.5. Snapper

Other than in Australia, there is no reason to consider snapper. There is no information available to suggest that in any of the other countries there are any populations of snapper. These countries are outside their natural range and there is no evidence that they have been introduced into any of those communities.

14.3. England

There is a long history of legislation limiting fishing or the use of devices for fishing. Chapter 23 of Magna Carta 1225 required that all weirs throughout England (other than on the coast) be pulled down. This was intended to ensure the free passage of fish among other objects. In *Weld v Hornby*, (1806) 7 E. 195, 103 E.R. 75, it was said by Lord Ellenborough that a weir was a public nuisance and the improvement of an existing one was not permissible.

In 1285, the statute 13 Edw. 1, c. 47 prohibited the taking of salmon from the 'Nativity of Our Lady' to St Martin's Day in certain rivers, and prescribed a separate period during which young salmon could not be taken. That statute was further confirmed and extended by 13 Rich. 2, c. 19 and 1 Eliz. 1, c. 17 to the taking of any spawn of salmon, or the taking of trout or salmon out of season, and a minimum length for salmon was prescribed. Further early legislation included 30 Car. 2, c. 9; 9 Ann, c. 26, 1 Geo. 1, c. 18 and 23 Geo. 2, c. 26.

Clearly ponds, motes and stews were long maintained in England for the keeping and raising of fish. An action for the nuisance caused by a privy being constructed too close to a water channel feeding a fishpond can be found in early decisions. There is also to be found in 31 Hen. 8, c. 2 offences for fishing at night time in those facilities and damaging them (punishable by death) and fishing in the day time (punishable by three months' imprisonment). This statute was amended by 5 Eliz. 1, c. 21 to reduce the penalties and to require the payment of treble damages.

There is no specific modern aquaculture legislation in England and the English fisheries legislation contains only minimal references to aquaculture or fish farming. (The thesis does not consider any laws of the European Economic Community binding on the United Kingdom.) The application of the English fisheries laws to aquaculture is discussed at some length in chapter 14 of Howarth (1990) and also briefly in Campney and Murphy (1991). There are a number of Acts with potential application, including the Salmon and Freshwater Fisheries
Act 1975, the Fisheries Act 1981, British Fishing Boats Act 1983 the Diseases of Fish Act 1983 and the Salmon Act 1986. The registration of fish farming activities is provided for under the Diseases of Fish Act 1983, which also prohibits the unlicensed import of freshwater fish and eggs. The Registration of Fish Farming and Shellfish Farming Business Order 1985 also requires any business conducting aquaculture to register with the Minister in writing and to provide certain particulars (Campney & Murphy 1991; Howarth 1990).

There is clear evidence of a long history of raising carp, tench, pike and mullet in ponds in England (see section 13.4). There is now little if any culture of such populations (FAO 2000b). Rainbow trout farming began at the turn of the twentieth century and now occurs on a significant scale. Atlantic salmon occur naturally in streams and rivers of England.

14.3.1. Rainbow Trout

In England cultured rainbow trout may not be currently distinguishable from feral populations at large, though they are clearly distinguishable from populations of native trout. It is unlikely that the number of farms would be regarded as significant. It is also unlikely that they would be regarded by a court as a part of general husbandry in England.

Rainbow trout can clearly survive in the wild and reproduce to some extent in the wild in England. Their status is clearly on the edge of the line between domitae naturae and ferae naturae, though in this community a court would probably hold that they are the former.

14.3.2. Atlantic Salmon

In this country Atlantic salmon would be regarded as having been accustomed for a significant time to associate with the community in a hunter-gatherer context. More recently, anecdotal indications are that their presence may have started to increase in the wild after having declined significantly. It is unlikely that the form of association would be sufficient for them to be considered domitae naturae.

There is clearly a sizeable population at large. They have been bred in the jurisdiction for some years, though it is unlikely that the number of farms would be regarded as significant or that they would be regarded by a court as having been commonly bred.

14.3.3. Carp

There is some evidence to suggest that carp as a population have been accustomed to associate with the English community for a significant time. The association,
however, is weak. There is evidence of exploitation by humans in a manner recognised in that community and carp have been maintained in ponds and stews for centuries to an extent, though now this is of minimal significance.

14.4. Australia

The power to legislate in respect of aquaculture, and in particular sea ranching in Australia, resides in both the federal legislature and the state and territory legislatures. The jurisdiction to legislate in respect of inland waters and territorial waters (the bays, gulfs, estuaries and rivers within the flux and reflux of the tide: see section sixteen) is generally vested in the states and territories and as a consequence the states and territories regulate most aquaculture activity.

Adopting the legislation of South Australia as being reasonably indicative of the approach of the other states and territories (see Campney & Murphy 1991 for a slightly dated overview of some of these requirements in Australia), aquaculture is controlled and constrained by the Fisheries Act 1982 and the regulations made under that Act. The principal regulations relating to aquaculture are the Fisheries (Exotic Fish, Fish Farming and Fish Diseases) Regulations 2000.

The Fisheries Act 1982, whilst relying in many aspects on the concept of species, does define species to include subspecies and variety, and it allows identification of groups or populations in a non-taxonomical sense for the purposes of the Act (section 5). Aquaculture is not defined in the Act but fish farming is defined in section 5 to mean “propagating or keeping stocks of fish for the purpose of trade or business, the control or eradication of the aquatic or benthic flora or fauna, or consumption as food”. Section 51 of the Fisheries Act 1982 authorises the making of regulations for the conduct of aquaculture activities.

A person desiring to undertake aquaculture in South Australia is required by the Fisheries (Exotic Fish, Fish Farming and Fish Diseases) Regulations 2000 to be licensed (regulation 9). Those regulations prohibit the release of farmed fish; they impose various requirements in connection with the outbreak and control of disease; they specify the requirements for the installation and operation of certain equipment; they require the lodgement of half-yearly returns and the provision of certain information; and they require the maintenance of certain records.

The undertaking of certain activities involving livestock in South Australia is governed by the Livestock Act 1997. The definition of livestock extends to animals kept or usually kept in a domestic or captive state and specifically includes fish kept or usually kept on a fish farm. That Act prescribes certain codes of practice, the registration of certain livestock industries, activities relating to health and reporting of diseases, provisions for restricting entry of livestock into the state, implied contractual terms in respect of certain transactions relating
to livestock, and the use and registration of brands. These are modern provisions that may not be found in all states of Australia.

14.4.1. Rainbow Trout

It is unlikely that rainbow trout would be regarded by a court as having been accustomed for a significant time to associate with Australian communities. In most areas the association has lasted less than forty years, though they have been present in the country for in excess of half the time of European settlement. The populations have clearly been subjected to exploitation in a recognised manner in some states. A sufficient number of the criteria may be satisfied in the states of Victoria, New South Wales and Tasmania. In these communities cultured rainbow trout may not currently be distinguishable from the isolated populations at large, which are feral alien animals, that depend in most communities on artificial stocking to maintain their numbers. The trout that are at large have been released and abandoned. They are all from the same stock as those raised on the farms.

Rainbow trout have specific culture requirements that can only be satisfied in limited parts of these communities. It is doubtful that the number of farms would be regarded as significant overall, but in those areas that are suitable a contrary view is likely to prevail. In most parts of Australia they are not commonly bred, but there are some areas where this may be the case. They are an introduced animal in these communities and generally do not reproduce in the wild.

14.4.2. Atlantic salmon

It is unlikely that Atlantic salmon would be regarded as having been accustomed for a significant time to associate with any Australian communities. In these communities they are alien animals; any animal in the waters of the community is distinguishable.

Atlantic salmon have been bred in Australia for some years. Whilst they are bred on a number of farms in Tasmania, and a few outside that state, it is unlikely that the number of farms would be regarded as significant. It is also unlikely that they would be regarded as having been commonly bred in Tasmania. Notwithstanding that, their production in Tasmania is significant to the community and is likely to affect their status there.

14.4.3. Carp

There is no evidence of significant or consistent exploitation of carp by humans in a manner recognised in these communities. There appears to be no distinguishable population. The populations that exist are at their liberty; they are
feral alien animals. They are probably derived from domesticated carp and have undergone a transition, an adaptation to the wild in a new environment.

14.4.4. Snapper

Most snapper production comes from the wild, with little aquaculture production. Minimal exploitation or association, apart from fishing, has occurred in any Australian communities. Whilst a few of the more general criteria for exploitation are satisfied; this will be insufficient to alter their status. They are capable of being identified as members of that population. There is a minimal population in confinement and there is no suggestion that they have, as yet, any distinguishing characteristics.

Snapper have been bred in Australia only in the last few years and there are only a few farms endeavouring to raise them. The expertise to raise them is not generally available. The animals are valuable. The methods of raising, housing and keeping the animals are adaptations of other fish culture methods, but they may not be clearly established as yet. They are recognised in legislation as domestic livestock. The specific written material on their raising and husbandry is limited, though what is available is essentially practical. They clearly survive in the wild and reproduce in the wild in large numbers; they are indigenous to much of this country and many of its communities. In most other respects they do not satisfy the criteria established in this thesis.

14.5. Canada

The constitutional position in Canada has been considered by Wildsmith (1982), and more recently by Campney and Murphy (1991). Wildsmith's (1982) view was that a reasonably good but not an unequivocal case could be made out for provincial legislation dealing with aquaculture, particularly where the legislation dealt with private property rights. Such legislation would only apply to the territorial areas of the legislating province. There is still potential for overlapping federal and provincial legislation. In such cases, the legislation of both jurisdictions will prevail unless there is an inconsistency, and then the doctrine of paramountcy will limit the operation of the provincial legislation (Wildsmith 1982).

Whilst recognising that there are differences between provinces, particularly between the Atlantic and Pacific coasts, British Columbia will be adopted as the example jurisdiction. In this jurisdiction it is necessary to consider the federal Fisheries Act (R.S. c. F-14) and the Fisheries Act (R.S.B.C. 1996, c. 149). In each case it is also necessary to consider regulations made under those Acts for the purposes of this thesis. There is also a Memorandum of Understanding between the federal government and the Province of British Columbia pertaining to certain aspects of aquaculture (Campney & Murphy 1991).
Aquaculture is defined in section 1 of the Fisheries Act of the Province of British Columbia to mean the growing and cultivation of aquatic plants and fish for commercial purposes, in any water environment or in human-made containers of water, and includes the growing and cultivation of shellfish on, in or under the foreshore or in water. A person carrying on the business of aquaculture is required to be licensed (section 13(5)). The detailed provisions controlling aquaculture are to be found in the Aquaculture Regulations (B.C. Reg. 364/89). They prescribe the requirements for a licence for each site. They deal with the application, term, renewal and the fees for such licences. They seek to control escapes and require the reporting of escapes. They prescribe the keeping of records in connection with the administration of drugs and the sale of the culturists' fish to processors. They prohibit processing, except at an establishment validly registered by the federal Department of Fisheries and Oceans.

The federal legislative provisions are extensive in their control of fishing activities and activities that may impact on fish. The Minister has the authority to restrict or control the placement of nets or require a licence for their placement. The Minister may also set apart waters for the natural or artificial propagation of fish. A licence is required for the importation of fish and their eggs or their movement between provinces.

A more extensive discussion of aquaculture in Canada generally can be found in Boghen (1995), with an earlier discussion in MacCrimmon et al. (1974); a discussion of the regulatory regime is also to be found in Campney and Murphy (1991) and for Ontario in Moccia and Bevan (2000).

14.5.1. Rainbow Trout

In British Columbia rainbow trout have had a relatively long association with humans in the hunter-gatherer situation; they are a native population. Rainbow trout have clearly been exploited in a significant manner in many Canadian communities and a sufficient number of the criteria appear to be satisfied in some of these communities. In some communities they may not be currently distinguishable from a sizeable population at large. In others there may be no or minimal populations at large. They are alien animals other than in British Columbia, where they may be distinguishable from the wild population.

It is unlikely that the number of farms would be regarded as significant in most communities or rainbow trout regarded as commonly bred. They are now recognised in legislation in some of the communities as domestic livestock. There is minimal evidence that they survive in the wild and reproduce in the wild in most of the communities outside their natural range, though this may be open to doubt.
14.5.2. Atlantic Salmon

Atlantic salmon may be regarded as having been accustomed for a significant time to associate with some of the communities of Atlantic Canada in a hunter-gatherer relationship. That will not be the case in other Canadian communities.

The population has been subjected to significant exploitation in a manner recognised in some Canadian communities. There is a small capture fishery in some communities (constituting less than .1 per cent of the total production of the country). A sufficient number of the criteria appear to be satisfied in at least one of those communities, namely British Columbia. In some of the communities they are alien animals. They clearly survive in the wild and reproduce in the wild in the communities in their natural range; outside that there is minimal evidence that they survive.

14.5.3. Carp

The production in Alberta and British Columbia appears to be minimal and insufficient to alter the general view that carp are *ferae naturae* in these communities.

14.6. United States of America

The United States of America provides the same problems as Australia and Canada of determining the levels of government that have the legislative capacity to control aquaculture activities. There are two texts that have discussed this issue, *Aquaculture and the law* (Kane 1970) and *Coastal aquaculture law and policy* (Bowden 1981; also see Hanson & Goodwin 1977). Bowden (1981; 33) initially has a brief discussion of the constitutional issues, noting that “since states control water and submerged land within three miles of the coast, state law governs most marine law in this country,” with a further consideration of those aspects later (see chapter 9).

Kane’s (1970) discussion of the constitutional position though more detailed, is more dated. Within the coastal waters and in the internal waters the states have the right to control their fisheries for the good of the public. The states are restricted, however, by the framework of their own constitutions. The power of the states in this area is subject to the paramount authority of the federal government. If the federal government has not legislated in a particular area, then the function is left to the states (Kane 1970).

The Congress has also passed the Submerged Lands Act 1953 by which the United States relinquished in favour of the states all right, title and interest in and to all lands, improvements and natural resources beneath the navigable waters
within the state boundaries, which the Act extended seaward three miles. So, subject to any conflicting federal legislation under the commerce clause, the states have exclusive authority within this zone. Kane also expresses the view that aquaculture will almost certainly be held in future decisions to be a fishery for purposes of state regulation (Kane 1970).

As described by Campney and Murphy (1991), different measures have been taken by different states to regulate aquaculture. For the purposes of this discussion the laws of the State of Mississippi will be used (see Campney and Murphy 1991 for a slightly dated overview of the requirements in some of the other states). Mississippi produces significant quantities of channel catfish. It has sought to encourage aquaculture activities and has recognised the significance of the industry.

The Mississippi statutes seek to facilitate aquaculture activities and to increase the opportunities for the cultivation and marketing of the products of aquaculture. They extend the definition of agriculture to include the cultivation, growing, harvesting and marketing of domesticated fish. The term “livestock” is extended to include domesticated fish. Domesticated fish include any fish that are spawned and grown, managed, harvested and marketed on an annual, semi-annual, biennial or short-term basis in privately owned waters.

The state is authorised to lease state waters for aquaculture and to issue permits for aquaculture activities. Permits are required for the production of non-native populations and there are limitations on the aquaculture of certain game fish. In the case of native populations a permit may be issued where it is necessary to facilitate the disposal of such products in other places. The marketing and labelling of some aquaculture products is dealt with extensively and fish processors are also regulated (Campney & Murphy 1991; see Mississippi Code of 1972, Title 69, Chapter 7 and Title 79, Chapter 22).

14.6.1. Rainbow Trout

Much like British Columbia, on the Pacific coast of the United States the communities have long fished for rainbow trout. There remains a small capture fishery in some communities (constituting less than .6 per cent of the total production of the country). In those communities they may not be currently distinguishable from a sizeable population at large. In others there may be no or minimal populations at large.

In a few communities the number of farms will be significant and rainbow trout would be regarded as having been commonly bred. They have clearly become subservient to humans, as can be seen from the level of aquaculture production and minimal capture fishery.
14.6.2. Atlantic Salmon

On the northeastern Atlantic coast of the United States Atlantic salmon would be regarded much like Atlantic salmon in eastern Canada and England. There is however no reported capture fishery in the U.S. A sufficient number of the criteria to be classified as *domitae naturae* may be satisfied in only one American community, namely Maine, where there is significant aquaculture production. Atlantic salmon are clearly capable of being identified as members of that population in that community.

14.6.3. Channel Catfish

Channel catfish are clearly a population of animals and have been the subject of capture fisheries in those communities for a considerable period. They have been raised in captivity for a comparatively short time.

The population has clearly been subjected to very significant exploitation in a manner recognised in many American communities. A sufficient number of the criteria put forward in this thesis appears to be satisfied in some of those communities. There is no reported capture fishery. The members of the population are clearly capable of being identified as members of that population. In some communities they may not be currently distinguishable from an indigenous population at large. In others there may be none or minimal populations at large; they are alien animals.

Channel catfish have been bred in the communities for about forty years; they are bred on hundreds of farms in a few of the communities and a significant number of farms in many other communities. In four communities tens of thousands of acres of land are involved and in others thousands of acres. They are commonly bred and in some of the communities they are as much a part of a mixed farm as are cattle, sheep or pigs.

They are recognised in legislation of some communities as domestic livestock. There is a limited licensing system for those farming them. They have clearly become subservient to humans, as can be seen from the level of production. There is significant written material on their raising and husbandry. Much of that material is essentially practical. They can survive in the wild and reproduce in the wild in many of the communities.

14.6.4. Carp

There is some level of carp production in the U.S., but it does not appear to be sufficient to distinguish the populations. It is likely that much of the population is in the wild. They are feral alien animals derived from domesticated carp that
were introduced and distributed; they have undergone a transition, an adaptation to the wild in a new environment.

15. What is the Application of the Principles to Teleost Fish?

15.1. Do Absolute Property Rights Exist in Teleost Fish?

As will be seen from the foregoing discussion, and as would be expected from the formulation of the test proposed in chapter two, it is not possible to provide a general answer to the question whether absolute property rights exist in teleost fish.

Each population must be considered in the particular community. Further, in a federation the test will need to be applied on the basis that each province or state constitutes a separate community and their status in each such community requires separate consideration.

Whilst it may be desirable to apply a worldwide approach, as to the status of a population, this may not be possible unless there are no wild members of the population worldwide. This is not the case with the foregoing populations, with the possible exception of common carp. There are clearly populations at large that are regarded by scientists as non-domesticated in each case. It is possible that in the case of common carp, apart from feral populations, there are few if any members of wild populations remaining (Balon 1995b).

Table 30 summarises the conclusions from section fourteen based on the foregoing discussion. The teleost fish that are not classified as *domitae naturae* in those communities will remain *ferae naturae*, as do all populations of animals not classified as *domitae naturae*.

<table>
<thead>
<tr>
<th>Fish/Country</th>
<th>England</th>
<th>Australia</th>
<th>Canada</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainbow trout</td>
<td>Yes&lt;sup&gt;af&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;bf&lt;/sup&gt;</td>
<td>Likely out of B.C.&lt;sup&gt;ef&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;f&lt;/sup&gt;</td>
</tr>
<tr>
<td>Atlantic salmon</td>
<td>No&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Yes&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Yes in B.C.&lt;sup&gt;d&lt;/sup&gt; and probably in others.&lt;sup&gt;f&lt;/sup&gt;</td>
<td>Possible&lt;sup&gt;ef&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*Continued on next Page*
Table 30 – Continued

<table>
<thead>
<tr>
<th>Fish/Country</th>
<th>England</th>
<th>Australia</th>
<th>Canada</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel catfish</td>
<td>N/A</td>
<td>N/A</td>
<td>No</td>
<td>Yes§</td>
</tr>
<tr>
<td>Carp</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Snapper</td>
<td>N/A</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Legend:
Yes – in the country or some of its communities in a federation the population will be regarded in law as *domitae naturae*.
No – in the country or some of its communities in a federation the population remains *ferae naturae*.
N/A – the population does not exist or is insignificant in the jurisdiction so the matter is not considered.

Notes:

a. The position is not clear. Whilst not raised extensively they are introduced and the two populations are indistinguishable. On a worldwide view this position can be adopted but it is open to question.
b. There may be some doubt in Tasmania because of the extent of the feral populations that are indistinguishable from the cultured populations.
c. Because of the existence of native populations in British Columbia, which may not be distinguishable (a matter that is contentious) these animals may remain *ferae naturae* in that province.
d. Atlantic salmon are likely to be *domitae naturae* in jurisdictions with no native populations; in British Columbia the matter may be more contentious than in most of Canada.
e. The production is not significant, though in Maine the population may be regarded as *domitae naturae*.
f. If a worldwide approach is adopted then the population is likely to be regarded as *domitae naturae* whatever the local experience may be.
g. In some States of the United States.

15.2. Qualified Property Rights

Clearly qualified property rights will subsist in respect of those teleost fish classified as *ferae naturae*, subject to satisfaction of the requirements of the common law for the retention of a proprietary interest. As has been discussed, each individual fact situation will need to be considered in terms of one of the criteria described in this thesis as established by the common law. In each of the situations considered in this thesis, it will involve an application of the principle *per industriam*. 
Where the fish are generally held in captivity, there should be no issue. In the case of those with *animus revertendi* arising out of the art and industry of humans, a qualified property interest will also be retained, for so long as that intention to return persists.

In the case of those bearing marks or brands the position is more uncertain. It has been asserted that there is limited authority and anecdotal evidence to support the retention of property rights in such animals, where there has only been a level of art or industry and they may be distinguished. This may only be the case when the animals remain in the neighbourhood. In many cases it will then become a matter of identification. Where the fish have been raised from egg to fingerling, released to grow and neither abandoned nor left to nature, with discernible marks a qualified property right appears to be available. In this situation there has been clearly a level of industry, and, whilst the animal has been released, the mark clearly identifies the animal. There is no intention to abandon the animals or to leave them to nature. Here this thesis is adopting one of the tests put forward in this thesis, the one that is more likely to be adopted, but it is not without doubt.
Chapter Four

Rights, Responsibilities and Advantages of the
Use of Tidal Waters in Sea Ranching

16. The Use of the Sea as a Common Resource

16.1. Introduction

This chapter will consider the right to use the sea from a legal perspective and the source of that right. It will consider the right to utilise the sea (statutory restrictions or assistance aside) to undertake sea ranching. The chapter will then consider particular issues that are likely to arise in environmental and ecological terms, and some economic and social aspects. Finally, it will consider some of the advantages of sea ranching. Many of the issues considered in these sections highlight further issues to be considered in the legislative framework for sea ranching proposed in chapter five.

As this section will demonstrate, the general rights of the subject at large are said to include fishing (subject to some historical restrictions) and navigation. In a number of common law jurisdictions there are also suggestions that a number of other rights have been considered and generally allowed, including the taking of ballast, seaweed, sand, ice and the floating of logs. Apart from those, there appear to be limited rights to utilise the seabed at least in inland waters and possibly both inland and territorial waters.

One difficulty for the aquaculturist who proposes to sea ranch is that if the incidents of the right to use the sea, apart from the limited public historical rights such as fishing and navigation, arise solely from the proprietary interests in the soil underlying the sea and the navigable rivers, then the sea rancher may, by releasing the animals, commit a trespass. It is therefore necessary to consider the status of the right of the Crown to the sea. This right is usually said to be based on the ownership of the soil or seabed by the Crown within its jurisdiction.

The discussion will focus on three areas: the inland waters the subject of the flux and reflux of the sea, the territorial waters and the waters of the sea outside of those waters. The territorial waters are those waters of a coastal state that extend beyond its land territory and internal waters over which it claims sovereignty (the usual claims are three to twelve nautical miles, see the 1982 United Nations Convention on the Law of the Sea; also see Bonser v La Machia, (1969) 122 C.L.R. 177; New South Wales v Commonwealth, (1975) 135 C.L.R. 337).
Allied with the right to use the sea, is the right to recapture the fish released and whether it constitutes fishing. In each of the countries the subject of discussion in this thesis, fishing is now heavily regulated. In many cases those regulations contain their own definition of fishing and may depart from the common law meaning of that activity. Sea ranching is rarely considered in that legislation.

16.2. Crown Rights to the Seabed and the Consequences

The owner of land, including where the tide flows and reflows, has control of the right to fish in the water over which the tide flows, whether it is the Crown or a private individual, but subject in the case of the Crown to the public right to fish (Attorney-General for British Columbia v Attorney-General for Canada). There is nothing to suggest that the ownership extends further than the soil, to every element of the water and everything in it. The emphasis is on the ownership of the soil and that all rights flow from that, much like the terrestrial soil. The law may not adequately distinguish between the soil of the sea that is the subject of ownership and the water, a *res nullius* (Walker 1980).

It is therefore necessary to summarise the extent to which the seabed is owned by the Crown. If the Crown is the owner of the relevant seabed then the right to take the fish released will depend on the historically recognised rights to use the sea and the scope of those rights. Alternatively, on that basis it is possible the use of the sea will be regarded as analogous to the acts of a squatter on crown land or those of the keeper of pigeons or bees, which appear to have an accepted wider licence to roam. Another alternative is that the water and everything in it is a *res nullius* apart from the soil of the bed and those items attached to it.

Much like the nature of the interest in animals, the right to use the sea and the nature and extent of those rights have long been the subject of discussion and comment. Unlike the law relating to animals the sea has been the subject of controversy over many centuries. The classic Roman law position was that the sea was common to all; it was free for all to use (Fenn 1926). It is beyond the scope of this thesis to consider developments, and various views on that topic. Fenn (1926) in his work *The origin of the right of fishery in territorial waters* examined many of the developments, whilst Fulton (1911) in his work *The sovereignty of the sea* has considered some other aspects, particularly the claims of England to the dominion of the British Seas and the evolution of the concept of territorial waters.

Some of the commentators focus on the legal status of public fisheries. The fisheries rights they consider may be one of two kinds: rights of ownership, or rights of use. They hold that the right of fishing is free to all, as the sea is the common property of all people or for the reason that the sea is incapable of being owned. The opposing view has regard to the feudal law; it regards the right to
control fisheries as part of the prerogatives or regalia of the Crown (Fenn 1926). But even this latter view may have a number of separate aspects. It may involve sovereignty or a lesser power, namely jurisdiction over the territorial sea. On the other hand it may involve a property in the sea and seabed or a right to the profits or use of the sea.

The issues become more complex with the need to distinguish between inland waters, the territorial sea, the exclusive economic zone and the high seas (see Van Houtte et al. 1989). A further layer of complexity is then added in the common law with the need to distinguish between the application of municipal law and the role of international law as part of that municipal law. These distinctions, issues and controversies continue to pervade many of the modern common law decisions. It is not proposed to discuss these differences or to seek to discuss the juridical basis for those competing views. This thesis will simply seek to identify what may be the more likely current common law status of inland tidal waters and territorial waters. Then it will seek to apply that law in the context of sea ranching.

It is clear that, if the classic view prevails, then the subject has the free right to use the territorial waters, but not inland tidal waters, subject to any legislative restriction properly applicable to the subject. This is a view for which no modern authority has been readily found, and it appears to be implicitly contrary to many of the discussion as to the nature and extent of the rights to use the sea for navigation and fishing. If the sea is free to all to use, why emphasise the right to navigate or fish?

In summary the Crown is clearly the proprietor of so much of the soil of the sea as constitutes inland tidal waters and the foreshore (i.e. the area between high water mark and low water mark). It may not be the proprietor of the seabed of the territorial sea but, even if it is not, it is within the legislative competence of the legislatures of those jurisdictions to make laws having effect in those waters (Marlston 1981; Lord Advocate v Wemyss, [1900] A.C. 48; New South Wales v Commonwealth; Re Ownership of the Bed of the Strait of Georgia, [1984] 1 S.C.R. 388; Post Office v Estuary Radio Ltd, [1968] 2 Q.B. 740; Commonwealth v Yarmirr, [2001] HCA 56).

Outside of those waters all are free to utilise the solum and the sea subject to any extraterritorial legislative provision (see Port Macdonnell Professional Fishermen's Association Inc v South Australia and Commonwealth, (1989) 168 C.L.R. 340). In a federal system there may be further distinctions as to both the arm of government in which any proprietorship is vested and the nature and extent of the respective legislative capacities.
16.3. Modern Rights to Use the Sea

16.3.1. Fishing

Fishing at common law is the capture or taking of a *res nullius*. It is the occupancy to the exclusion of others of *ferae naturae*. In this respect, subject to custom, the common law follows the Roman law relating to the capture of *ferae naturae*. The difference is the medium in which it takes place and the methods required by that medium. As Fletcher Moulton L.J. said in *Foster v Urban Council of Warblingto*, [1906] 1 K.B. 648, 681:

*Rights of fishing signify the right to catch that species of creatures known as *ferae naturae* which exist in the sea, and there is no doubt that when, as in a several oyster fishery, or in a public oyster fishery, you dredge oysters from their natural beds, you are fishing you are taking things in respect of which, in the case of a public fishery, nothing in the nature of a proprietary right exists in anyone, and are appropriating them and making them your own property.*

The appropriation of fish taken at sea is only effectual to vest property, subject to any contrary custom (which may vary from place to place), when complete (*Aberdeen Arctic Co v Sutter; Fennings v Lord Grenville; Young v Hichens; Littledale v Scath; Hogarth v Jackson; Skinner v Chapman*). All but reducing the animal into possession is not sufficient, (Patterson J., *Young v Hichens*). Whatever interpretation may be placed on the terms “custody” or “possession”, the question will be whether custody or possession has been obtained (Lord Denman C.J., *Young v Hichens*).

Many legislative schemes have their own definition of fishing. In some of them it is specifically defined in terms different to the common law. They are not concerned with the status of the animal taken (Howarth 1987, 1990), namely whether the animal is *ferae naturae* or *domitae naturae*; they emphasise the activity. The sea rancher will be fishing if the sea rancher retakes the fish in some of those situations. Contemporary United States decisions distinguish between fishing and aquaculture. The latter is not even “a natural derivative of the public right to fish” (*Priscilla Pazolt, Trustee v Director of the Division of Marine Fisheries, 417 Mass. 565, 631 N.E. 2d 547 (1994); also see next section*).

16.3.2. Scope of the Right to Fish

The public right to fish does not extend to fishing by means of devices attached to the soil. The use of the soil for fishing is the right of the owner of the soil whether it is the Crown or a private owner (see appendix five), subject in the case of the Crown to the public right to fish. In international waters, subject to extraterritorial provisions, all are free to fish and use the soil of the sea. The
rights in respect of navigable rivers beyond the flux and reflux of the sea are far more contentious (see appendix five).

The incidental use of the foreshore or seabed in the course of fishing in exercise of the public right to do so does not amount to an appropriation of the property and is permissible (La Forest 1973; Moore & Moore 1903). The right to take fish is not limited to floating fish but extends to shellfish (Bagott v Orr, (1801) 2 Bos. & Pul. 472, 126 E.R. 139).

The public right to fish must be exercised reasonably having regard to others’ rights to fish and to the other public rights including navigation. Usually the reasonable exercise of the rights of navigation and of fishing can be undertaken concurrently (La Forest 1973; Moore & Moore 1903).

The public right to fish extends to the shore as well as the sea. There is a right to land the fish nearest to where it is caught. A person seeking access to a boat must take the usual and public road to the seashore, but if it is necessary at high water to traverse the edge of private land to achieve that access, the person may do so. The person may do what is sufficient, but no more (Moore 1888).

There are a number of rights incidental to the right to fish. As an incident of fishing, the person is permitted to fasten stakes on another person’s land to dry the nets of the fishers because it is for the benefit of the common good (Gedge v Minne). The right to fish includes the right to use nets (Warren v Mathews, (1703) 6 Mod. 73, 87 E.R. 831) and to use as many boats as the fisher pleases (Ward v Creswell, (1741) Will. 265, 125 E.R. 1165).

In the United States decision of Priscilla Pazolt, Trustee v Director of the Division of Marine Fisheries, some of the incidental rights were described as reasonable access to privately held tidal flats and to use seines, lines, spears, nets and other usual devices for fishing.

The public right of fishing in tidal waters is not limited by the need to preserve the capacity of the fishery to sustain itself; that is not a matter for the common law. Conservation measures must be provided, if at all, by statute (Harper v Minister for Sea Fisheries, (1989) 168 C.L.R. 314).

16.3.3. Fishing and Aquaculture

Subject to any legislative provision, aquaculture is not fishing nor a proper or natural derivative of it. A person undertaking an aquaculture activity cannot rely on the public right to fish. The aquaculturist may rely on the right of navigation in the pursuit of the commercial activity to the extent the aquaculturist may need to traverse the sea, but only to that extent. It is a commercial activity divorced
from fishing (see section 16.3.4). The quotation by Fletcher Moulton L.J. in *Foster v Urban Council of Warblington* (see section 16.3.1) confirms that aquaculture will not be regarded as fishing if the person taking the animals has a proprietary interest in them, a matter on which much of this thesis has already dwelt. It is therefore necessary to briefly discuss the few decisions that have described the nature of the activity and the differences.

In *Robertson v Johnson*, [1893] 1 Q.B. 129 the appellant was convicted of selling oysters during the closed season. There was an exception in the legislative restrictions for the sale of oysters taken in a foreign country. The appellant had purchased oysters from France and laid them out in an oyster laying in England. During the English closed season, the appellant dredged for the oysters from the laying and sold them. The issue was whether the oysters were still foreign oysters or had become English oysters by being so laid out. Pollock B. said, *Robertson v Johnson*, [1893] 1 Q.B. 129, 135:

> It seems to me that the bed where the oysters are deposited is not a fishery in the sense contemplated by the Act of Parliament, although it might become a fishery if the oysters spat had bred there, or possibly, if very small oysters, that could be nurtured so as to become large oysters by nurturing and artificial feeding, were brought from a foreign country, it might then be said that they had become English oysters.

The decision supports the proposition that the nature or status of an animal is not altered by being temporarily placed in the waters of a state, even where similar recovery methods are subsequently used to recover the animals as are used to take the *ferae naturae* at large (see contrary older suggestions in section 12 and appendix five).

*Sollers v Sollers* has already been mentioned and doubted. In that case fish that had been caught and placed in a cove within the ebb and flow of the tide were confined by a wire fence extending across its mouth and taken by a trespasser. The court said that there were insufficient rights of property to support an action of trespass against a person who caught them and appropriated them to his own use. A contrasting decision was *State v Shaw*, where the fish entered a private net or trap through a tunnel. There the court held that the law does not require absolute security against the possibility of escape, but that a person who confines animals *ferae naturae* so that the person may use them at that person's pleasure and maintains reasonable measures to prevent their escape, has a qualified property. They are in captivity.

The foregoing discussions have suggested that fishing, in the conventional form, will not include the recapture of *domitae naturae* or *ferae naturae* in which a proprietary interest persists. This matter was raised in *On Appeal From Conviction, Forfeiture and Sentence Imposed by the Provincial Court Judicial*
Centre of Outlook under the Fisheries Act Between: Her Majesty The Queen Respondent - and - Agpro Grain Inc. and John Bielka Appellants, (1996) Lexis 12748, 22; W.C.B.J. (2d) 311, 44, but not decided, the defendant being convicted for taking wild fish, the court said:

I need not deal with the submissions respecting the ownership or expropriation of escaped “domestic” fish, nor with the subsequent proposal by the department to clarify the law by including a provision in the new legislation to the effect that escaped “domestic” fish become “wild fish”. Much was made of these issues at trial including whether “wild” Rainbow Trout previously stocked in the lake had survived and whether they could be identified and distinguished from the “domestic” Rainbow Trout that had escaped over the previous year.

In the United States decision already mentioned of Priscilla Pazolt, Trustee v Director of the Division of Marine Fisheries, 417 Mass. 565, 572-73, 631 N.E. 2d 547 (1994), the difference between aquaculture and fishing was discussed, the court adopted a similar view, in the following terms:

The judge, relying on the concurring opinion in Wellfleet v. Glaze, supra a 89, ruled, in the words of Justice O’Connor that, “aquaculture is not fishing, nor can it legitimately be considered a ‘natural derivative’ of the right to fish . . . .” We agree.

General Laws c. 130, @ 1 (1992 ed.), defines the verb “to fish” as follows: “to take or to attempt to take fish by any method or means, whether or not such method or means results in their capture.” By contrast, Webster’s Dictionary defines the verb “to farm” as, “to grow or cultivate in quantity <approximately equal to shellfish>.” Webster’s New Collegiate Dictionary 450 (9th ed. 1991). In addition, Webster’s defines the noun “farm” as “a tract of water reserved for the artificial cultivation of some aquatic food; as an oyster farm.” Webster’s Third New International Dictionary 824 (1961).

Aquaculture is a contemporary method of farming [shellfish]. We conclude that it is not incidental to or reasonably related to or a natural derivative of the public’s right to fish. See Wellfleet v. Glaze, supra at 90 (O’Connor, J., concurring).

16.3.4. Other Recognised Rights to Use the Solum of the Sea and Foreshore

As will be described, the rights of the subject to use the solum of the sea or foreshore appear to be limited to a small or restricted class of activities, to be described shortly. They highlight that the seashore is clearly not free for the use of all in the common law, and the same is probably true for the sea, at least in inland and possibly territorial waters. Notwithstanding that, the scope of the
rights have been expanded in some jurisdictions in recognition of the needs of commercial activities.

The scope of the right of navigation or free passage reflects the early jurists’ view that the sea is free to all. It is a right pertaining to the sea, and to the waters the subject of the flux and reflux of the sea (New South Wales v Commonwealth; Commonwealth v Yarmirr), as authorised by statute, immemorial custom or where the waters have been dedicated by the owner as a highway (Caldwell v McLaren, (1884) 9 A.C. 392) and such of those waters as are navigable in fact. The right applies to those waters that have the characteristic of a highway; a navigable river is a public highway (Rogers v Allen, (1808) 1 Camp. 309, 170 E.R. 967). This does not apply to every use of every floatable thing on the surface of water but to navigation for the purposes of trade, commerce or agriculture (La Forest 1973; Brown v Chadbourne, 31 Me. 9 (1849) referred to in Henry 1970), though Stephens J. in New South Wales v Commonwealth extended it to intercourse, which may be considerably wider, unless read ejusdem generis. In Canada it appears it may extend to recreational use, however the test of navigability is still dependent on commercial use (Canadian Encyclopedic Digest 2000).

The right of navigation is similar to the public right of passing and repassing on a highway. It includes all rights necessary for the enjoyment of the right, including the right to pass, anchor, moor and remain in one place for a reasonable time for loading and unloading (Rogers v Allen). The right does not extend to doing things inconsistent with the rights of the owner of the soil. It is not affected by the formation of ice and extends to a right to travel over the ice of navigable waters in the well marked or accepted ways, as is most convenient. All members of the public have an equal right to navigate. It is a right that must be exercised reasonably and exercised in a manner so as not to interfere unreasonably with the like right of others. Reasonableness in each case is to be determined by the actual circumstances (La Forest 1973).

It is a paramount right; whenever it conflicts with the rights of the owner of the bed or of a riparian owner, it will prevail (Canadian Encyclopedic Digest 2000). Even the owner of the bed may not be entitled to erect anything on the bed that interferes with the public rights of navigation, whether temporary or permanent, but it must be placed there intentionally or negligently. Any obstruction to navigation must be substantial enough to amount to a public nuisance. However it may not be every obstruction that constitutes such a nuisance; some may be beneficial to navigation and it is possible that, where the benefit to the general community is greater and there is minor interference, it will be permitted (La Forest 1973).

The rule in Canada, at least in Quebec, Ontario, the prairie provinces and British Columbia, is that if the waters are de facto navigable, the public right of navigation exists, whether the waters are tidal or not (La Forest 1973; Canadian
Encyclopedic Digest 2000). This right is extinguishable by statute, but not otherwise (Canadian Encyclopedic Digest 2000).

It appears that a right to float logs arose in Canada before there was extensive settlement and that the practice or right was reasonably well established by the time closer settlement occurred (La Forest 1973). This highlights the scope and flexibility of the common law to accommodate new rights in connection with the use of the waters. This right extends beyond tidal waters and applies to both navigable and floatable streams, streams that, though not navigable, are capable of being used for floating logs and other property. This right has been described as in the nature of a public easement, but must be exercised with reasonable regard for the rights of others (Canadian Encyclopedic Digest 2000). Apparently there is no such general right in England but such a right was sometimes recognised as a custom or by finding that the owner of the stream had dedicated such a right of passage to the public for that purpose. This right to float logs and other property has been regarded as an economic necessity in some areas of Canada (La Forest 1973; Canadian Encyclopedic Digest 2000).

It is not necessary that the stream be floatable at all times, it may be sufficient if the stream only has the capacity to float logs and other property at the freshet times. In the exercise of that right a person may go on to riparian land when necessary to remove logs that have been cast on the shore. All have equal rights to passage for their logs and other property. The right to float logs is concurrent with the rights of the owner of the bed and bank. The right to float and the right of navigation appear to be assimilated to some extent, once the river is amenable to navigation as well as flotation (La Forest 1973).

Some other rights include the right to take ice, the right to take floating seaweed and in some places to take sand. In navigable waters in Canada, where the Crown is the owner of the bed and makes no claim to the ice, the ice becomes the property of anyone who gathers it up and reduces it to possession (La Forest 1973). The right must be exercised reasonably (La Forest 1973). In the United States a similar right is justified on the basis that the state owns the beds of navigable rivers and holds them in trust for the public (Henry 1970, on the authority of McFadden v Ice Company, 86 Me. 319 (1894)). The right to take floating seaweed does not extend to taking seaweed from the shore (La Forest 1973), for, once cast upon the seashore, it belongs to the owner of the seashore (also see earlier discussion in chapter three). In some places there may be a custom or other right to take sand and seashells, but generally there appears to be no such general right (Moore & Moore 1903; also see Bagott v Orr).

A right about which there is considerable doubt is the right to bathe in the sea. The better view appears to be that the authorities neither recognise a right to bathe nor a right of access to the seashore for that purpose (La Forest 1973; Moore &
Moore 1903), however Moore and Moore (1903) suggest that the authorities appear to be misconceived.

The public also uses the foreshore for many other activities and assumes a right to do so. However, as was said by Harman L.J. in *Alfred F Beckett, Ltd. v Lyons*, [1967] Ch. 449, 468, at least in England:

*It is notorious that many things are done on the sea-shore by the public which they have no legal right to do. The only clear right of the public on the foreshore is the right to pass over it in boats when it is covered with water for the purpose of fishing. Bathing, for instance, is not a public right but goes on by tolerance: see Brinckman v. Matley, a decision of the Court of Appeal following Blundell v. Catterall. I cannot find any clear decision that the public has the right to walk on the foreshore when the tide is out, nor of landing from boats or embarking except in cases of emergency. It seems also clear enough that there is no public highway along the foreshore. It is on the other hand notorious that in many, and indeed most places the use of the foreshore by the public for purposes of recreation and bathing is tolerated.*

In other places there may have been established customs as to the use of the sea and foreshore for commercial activities that were beneficial to the community, such as oyster layings. In these places it was common for the oyster layer to mark out an area of sea for that purpose. There are a number of decisions recognising such rights both in England and the United States (some have been mentioned in section ten). Since the late 1800s these activities both in England and Australia have been regulated by statute and accordingly the need for recognition of such local custom or practice has generally been unnecessary.

16.3.5. Infringement of Crown Rights

This thesis has already recognised that the soil of inland tidal waters is vested in the Crown. In the case of the territorial seas, a couple of alternatives are proprietorship or sovereignty without ownership. The preceding section has considered the rights of the subject to use the foreshore and sea and indicated that they may be limited. In those parts of the sea that are merely the subject of sovereignty or jurisdiction without ownership, subject to any legislative restriction and any interference with navigation, there appears to be no reason why the right to utilise the sea should be so limited.

So does the utilisation by the sea rancher of the sea constitute an infringement of the Crown rights where it is the proprietor of the solum of the sea bed? This must be considered in the context of whether the space above the solum of the sea belongs to the Crown and takes with it the right to exclude, whether or not the
water itself is a res nullius. This discussion will be followed by a consideration of whether the use of the sea constitutes a trespass.

The answer to the first issue depends very much on the scope of old maxim “Whose is the soil, his it is to heaven and to the middle of the earth” (Coke 1628, 4). This proposition is no longer accepted. In Commissioner for Railways v Valuer-General, [1974] A.C. 328, 351-52 Lord Wilberforce had this to say of the maxim:

There are a number of examples of its use in judgments of the 19th century, by which time mineral values had drawn attention to downwards extent as well as, or more than, extent upwards. But its use, whether with reference to mineral rights, or trespass in the airspace by projections, animals or wires, is imprecise and it is [mainly serviceable] as dispensing with analysis (cf Pickering v Rudd n2, Ellis v Loftus Iron Co n3). In none of these cases is there an authoritative pronouncement that “land” means the whole of the space from the centre of the earth to the heavens: so sweeping, unscientific and unpractical a doctrine is unlikely to appeal to the common law mind.

This view was extended by Griffiths J. in Lord Bernstein of Leigh v Skyviews & General Ltd, [1978] Q.B. 479, 488 when he said:

The problem is to balance the rights of an owner to enjoy the use of his land against the rights of the general public to take advantage of all that science now offers in the use of air space. This balance is in my judgment best struck in our present society by restricting the rights of an owner in the air space above his land to such height as is necessary for the ordinary use and enjoyment of his land and the structures upon it, and declaring that above that height he has no greater rights in the air space than any other member of the public.

This development will not be extended too far, as can be seen in Anchor Brewhouse Developments Ltd v Berkley House (Docklands Developments) Ltd (1987) 38 Build. L.R. 82. These limitations on the right of the landowner are still being developed by the courts to meet new circumstances. It is therefore clearly open for the courts to find that the limitation of the maxim in this context permits the subject to undertake a wide range of activities in the sea. This appears inconsistent with the limited rights already discussed. In addition, in this very different situation, the courts may not limit the maxim because of the interests of the Crown. Though the courts would recognise that if the state were dissatisfied with the decision of the court it could legislate to overturn the results of the decision. Wildsmith (1982) considers this problem in the context of a mariculturist seeking to occupy a portion of the seabed and the sea in the conventional property manner; the soil takes with it all that is above (i.e. the water column) and below it, subject to the recognised rights.
Assuming the Crown is the proprietor of the solum and the water column above it, then it is necessary to ascertain whether the release of animals would infringe the rights of the Crown. The usual remedy would be in trespass, which does not require proof of damage. It is a tort of strict liability. The Crown may also have some more ancient remedies, such as a writ of intrusion, an action in the nature of an action of trespass to land (Chitty 1820; Commonwealth v Anderson, (1960) 105 C.L.R. 303). As for trespass by passage through the water, in Hamps v Darby there is no suggestion that the pigeons were trespassers or that there had been a trespass by the owner of the pigeons in their flight. They passed through the airspace of others at a height that is not usually within the exception to the maxim already considered. It is possible that the owner of the pigeons had no intent to commit the trespass. The owner did not send them into that land (Stormer v Ingram), but the owner did release them as homing pigeons and would have expected them to enter the airspace of the land of various persons on their flight home. The plaintiff in Hamps v Darby should also have recognised that on their journey they would stop for rest and might encounter fields with grain. On the basis of the view of Williams (1939) that pigeons have historically been accorded greater movement and the remedy is in nuisance, if indeed they become a nuisance. Williams (1939) cites another example in support of his view, one where the defendant had let a falcon fly at a pheasant in the land of the defendant and the falcon took its quarry in the land of another (YB (1365) 38 Edw. 3, 10 and also see Mitten v Fawdrey), and he suggests that the infringement of air space did not constitute a trespass.

More recently it has been held that a person has sufficient property in bees to support an action for their loss (Tutton v A.D. Walter Ltd, [1986] 1 Q.B. 61). Bees are not to be regarded as wrongdoers; they are useful insects and that is universal. As such they are not trespassers according to Tutton v A.D. Walter Ltd, yet in Stormer v Ingram, Legoe J. suggested that technically bees may commit a trespass. Legoe J. did not decide whether a trespass by bees requires the owner to drive or permit them to enter the land of another, though he did advert to it. Further, he was of the view that the owner or possessor is not liable for cattle trespass for the bees of that person, as they are not cattle (Stormer v Ingram, Legoe J. having quoted from Williams 1939, held they are not cattle without considering the availability of the former writ for the replevin of cattle for bees, implying they were regarded as avers and accordingly cattle in the wider meaning of that word, i.e. cattle trespass would have been available).

There is also a strong suggestion in the cases that there is an immunity for dogs, cats and some other animals straying on or about land. As Sheriff-Substitute Shennan said in a Scottish case, “house cats are licensed wanderers” (Allan v Reekie, 22 Sc. L. Rev. 57). That matter is also discussed at some length in Williams (1939), 145-46, though the following quote is sufficient for this purpose:

The absence of liability for vagabond dogs and cats can be based upon grounds of commonsense and public necessity. These animals, it is said,
form a class by themselves, although some hold that the courts may yet add to it “other domestic animals not usually kept in confinement and not likely to do substantial damage by straying”.

As further noted by Williams (1939), this view was not adopted in the Supreme Court of Victoria in Doyle v Vance, (1880) 6 V.L.R. 87. Some United States decisions suggest that there is a common law rule requiring the owner of domestic animals to keep those animals restrained upon the premises of the owner, and that an injunction is available to restrain such trespasses, but in some cases it was inapplicable to the habits and conditions of some jurisdictions (eg Iowa where it did not apply to chickens that were allowed to range: see Kimple v Schafer).

So, assuming the released fish are committing a trespass, there is also an early view that some trespasses may be justified as beneficial to the community and accordingly not to be punished (Gedge v Minne, see discussion in section 9.6). It is likely that any court will be very circumspect in extending the scope of such a rule. However a number of the decisions quoted above on the strict rule of liability in connection with trespass to the land appear to acknowledge similar justifications for such exceptions.

In summary, subject to statutory intervention or limitations, it is clearly arguable that the use of the sea does not infringe the use of solum of the sea. This view may not find favour with the courts, but, even if it does not, it would appear that the release of fish in the sea is similar to the passage of pigeons and bees through the airspace above terrestrial land and does not constitute a trespass either because such passage is not regarded as a trespass or it is a trespass that is beneficial to the community and to be disregarded.

16.4. Sea Ranching and Fishing Laws

In most common law jurisdictions the laws relating to fisheries or fish and game laws regulate aquaculture (see Van Houtte et al. 1989). There are a few jurisdictions in which aquaculture is the subject of specific legislation (see New Brunswick, Aquaculture Act (c. A-9.2)). Accordingly fisheries laws govern most aspects of the administration and operation of an aquaculture venture and the administration is usually allocated to fisheries officials. Most of those legislative schemes do not address the possibility of sea ranching (see later for a few exceptions). The existing aquaculture provisions are directed at net, pen, cage or pond fish farming. They seek to control releases and escapes in general terms. They are inadequate to deal effectively with sea ranching and the appropriate use of the sea for sea ranching. They hinder the development of sea ranching in many situations, more by accident than design. This reflects the fact that aquaculture lacks a firm legal status of its own. It is not classified as agriculture, usually it is not included in animal husbandry nor is it fishing (Van Houtte et al. 1989; Wildsmith 1982; also see section 16.3.3).
The modern traditional aim of most fisheries legislation is to conserve the fish stock. It seeks to maintain a level of exploitation consistent with achieving a maximum sustainable yield. It does this by utilising a number of measures including most importantly either or both input and output restrictions. Fisheries legislation seeks to control and restrict the taking of *ferae naturae* in the wild state. It seeks to control the hunter-gatherer and those who may adversely affect the medium in which those *ferae naturae* subsist (Bowden 1981; Howarth 1990). This unfortunately places the wrong emphasis and characterisation on aquaculture. Much aquaculture is akin to intensive agriculture or an industrialised process. Fisheries legislative schemes and frameworks have not been and were not designed to deal with aquaculture (see Wildsmith 1982 for a Model Act for Aquaculture for a Province of Canada). Aspects of the applicable law in these areas, in the other countries discussed in this thesis, may be found in Howarth (1987, 1990), Wildsmith (1982), Campney and Murphy (1991), Kane (1970), Bowden (1981) and Hershman (1996). A more extensive review of this area and this issue was undertaken by the FAO in the late 1980s (Van Houtte et al. 1989).

The regulation of aquaculture by fish and game laws can be demonstrated by a brief examination of a few aspects of the legislative framework of one of the common law jurisdictions already considered, namely the State of South Australia. It is intended to be illustrative only. The structure of that legislative scheme has already been described in section 14.4.

The Fisheries Act 1982 does not contain a definition of fishing nor proscribe the act of fishing. It proscribes engaging in a fishing activity by way of a trade or business in a fishery unless licensed (section 34) or engaging in a fishing activity of a prescribed class (section 41). A fishing activity is defined to mean the act of taking fish or an act preparatory to the taking of fish (section 5). The word "take" is in turn defined, in relation to fish, to mean catch, take or obtain fish (whether alive or dead) from any waters or kill or destroy fish in any waters. This is different from fishing in a common law context, because of the emphasis on taking fish not on fishing. Notwithstanding that, in this context it is probable that a fish means a wild fish. So does a person with ownership and therefore implied possession (a notional possession), catch, take or obtain the fish that are notionally in possession? An answer is that the person retakes them, if any taking is done, rather than takes them, the later implying taking something not previously taken or in possession, the taking of a *res nullius*. Based on these provisions there is a possibility that a rancher taking the fish released by the sea rancher, could offend this Act unless licensed as a fish farmer or a commercial fisher and authorised to do so, though the view preferred in this thesis is to the contrary.

A person is also prohibited by section 44 from dealing, whether by sale or purchase, in fish without a license where they are taken in waters to which the Act applies. It creates a secondary prohibition designed to reinforce the other
restrictions. Separate registration is also required of those engaging in processing (section 54).

Section 50 of the Fisheries Act 1982 also contains a prohibition that effectively prevents the undertaking of sea ranching in the waters of the state without a permit from the Director of Fisheries. It contains a prohibition on the release of fish in the following terms:

50. (1) Subject to this section, a person must not release or permit to escape into, or deposit in, any waters-
(a) any exotic fish; or
(b) any farm fish; or
(c) any fish that have been kept apart from their natural habitat.

Subsection (2) permits the release of certain populations of fish that are prescribed in accordance with a permit issued by the Director. Regulation 8 of the Fisheries (Exotic Fish, Fish Farming and Fish Diseases) Regulations 2000 contains that prescription and it includes salmon, trout and snapper. It is therefore open to a prospective sea rancher to apply for such a permit, and if granted (there appear to be no further legislative guidelines in the regulations as to its exercise) to release fish and then seek to assert the claim of the sea rancher to the fish, as contemplated by this thesis.

The Minister is authorised by the Act to grant leases or licences for a term not exceeding ten years in respect of any area consisting of land or of waters, or of land and adjacent waters, for the purposes of aquaculture. The lease or licence confers rights to occupy and use the area for fish farming or to take fish from the area (section 53). So a person desiring to undertake sea ranching based on feed-induced acoustic response in a body of water may seek such a lease or licence.

A person desiring to undertake aquaculture is also required by the regulations (regulation 7) to be licensed. Fish farming is defined in the Act to mean "propagating or keeping stocks of fish for the purpose of trade or business, the control or eradication of the aquatic or benthic flora or fauna or consumption as food". This definition does not contemplate sea ranching. It assumes the propagation or keeping of the fish continues until disposal or death. It will only apply to the sea rancher up to the release stage.

Notwithstanding the usual generality of these fisheries laws in their application to sea ranching or enhancement, a few do include specific provisions affecting sea ranching. The usual provision is a prohibition on the release of fish in the sea, though a few touch on the status of the property rights in the released fish (either directly or by implication). A few examples may be found in Alaska (see appendix four), Norway (Act No. 47 of 15 May 1992 relating to salmonids and
freshwater fish, etc.) and New Zealand (see Freshwater Fish Farming Regulations 1983).

17. Particular Incidents of Ownership of Animals Utilising the Sea

17.1. Introduction

The purpose of this section is to review some of the problems raised by intensive aquaculture, enhancement activities and the use of the sea as a common resource in the context of sea ranching. The issues are considered in broad terms and they are compartmentalised for discussion purposes when many overlap. The issues are aggregated under two broad headings, environmental and economic. One or two of the issues are more of an administrative nature, and they are raised without any discussion of their juridical basis.

In a few cases there is an attempt to adopt or suggest a preferred course of conduct, a course that is then reflected in the legislative framework provided in chapter five, whilst in others the problem or issue is simply raised and the need for consideration highlighted. It is not possible in this context to do more. It leaves these issues to be considered and developed in their particular situation and environment. In many cases there is no answer. There may simply be a preferred course, having regard to the matters impacting in that geographical area.

The preferred course is one that adopts the precautionary approach as recommended by FAO (1995b, 2000c), an approach that may deal with policy, technology and management. The precautionary approach suggests that: appropriate action should be taken in advance of development activities; appropriate targets and limits in relation to environmental impacts should be identified; prior agreed actions should be implemented in a timely manner when limits are reached; impacts should be reversible over a specified period of time; conservation and management actions should be implemented in spite of the absence of full scientific certainty on the impacts of development; and the rigor of conservation and preventative actions and the standard of proof required to judge impacts should be commensurate with environmental risk and social gain (Bartley 1998; also see the Code of Conduct for Responsible Fisheries (FAO 1995a) and Aquaculture Development Beyond 2000: The Bangkok Declaration and Strategy (FAO 2000c)). This approach has particular relevance to most of the environmental factors to be considered in the remaining sections of this thesis, where few adequate conclusions can be currently drawn.

Some of the issues are highly contentious worldwide, and some are contentious in particular communities. There are influential groups opposed to sea ranching, as it constitutes a threat or change to the current order or emerging interests. In some of these jurisdictions government authorities are already undertaking or
encouraging enhancement activities. They appear to have decided the benefits outweigh the risks, they have considered and rejected the concerns raised, or in other jurisdictions they have bowed to the pressure of the fishers. It is not however clear that a precautionary approach has always been adopted. Further, many of the issues and arguments that may be raised to resist sea ranching are the same or very similar to those that may be raised in respect of enhancement. Accordingly, if enhancement can be justified in ecological terms, then sea ranching can also be justified. Few arguments can be raised in rebuttal, and those that can be raised are likely to centre around the need for greater governmental control of hatchery programmes and the danger that commercial pressures will force a departure from best practice.

17.2. Environmental and Ecological Aspects

17.2.1. Fish Health and Spread of Disease

There are few studies documenting the transmission of diseases between hatchery and wild stocks (Brackett 1991), though the spread of furunculosis to the River Numedalslaegen and wild fish in the 1960s and 1970s is attributed to fish farms (Johnsen & Jensen 1994). Hatchery or farmed fish, particularly those in pens or cages in the sea, appear to be more vulnerable to disease than wild stocks because of the stress involved in the confinement and the concentration of numbers in the farmed situation (Hine 1995). The risk of spreading appears to be greater when the receiving waters have populations of the same fish or related populations or the strain of the disease or parasite is more virulent (Hine 1995).

The foregoing are views that were not fully shared by the British Columbia Salmon Aquaculture Review Committee (1997, see summary report), when it said “The susceptibility of farmed salmon to disease may be increased by the stress of being raised in captivity; however, it is not known whether there is a greater incidence of disease in farmed than in wild fish.” The committee went on to note that many farmed fish are vaccinated against disease and that primarily “as a result of difficulties in monitoring disease and identifying the source of pathogens, there is no evidence to prove or disprove whether transfer of pathogens and parasites from farmed to wild stocks increases the rate of disease.” Later it did state that diseases are not transferred from farmed to wild fish, though more information is required.

Notwithstanding that view, the existence of disease in wild fish is usually seen as a phenomenon rather than a problem. The release of hatchery fish is a potential way of spreading infectious disease or parasites to wild stocks. Movement of fish between localities increases the risk, particularly moves of large distances. One example was that encountered in Norway with the spread of parasites and diseases transmitted by escaped farmed salmon mixing with wild stocks (noted in Alaska...
State Senate Special Committee 1992). This was part of a larger problem, as already mentioned, involving the spread of disease with the introduction of furunculosus from Scotland and the parasitic fluke *Gyrodactylus salaris* from the Baltic Sea (Hansen & Jonsson 1994; Heggberget & Eriksson 1992). By 1991 the fluke had been spread to 32 rivers through stockings from infected hatcheries. The fluke attacked salmon parr, causing heavy mortalities (Egidius et al. 1991). Now it is not a particular problem in the fish farms, as it can be treated easily (Egidius et al. 1991). The foregoing incidents highlight the need for caution and the general lack of adequate knowledge in this area, and the need for even greater care where there is a movement of fish any distance.

17.2.2. Effect on Natural Gene Pool

The consensus of scientific opinion is that it is essential to have healthy wild stocks to maintain the health and genetic diversity of all stocks; genetic diversity must be preserved. However, scientific knowledge is still incomplete as to both the subdivisions in the natural populations (Nielsen 1998) and the impact on wild stocks of hatchery fish (Youngson & Verspoor 1998). The reduction in fitness of wild stocks, to the extent that it has been documented, is caused by numerous factors. The existence of hatchery stocks will affect the genetic composition of wild stocks (see discussion in section thirteen). There is no consensus as to the extent to which the changes affect the short-term or long-term fitness of a population (Alaska State Senate Special Committee 1992; Gall 1993; Nakajima & Fujio 1992), though it is more likely that there will be an adverse impact (Fleming et al 2000).

In the early 1990s, Hindar et al. (1991) summarised a number of empirical studies relating directly or indirectly to past, current or future genetic effects on recipient populations. In those studies they divided the traits under the following headings: genetic structure; hybrid isolation; stock size; juvenile survival, juvenile physical fitness; territorial behaviour; concealment behaviour; ocean survival; ocean and river recapture rate; straying rate; return rate; pre-spawning survival; and disease resistance. They particularly noted that, where there is a detectable effect in comparisons between hatchery stocks and wild stocks (including hybrids), the performance of the wild stock is always better. Some of the more recent studies suggest that this may not always be the case; many of the attributes can be either beneficial or detrimental in different situations (see table 9 and Gross 1998).

In the case of salmonids, in particular, the homing ability leads to reproductive isolation and genetic adaptation to local environments (Mathisen & Thomas 1992). Improperly imprinted fish are a risk to wild populations. The extent of straying, the variables involved in imprinting and the effects of interbreeding are generally unknown. Significant straying by large numbers of hatchery fish has the potential to overwhelm the local populations (Allendorf et al. 1992). The genetic impact of strays depends not only on the prevalence of straying and the
mating success of the strays, but also on the different survival rates of the populations (Mathisen & Thomas 1992). Hatchery fish that successfully produce progeny, when they interbreed, may reduce the fitness of the local population. Where hatchery fish do not produce progeny from that interbreeding, they reduce the productivity of the wild population and can lead to their extirpation (Allendorf et al. 1992).

The greater the distance between the hatchery or source stream and release site, the greater the amount of straying that is observed. Accordingly there is an increasing concern about extensive releases at remote sites. In time this is expected to have an adverse effect on genetic diversity, possibly resulting in permanent irreversible loss (Alaska State Senate Special Committee 1992).

Similar concerns have been raised in the case of the releases of Atlantic salmon in Norway. In particular there are concerns about hatchery males competing with wild males, and hatchery females competing with wild females for spawning territory. Even where ranched females lose in spawning competitions they may spawn later than wild females and thereby dig up the eggs of the wild females (Hansen & Jonsson 1994).

The expectation is that individuals released as part of a sea ranching programme will be caught and not reproduce in the wild or will have been subjected to specific processes to limit that capability. It must however be recognised that some will survive, reproduce and probably breed with individuals from the wild population. The genotypes of the release population will therefore be important. There are also clear implications of using a limited number of brood stock. The hatchery practices may also need to be controlled to ensure the full utilisation of the broad stock base. Many of the problems described elsewhere in this thesis for salmonids appear to be equally applicable to many marine species (Naevdal 1994), though the issues are even less well known in their case.

Many marine species have significant migration practices. Whilst these mechanisms appear to be less precise than salmonids, current knowledge is minimal. Such processes may be part of unknown isolating mechanisms, keeping gene pools separated without geographical barriers. They can therefore be of great significance in sea ranching both in terms of the ultimate economic benefit and the potential negative effects of breaking up or destroying gene pools by liberating materials which may in the short term be well adapted for the release areas, but are inferior for long-term survival because of the differentially adapted migration behaviour (Naevdal 1994).

Hatchery stocks will be different from wild stocks. It is also likely that sea ranchers will seek to undertake selective breeding practices. Such practices have been successful in aquaculture to date. The evolutionary or genetic changes to
cultured fish are likely to be longer-term and to have genetic effects on wild populations when interbreeding occurs.

Genetic changes to cultured fish occur through intentional and unintentional processes. Intentional changes result from selective breeding for desired attributes which can include: growth rate, timing of maturity, timing of spawning, length, weight, morphology and colour, egg production, survival, disease resistance, stress response, temperature tolerance, hybridisation and gene transfer (Fleming 1992). Unintentional changes may come from the founder effect, genetic drift and altered selective forces within the culture environment. The latter may include: loss of genetic diversity, developmental instability, allele frequency, egg viability, growth, survival, deformity, feed conversion, growth rate, size at maturity, timing of maturity, timing of spawning, morphology, egg production, fertility, egg viability, aggression, catch ability, crowding tolerance, survival and disease resistance, and malic enzyme production. Fish culture exerts novel forms of selection, which are capable of succeeding in this new environment, as well as relaxing selection for traits previously advantageous in the wild. Many of these unintentional genetic changes occur rapidly. The inevitable result is a divergence from their wild phenotypes through environmentally induced development, and, eventually, evolutionary processes. The most critical aspect of the interaction between cultured and wild populations is reproduction.

Where intraspecific introgression of genes from cultured fish into wild populations has been investigated specifically, it has been unpredictable, varying from none to extensive. There are many possible outcomes of intrusion by cultured fish. Breeding density, sex-biased immigration, differences in breeding behaviour, morphology and relative body size, spatial and temporal breeding patterns, and environmental characteristics of the spawning grounds may all be important. It is uncertain whether relative reproductive success declines as the proportion of a fish’s life and the number of generations spent in culture increase. So the gene flow into wild populations may be considerably greater from seaweekoned fish than from farm strays, since the latter are likely to be more strongly inhibited competitively and reproductively. The threat may be considerably less from cultured fish that are divergent genetically from the wild fish than from cultured fish from a more intermediate level of divergence (Fleming 1992; Gross 1998).

A somewhat different view is that hybridisation between native and non-native can result in potentially deleterious genetic changes to the native population and can result in the genetic extinction of native populations (Leary et al. 1995). The native population exists but with a combination of native and non-native, a novel combination. This has the potential to reduce local adaptation, reducing the survival and reproductive capabilities of individuals. Hybridisation may affect local adaptations such as thermal adaptation and homing behaviour. It can result
in disruption of physiological and developmental processes and rarely improves fitness. Consequently, the productivity of the wild population fishery is adversely affected (Leary et al. 1995). In many cases hybrids may be sterile. Whilst sterile hybrids limit the effect of hybridisation they waste the reproductive potential of the native species and may aid in its ultimate displacement. Similar problems can arise in respect of conspecifics, where they are usually more difficult to discern (Leary et al. 1995).

The current evidence suggests that hatchery stocks do poorly in the wild (Gross 1998; Hilborn 1998b; Hilborn & Eggers 2000). The lower reproductive success of hatchery-reared stocks compared to wild stocks continues to be demonstrated (Petersson & Jaervi 1997; Fleming et al. 1996; Leider et al. 1990). Survival of hatchery steelheads was also found to be lower than wild steelheads throughout their life span (in both freshwater and marine stages) (Leider et al. 1990). Observations of sea-ranched Atlantic salmon also indicate that reproduction is lower than among wild fish. In the river Imsa it has been observed that a large number of the sea-ranched but not the wild fish descend unspawned in the autumn. During the spawning period, the sea-ranched fish also move over a wider range than the wild fish and are more frequently bitten by the spawners (Egidius et al. 1991). These findings are partly explainable by reason of selection in the hatchery (generally regarded as domestication) (Fleming et al. 1996) and the mixing of different stocks (Hilborn 1992; Hilborn & Eggers 2000).

Other consequences of domestication include increased catchability, lack of predator avoidance skills and increased agonistic behaviour (Berejikian et al. 1996; Dwyer 1990; Berejikian 1995; also see section 13.2). Factors such as timing of spawning and emergence are important considerations in determining the relative success of wild and domesticated salmons in streams. Early timing may facilitate acquisition of territories and provide a size advantage, but increased predation on the fry may reduce this advantage. The combination of the potentially superior competitive ability and inferior predator avoidance ability of domesticated fry demonstrates the complexity of such situations (Berejikian et al. 1996).

There are a number of methods of reducing potential impacts. Two are minimising genetic differences or maximising the divergence in the wild phenotypes. Both are not without their difficulties. In the case of the former the establishment of hatchery broodstock from local rather than foreign populations will not avoid the divergence that occurs as a result of the cultured operations. The continued use of wild stock may have a significant impact on their numbers. Supplementation with wild populations is likely to be problematic (Fleming 1992).

Another possibility is domesticating cultured fish to the point where they are unable to breed successfully in nature or survive. In some cases it has been
demonstrated that animals that have been thoroughly domesticated are unable to survive in the wild or successfully breed with wild populations. A further possibility is the use of reproductively incapable releases. This itself may have a deleterious affect on the continued existence of the wild population, as described. The inability of domestic stock to breed will also minimise the establishment of feral populations from the cultured species. This possibility may be regarded as less practical to some in sea ranching operations, who will prefer breeding programmes concentrating on developing fish specifically adapted to local aquaculture environments (Fleming 1992). For the time being, this appears to be the course most likely to minimise the impact in this area. Both of these methods raise a concern about the presence in the sea of such large numbers of fish that some may regard as unnatural. It is a matter of finding a suitable balance.

Hynes et al. (1981) proposed guidelines for the application of genetic principles and methods of release twenty years ago, and they and subsequent commentators discuss many of the genetic problems of hatchery production in detail (Allendorf & Ryman 1987; Youngson and Verspoor 1998). These guidelines adapted to take account of more recent findings must be considered as part of any overall release programme.

17.2.3. Carrying Capacity of the Seas

A common cry in a time of declining catches is that enhancement will return the productivity of a fishery to that previously achieved. The former catch history is used to support the view of the carrying capacity of the sea, usually without much regard to other matters. This usually overlooks the fact that the particular water body may be undergoing many changes that are causing its declining carrying capacity (Schell 2000) or that there are many factors that affect that carrying capacity.

The factors affecting the current capacity of the sea are poorly understood. There is some empirical evidence to support the theory of density-dependent growth for some species (Pearcy 1992; Hilborn & Eggers 2000). The concern is not only for the hatchery-released fish but also for the wild stocks now competing more heavily (Cooney 1992). The usually cited example of this problem is the declining size of chum salmon released as part of the Japanese sea ranching programme with an increasing age at the time of return (Hilborn 1998a, 1998b; Mathisen & Thomas 1992; Cooney 1992). These fish also exhibit reduced condition and lower fecundity (Cooney 1992). In 1991 the average length and weight of pink salmon in Alaska decreased sharply, coinciding with record catches in the Far East (Mathisen & Thomas 1992).

Another view is that the cycle in salmon returns is also partly dependent on changing oceanic environmental conditions. On that basis, hatchery-released fish
will fare little better than wild stocks in periods when there are adverse environmental conditions. The concept of a direct link between such changes and concurrent changes in salmon production is the subject of recent consideration and much debate and uncertainty (Downton & Miller 1998; Bisbal & Mcconnaha 1998; Kruse 1998; Farley & Murphy 1997). Further it may be necessary to distinguish between different species and their different foraging patterns, both near shore and in the ocean environment (Shelton & Koenings 1995) and their territorial instincts and practices. An example of the latter is where snapper have been found to exhibit a territorial and colonising behaviour to the exclusion of others after an initial establishment period (Yamaoka 1993). A later study confirmed this effect and suggests one limitation on carrying capacity arises where the released fish are territorial and take up the available space to the exclusion of both further releases and the wild population (Takaba et al. 1995) or remain in the same area and become the predators of the further releases (Fossa et al. 1994).

Hilborn (1998a) and more recently Hilborn and Eggers (2000) find support for the view that enhancement does not improve the productivity of a salmon fishery in a comparison of the returns in the Prince William Sound region compared to a number of neighbouring regions, where considerably less enhancement has been undertaken. Using the other regions as controls, they demonstrate that much the same cycles exist in each of the regions and they conclude that, accordingly, enhancement has made little contribution to the overall productivity of the Prince William Sound salmon fishery. They also suggest that is partly attributable to the carrying capacity of the seas (Hilborn 1998a; Hilbom & Eggers 2000).

Aspects of the arguments of Hilborn and Eggers (Hilborn 1998a; Hilborn & Eggers 2000) can be questioned based on findings that there is a surprisingly low incidence of coherence between North American pink, chum and coho mean survival rates from 1970 to 1997 both between and within species and that the trends show few similarities, local or widespread. The level of coherence may be limited to a particular area.

A Masfjorden Sound study found that the food resources were fully exploited by the wild fish in the fjord and that the released cod did not gain much of the resources in competition with other species. The carrying capacity in the fjord of cod appeared to depend on advected zooplankton (Smedstad et al. 1994). Ohkuma and Nomura (1988) express a similar view on the carrying capacity of streams for juvenile chum salmon in their first year.

A further facet to be considered is the site of the releases. It should be within the natural range of the animals. On the fringe or outside the natural range the survival rate may be considerably lower (Hopley 1988).
The foregoing highlights the uncertainty in many of these areas. It demonstrates the need for a precautionary approach in facilitating sea ranching.

17.2.4. Predator-Prey Relationship and Trophic Interaction

The predator-prey relationship in most cases is poorly understood, whether the released animals are the predator or the prey. The preying by a released species on a local species or the local species on the released species has serious implications for both. In several Norwegian rivers it has been observed that released Atlantic salmon smolts were preyed on by birds and fish (Hansen & Jonsson 1994) and such predation is postulated as having a significant effect in a number of other release experiments (Stottrup et al. 1994; Olla et al. 1994).

Both timing and release sites may need to be controlled to minimise these problems. Whilst it is occasionally suggested that changing the timing may minimise them (see Alaska State Senate Special Committee 1992), Hansen and Jonsson (1994) reported that there was no significant difference in return rates between salmon smolts released in the morning or the evening. Another method of reducing predation is pre-release conditioning (Howell 1994; Olla et al. 1994).

The effect of significantly increased hatchery populations of top predators in the overall structure of the coastal, shelf and oceanic ecosystems is unknown (Cooney 1992), but it is to be anticipated that if a large number of the released fish survive, then the effect will be significant (Kitchell 1988). A further aspect requiring consideration is the trophic level of the released population. Those at a lower trophic level are likely to be more confined to the littoral areas and required to trade off growth for an increased risk of mortality. The animals at a higher trophic level will not be so confined, but large-scale releases may be less effective unless spread more widely (Salvanes et al. 1993).

An effect of the introduction of salmon in the Laurentian Great Lakes of North America was to cause responses higher in the trophic system, with the spawning runs of adult sea lampreys approximately doubling over the two decades of growth in the salmonid stocking programme. Such activities can affect lower trophic levels through directed predator-prey interactions that ameliorate competitive predation effects, facilitate recovery of populations and enhance water clarity (Kitchell 1988). There are now suggestions that predator demand by the introduced populations in the Laurentian Great Lakes of North America may have exceeded prey supply, again causing disequilibrium (Hondorp & Brandt 1996).

The release size can also have a significant effect on the predator – prey relationship, as the variation in the size of prey eaten by piscivores is related to piscivore body size (Mittelbach & Persson 1998; Vander Zanden et al. 2000) as
well as distribution (Connell 1998). This is a matter that will require consideration in the permitted timing of releases. Further, the number released, where there are scarce resources, may increase risk taking behaviour and consequently predation (Grand & Dill 1999).

Once a sea rancher identifies that the released fish will be preyed on, the sea rancher may seek to minimise the impact the predators may have by using a range of methods including acoustic deterrent devices and the killing of such animals. In some situations these practices may also have an adverse impact (see Ellis 1996 for examples in aquaculture; British Columbia Salmon Aquaculture Review Committee 1997)

17.2.5. Some Other Impacts on Fisheries

Considerable controversy exists as to the effectiveness of enhancement programmes and by implication sea ranching. Biologists from jurisdictions with long histories in hatchery programmes are less enthusiastic than those from jurisdictions with more recently adopted programmes (see Alaska State Senate Special Committee 1992).

There is clearly the potential for overwhelming local stocks by the continuous and persistent release of significant numbers of hatchery-reared stock (see section 17.2.6). The overwhelming of local populations is likely to be aggravated by such releases in enclosed waters or foreshore areas. Many of these areas may already constitute natural nurseries. The release in these areas of an earlier year class than would naturally occur is likely to increase the predation pressures on the naturally occurring current year class. This would be a particular problem where there is limited knowledge of growth patterns of stocks so the impact of the numbers, timing, site of releases and age class differences of the releases on wild stocks and the likely success of the releases are unknown (Cooney 1992).

These impacts may not be limited to the wild stock but are likely to extend to the predators, competitors and food organisms (Nordeide et al. 1994). In one experimental mass release of cod in a fjord in Norway it was observed that there were no significant effects on the abundance of wild cod (though there was some slight decrease in their condition) or the abundance, growth and condition of competitors and a selected prey species. This particular situation may not be a good example as there was no measurable increase in the abundance of cod within one to five years after the mass release, suggesting sea ranching within the particular fjord was unsuccessful (Fossa et al. 1994).

There is currently minimal understanding and experience of the use of acoustically induced feeding responses in fish. It is well known that wild stocks are attracted to the feed offered by net, pen and cage farming. It is uncertain to
what extent wild stocks will also become accustomed to acoustically induced feeding regimes and incidentally harvested in such programmes. Such devices may be offensive to other animals in the sea (as were acoustic scaring devices used around salmon farms in British Columbia (British Columbia Salmon Aquaculture Review Committee 1997)).

17.2.6. Mixed Stock Management Regimes

17.2.6.1. Identification

Apart from the need to identify the enhanced fish for property reasons (see discussion in sections 5.5.5, 5.5.6 and ten) it will also be important to be able to identify the enhanced species in order to manage the various populations (see Alaska State Senate Special Committee 1992). Without adequate programmes of identification, large numbers of hatchery fish can mask declining numbers of wild fish (Allendorf et al. 1992) or particular populations of wild fish. This problem has been recognised not only in the interaction between hatchery and wild stocks but also in various populations of salmon on the Pacific Northest coast and the loss of many of the spawning populations (Riddell 1993).

With the ability to identify the different stocks it may be possible to take advantage of localised areas of abundance and avoid density-dependent effects (Allendorf et al. 1992). Others have gone further, suggesting that all fish that may escape or are released should be the subject of a genetic mark to permit monitoring of introgression with wild populations or establishment of self-sustaining populations (Hindar et al. 1991).

17.2.6.2. Competition between Released Fish from Different Sea Ranchers

It is to be assumed that if sea ranching becomes extensive, there will be the potential for both interaction and competition between the fish from different sea ranchers and enhancement programmes and in addition to that with the wild populations. In a situation where there are already considerable difficulties in estimating the population dynamics of the wild fish, this is only likely to create further difficulties in the modelling and prediction of the interaction of all populations, and the survival of the wild population.

Any licensing regime will also need to take account of the potential interaction between the releases from different sources. It will need to consider much the same matters as have been described for the interaction between the wild fish and a released population. There is little in the way of studies of such situations.
17.2.6.3. Management Regime for Mixed Stock Fisheries

Accordingly, in the planning of any permitted release programmes, there should be an attempt to minimise over both space and time the impact of hatchery populations on native populations. Otherwise the management regime in a mixed fishery must limit the exploitation rate to that of the weakest natural stock in terms of numbers (Mathiesen 1992). Usually, the released stocks can tolerate much heavier harvesting rates than natural stocks (Allendorf et al. 1992; also see section 3.3).

The report of the Alaska State Senate Special Committee (1992) considered the issue to be more general; the weakest stock will be overfished. The smaller stocks are more likely to be depleted in mixed stock fisheries because of the tendency to optimally harvest the largest stocks (Alaska State Senate Special Committee 1992), a matter already discussed and clearly demonstrated to be a significant problem (Anderson 1983 and see section 3.3). Though the foregoing was primarily discussing salmonids, many of the matters raised are applicable to other populations. Other populations will also raise different and additional issues. The importance of managing a mixed stock of wild and sea-ranched marine populations may even be more acute in the case of highly fecund marine species (see earlier discussion in section 3.3).

Another pressure in the management of salmonids arises when fish quality becomes a concern (eg chum salmon deteriorate rapidly in terminal areas which creates difficulties with harvest strategies). To achieve maximum value and quality it may be desirable to harvest the fish at a time that maximises quality but will jeopardise the wild stock through the risk of being over-harvested (Mathisen & Thomas 1992).

17.2.6.4. The Wild Fishery will become Dependent on the Releases

A real concern exists that significant enhancement will lead to the replacement of the same species of wild stock or a number of wild species with the enhanced stock (Hilborn 1992, 1998a, 1998b; Hilborn & Eggers 2000), as described. Allied with this is the problem that if the management regime emphasises the enhanced stocks, it puts the population at risk if the enhanced stock fails one year and there is minimal stock left to rebuild a new enhanced population (Mathiesen 1992).

In the case of both pink and chum salmon in Prince William Sound, the wild stock may have already been overwhelmed. The report of the Alaska State Senate Special Committee (1992) stated that hatchery operations were now responsible for over 80 per cent of the total pink salmon production of that fishery. The report did not suggest that the hatchery fish had replaced the wild fish; however others have made that observation (Hilborn 1998a; Hilborn & Eggers 2000).
Since 1888 government and private hatcheries in Japan have released significant numbers of salmon fry to re-establish stocks. In spite of those efforts, up until the 1970s the number of salmon returning to Japanese coastal waters remained low, fluctuating between 2 and 5 million. Since 1970 the salmon catch in the Japanese coastal area has increased considerably and in 1990 the catch reached a high of 68 million fish. This increase is attributed to the increase in the number of salmon fry released through improvements in hatchery rearing and releasing techniques (Pearcy 1992; Hilborn 1998b) and is usually cited as an example of successful rebuilding of a depleted fishery. Apparently, now all chum salmon returning to Japanese coastal areas are those released by hatcheries. In 1992 or thereabouts there were 156 hatcheries in Honshu and 184 hatcheries in Hokkaido having a total capacity to rear 2,400 million eggs and to release 2,100 million fry into 166 rivers in Hokkaido and 163 rivers in Honshu (Ikenoue & Kafuku 1992).

Another example is to be found in the Baltic salmon enhancement practices in Sweden. These populations have been the subject of much the same environmental degradation as experienced by salmon worldwide. Again the early history of hatchery production may not have made much difference to the adult stock. In the 1950s the methods were altered in favour of smolt production. The level of stock enhancement carried out in this fashion in the 1980s was approximately three million smolts per annum. It is believed that the natural production has fallen to less than 2 million, a reduction from a natural production of an estimated 7.3 million smolts in 1900. This enhancement has sustained a total catch for all riverine states of the Baltic of about 2,500 hundred tonnes in comparison to on average catches of around 500 tonnes during the first decade of the 1900s (Kirk 1987; Larsson 1980); also see section 2.4).

The particular situations described in this section illustrate the success of some enhancement practices. Ultimately it depends on the goals of the programme and the criteria used to measure success. Hilborn (1998b), whilst not considering the Baltic enhancement programme, considers a number of the programmes discussed and others and finds of the nine considered, using the criteria he prescribes, that the chum salmon enhancement in Japan is the only one that has been successful.

The programme in Alaska was undertaken using a particular private enterprise model, which is unusual, adopting practices designed to favour commercial fishers and based on the area licensing mechanism used in that jurisdiction. In Japan, government or semi-government bodies have usually undertaken the activities (though see Ruddle 1992 and the brief discussion in section 2.5). Clearly, if a government is prepared to fund the enhancement activities or provide other mechanisms for subsidising such activities, then the case for sea ranching is adversely impacted. The recent trend in a number of western countries has been for government to retreat from activities that private enterprise may be willing to undertake. There is no reason to suggest that it would be any different for enhancement in the form of sea ranching.
17.2.6.5. Wild Stock Priority

The maintenance of the maximum sustainable yield from fisheries is in some cases a constitutional obligation of the jurisdiction (Alaska State Senate Special Committee 1992). In many cases it is now an international obligation arising out of accession to the International Law of the Sea Treaty. The obligation imposed by the treaty is unclear in its application to mixed stock situations. The problem is similar to that encountered by Alaska (Alaska State Senate Special Committee 1992). The issue then becomes how the wild stock are to be afforded priority of protection and a balance achieved.

The Alaska Salmon Enhancement Programme originally made no such provision. Whether the management authority even had a role in managing the enhanced stock was an issue (see the report of the Alaskan State Senate Special Committee 1992 and the various legal opinions referred to in that report). Following its review of that programme, the Alaska State Senate Special Committee recommended that priority be afforded to the wild stock. That recommendation was implemented by amendments to the Alaska statutes relating to fisheries. They now require that the wild fish be managed consistently with sustained yield. Released fish stocks may also be managed consistently with that principle (Alaska State Senate Special Committee 1992), but the wild population is to be afforded priority. Other than in the most exceptional circumstances this approach should be adopted in the management of such mixed populations.

17.2.7. Some Interaction Problems of Genetic Marking

Whilst genetic marking may be a relatively simple method of batch marking of large numbers of fish, it creates a potential problem that may work to its detriment. If the particular marker is transmitted to the progeny, then, unless the proprietor of the released parent is to be entitled to all progeny, the released fish and their offspring with the marker may be regarded as indistinguishable. This is the case with mitochondrial DNA markers, which involve maternal inheritance, and the identification of maternal lineage (Utter & Seeb 1990; Carragher 1993). If the progeny of the person releasing the parent does not belong to that person for any reason, identification again becomes impossible.

In captivity this difficulty does not usually arise. It may where animus revertendi is involved, but the owner of the female animal will obviously claim the offspring (other than when swans are involved). Where there may be a spawning involving the released animals and wild animals the person releasing the female fish could appropriate the wild fish. This will not unduly complicate the situation where the current rule is that the ownership follows the female. There will however be a concern that the effect is to appropriate the efforts of part of the wild population with little industry on the part of the person releasing the female fish in raising or sustaining the offspring (see the discussion in sections 8.8 and 9.5). With
sufficient time and releases the whole of a population could be appropriated, a clearly unacceptable situation.

In any of these situations there will be at the time of release the same initial art or industry. The basis for retaining ownership may then become far more tenuous (see discussion in section 10.3). It becomes indistinguishable from that claimed for domitae naturae. Accordingly, if all the other problems are hurdled, any form of genetic marking must be one that cannot be transmitted, otherwise the whole of the population including the wild fish may be appropriated to a few. It will ultimately exclude commercial fishers.

17.2.8. Introductions and Translocations of Non-Indigenous Species

The literature is rich with examples of the effect of introduced species on newly colonised areas. In some cases the effect is devastating and in others there is little noticeable effect. One of the more spectacular cases in the aquatic environment is the elimination of about two hundred cichlids in Lake Victoria following the introduction of Nile perch (*Lates niloticus*) (Moyle & Light 1996). Another is the effect of the invasion of zebra mussels (*Dreissena polymorpha*) in the Laurentian Great Lakes (Johnson & Padilla 1996). In an analysis of extinctions of forty North American native fishes, introduced species were cited as a factor in twenty-seven cases and as the primary or major factor in ten of those cases (Lassuy 1995).

The events in Lake Victoria following the introduction of Nile perch (*Lates niloticus*) provide one of the most noteworthy examples in recent times of not only the effect of the introduction of an exotic species but at the same time the delivery of very important socioeconomic advantages. The introduction accelerated a decline in a diverse endemic ichthyofauna by about two hundred from in excess of four hundred species and to cause very significant changes in the food web. Major fisheries were increased from a hundred thousand metric tonnes to the order of three hundred to five hundred thousand metric tonnes (at the peak; it is now in decline), creating approximately one hundred thousand new jobs. The fish populations were and are changing more rapidly than the policy-making process, which requires international agreements, and the trophic system has become very much simpler (Kitchell et al. 1997).

It is not usually possible to accurately predict the decline or extinction of native species as a result of introductions. Experience suggests that some adverse effects are likely and they could contribute to the local extinction of some indigenous species (Townsend & Winterbourn 1991). Generally, there is too little data to demonstrate how introduced species will affect native species. There is little understanding of the circumstances under which the effects will either ripple or cascade through the food web. Some characteristics that made the invasion by brown trout in New Zealand successful included: long distance dispersal ability;
size of founder population; the number of invasion attempts; nature and size of propagation efforts; large body size; longevity; wide tolerance limits and a broad habitat range; ability to use and disperse between a range of habitats; a generalised diet; and successful adaptation to human-influenced landscapes. In the case of the receiving community the relevant factors were: appropriate physiochemical conditions; non-species-rich communities; species-poor insular communities; and a vacant niche, particularly where the receiving community was relatively species poor (Townsend 1996).

Some other matters of significance include: a basal trophic level consisting mainly of parasitic algae; introduction of a predator that feeds high in the food chain and lacks predators; a lack of co-evolution; natural selection acting on the invaders; and the invaders influencing established habits and practices of indigenous species or organisms so that those that remain are less efficient at exploiting their usual resources (Townsend 1996).

Once introduced, the spread of the species within interconnected drainage systems or between linked drainages (e.g. hydroelectric power canals) is very likely. People are also likely to transfer the species over longer distances, which will ultimately facilitate dispersal and colonisation in suitable climatic zones. The time span in which this may occur usually cannot be predicted (Townsend & Winterbourn 1991).

Any decision to allow the introduction of a non-indigenous species must be made after an adequate procedure reviewing the impact (Townsend & Winterbourn 1991) with clearly defined objectives that are capable of evaluation and review. What constitutes an undesirable introduction is a matter of individual perspective (Dill & Cordone 1997) and that must also be recognised.

A number of procedures to review any proposed introduction can be developed. One such procedure could include environmental impact assessment, publicity, independent review and implementation. A seven-step procedure could involve the following: environmental impact assessment; publicity; independent review; experimental research; more publicity; a second independent review and implementation. The environmental impact assessment must include a clear rationale for the proposed importation, an explanation as to why the proposed species is appropriate and verifiable statements that no resident species could perform the proposed role. It must consider in detail the potential ecological impact and include an assessment of disease risk. The ecological assessment must note the effects of introductions elsewhere, particularly where comparable environmental conditions exist. The assessment should also include the economic costs of any removal or control of the species and consider the social and cultural impact of the introduction. Another important stage is publicity. A wide dissemination of the environmental impact assessment facilitates identifying other possible sources of information that may have been missed (Townsend & Winterbourn 1991).
The introduction programme must include a regular review process, to ensure that
the original objectives are being achieved and to adjust those objectives in
changing circumstances. Reviews must take into account the wider environment
plan for the region and jurisdiction. Once a species is introduced in a sea
ranching programme it will not usually be possible to reverse the decision, so the
programme should include a process to address unexpected and unintended
consequences (Townsend 1996). Introduction for even a limited purpose can be
tantamount to an ultimate full release in the wild. Escape is inevitable (Townsend
& Winterbourn 1991).

Moyle and Light (1996) presented twelve rules for predicting the fate and impact
of biological invasions in aquatic habitats and regions. They regarded the rules as
the basis for formulating testable hypotheses that in turn can support a theoretical
framework. Most invaders fail to become established. Most successful invaders
are integrated without major negative effects on the communities being invaded.
All aquatic systems can be invaded and that potential is not related to the diversity
of the resident organisms. Major community effects of invasions are most often
observed where the number of species is low. In systems that have been
minimally altered by human activity, the fishes most likely to be successful
invaders are top predators, omnivores and detritivores. Piscivorous invaders are
most likely to alter the fish assemblages they invade while omnivores and
detritivores are least likely to do so. In aquatic systems with intermediate levels
of human disturbance, any species with the right physiological and morphological
characteristics can become established. In the long term, or in relatively
undisturbed aquatic systems, the success of an invader will depend on a close
match between its physiological and life history requirements and the
characteristics of the system being invaded. The invaders of natural aquatic
systems are most likely to become established when native organisms have been
temporarily disrupted or depleted. Long-term success (integration) of an invading
species is much more likely in an aquatic system permanently altered by human
activity than one lightly disturbed. The ability to invade a natural aquatic system
is related to the interactions among environmental variability, predictability and
severity. The invaders most likely to extirpate native species in aquatic systems
are those ranked extremely high or extremely low.

Quarantine is particularly significant in the consideration of any introductions or
translocations. All wild and most cultured fish carry parasites, bacteria, viruses
and other potential pathogens. Their movement inevitably transfers such agents.
The knowledge of fish diseases is restricted to very few species. Less than two
per cent of the total number is known to science in some regions, and little or no
information exists on the vast majority of aquatic organisms (Arthur 1995; also
see discussion in section 17.2.1).

Quarantine programmes for aquatic organisms typically involve a number of
protocols. The aims are to prevent the spread of exotic diseases or strains of
parasites, bacteria or viruses into countries where they do not occur and to protect the natural environment and native faunas from the deleterious impacts of exotic species.

There are a number of international codes of practice on the introduction of aquatic species. These include the International Aquatic Animal Health Code, the Code of Practice to Reduce the Risks of Adverse Effects Arising from the Introduction and Transfer of Marine Species and that provided by the International Council for the Exploration of the Sea (ICES). These codes of practice and supporting documents endeavour to describe specific diagnostic techniques, and define sanitary regulations (Arthur 1995).

17.2.9. Transfers and Relocations of a Species within a Jurisdiction

There are few differences between the issues arising on the introduction of a species to a country and a transfer of a population within a jurisdiction. In many cases it is more difficult to recognise and control the transfer between localities in the same jurisdiction. There are fewer regulating bodies and more public acceptance. A fish is a fish, or at least a given species (Ferguson 1990), in most communities.

Given that many species are subdivided into locally adapted populations, whose genetic integrity should be preserved, the challenge is to characterise those populations relative to any geographical reference so that informed decisions can be made. The genetic variation may be further partitioned into that attributable to genetic differences among the regions, among local populations within regions and within local populations. This pattern is expected to differ between species depending upon major evolutionary forces (e.g. mutation, natural selection, genetic drift and migration; Ferguson 1990). This effectively requires a cataloguing of genetic characteristics of all significant populations and this should be a priority where sea ranching is to be undertaken (Hindar et al. 1991).

The transportation or release of fish or their reproductive products from one part of a jurisdiction to another also has the capacity to disturb the existing balance and introduce disease or other unwanted pathogens. Any such transfers should therefore be controlled and restricted. An approval process for those proposing such transfers should be established (Alaska State Senate Special Committee 1992).

The review of such applications should consider the following: the effective period during which such transfers may take place; the maximum number of fish or eggs to be transported; the source of such fish or eggs; the proposed incubation and rearing location; the release location; the purpose underlying such transfers and the perceived benefits and any detriments; the evaluation methods used in
determining the benefits and detriments; the presence and nature of the same species in the proposed release area; if the species proposed to be released is not present in the proposed release area then a further process needs to be developed to evaluate the effect of the proposed release on a basis similar to that to be adopted for the translocations and introductions of non-indigenous species; the disease and pathogen history of the fish to be released; a description of the proposed gamete collection methods; planned disease and pathogen control measures; and the water source for rearing and effluent discharge location (Alaska State Senate Special Committee 1992).

17.3. Some Economic and Social Aspects

17.3.1. Resource Rent Issues

The utilisation of the sea is the utilisation of a common resource, otherwise available to all, in pursuit of private commercial gain, subject to the restrictions and limitations already described or to be imposed. Within inland tidal waters, territorial waters and a country's maritime economic zone the situation will be different from that in the general oceans.

The issue that arises is whether those seeking to utilise a particular community resource for commercial purposes, in the form of sea ranching, should be required to pay some form of rent or licence fee, a compensation to the community for the exploitation of its resources (Ellis 1996). It can be argued that it should be no different from the right to use terrestrial land, for which rent or agistment would usually be payable based on its market value, though quite often in Australia the rent payable to the state for rural land is usually very small. It does not represent the potential profitability that users do or could reap from using the land (Campbell & Haynes 1990). Recent examples of the state recovering a sum for the utilisation of a common resource can be found in the sale of the use of radio frequency spectrum for a limited period and, rarely, the sale of individual transferable fishing quotas. The usual case is minerals, with a prescribed rate of royalty payable to the state.

Notwithstanding the introduction of fisheries licensing in most places, the amount payable for the licence, and ultimately for access to the particular resource, has usually been small. The concept of the community being recompensed for access to and utilisation of the fishery has rarely been pursued. Various models have been considered for the imposition of a resource rent in fisheries (see discussion in Campbell and Haynes 1990). It is a cost that the fishers would, where possible, seek to pass on to the processor and ultimately the consumer.

A similar approach has been adopted in some jurisdictions for net, pen and cage leases and licences, British Columbia is an example of the lesser charges, in
Norway it is more important and in Scotland a percentage of gross farm revenues is required, though lower rents are payable in more isolated areas (Ellis 1996). Others consider the possibility of recovering any unearned windfall profits from this activity, though in doing so they doubt the success of such policies without a political will (Bowden 1981).

In resource rent terms the method adopted in Scotland is the more desirable, an *ad valorem* charge based on output. An even more desirable method would be to assess the charge by reference to profits or net cash flows, effectively a tax surcharge (Campbell & Haynes 1990). This approach raises many complications. A different approach is to auction or offer for tender the available licences either in perpetuity or for a specified period (Campbell & Haynes 1990). In most situations this will be a new activity and the bids will suffer the usual conservative assessments of the likely profitability of such innovative ventures. A fixed period allows it to be proven and then re-bid.

Finally, having regard to the treatment of most fishers, a sea rancher may rightly question why the utilisation of this common resource should attract any substantial payment and, more particularly, anything more significant than paid by fishers, the principal competitor. Even if imposed, it is a cost the sea rancher will usually seek to pass on to the consumer, to the extent that is possible, having regard to the production from the wild fishery and consequent market prices.

17.3.2. Licensing of Operators

The effective monitoring and control of operators of private enhancement activities will require a licensing system, the licences specifying the terms and conditions under which those activities may be undertaken. Such terms and conditions may be divided into specific conditions and general conditions. The former are likely to include limits on the number of fish that may be released, the species and subspecies and the place of release. The latter will involve both substantive issues of general application and administrative aspects.

The issue of a permit is also likely to create property rights, particularly if the permit is transferable, either directly or on surrender and re-issue (see sections 3.5 and 5.5). There would appear to be no reason why such licences or permits should not be transferable if they are site or area specific. The ability to transfer such licences or permits to other areas may create other difficulties. In the case of some populations, the permits may need to be limited to areas where there will be minimal competition with existing wild fish. Such permits are already used in Alaska (Alaska State Senate Special Committee 1992) for anadromous species. Similar issues are likely to arise for other populations, though they may need to be addressed in a different manner. In some cases it may be prudent to require the
releases to take place in a number of different areas to minimise the impact of significant releases in a single area.

The issue of the permit will require a formalised procedure. This may involve all or some of the following steps: a pre-application assistance procedure; a management feasibility analysis; departmental review of the application at various levels; a procedure for requesting and receiving additional information; a completeness determination review; possibly public hearings; a final decision process; and possibly a review procedure from such a decision process (Alaska State Senate Special Committee 1992).

The decision to issue a permit must be undertaken against specific criteria. The criteria may include: the effect the hatchery and release programme will have on the existing community; the contribution it will make to the common property fishery; the methods of protecting the wild stocks from any adverse effects which may originate from the release; the compatibility of the proposed hatchery with the region and the jurisdiction management plans for the species; whether there are better methods of improving the local production of the proposed species; an environmental assessment of the impact of the proposed releases; the financial viability of the applicant; future production projections and a management plan; the marketability of the proposed product to be produced; a detailed project cost-benefit analysis; methods of ensuring genetic diversity; ongoing genetic and biological monitoring; the cost and method of undertaking rehabilitation of a failed release programme; and a public benefit and cost analysis (Alaska State Senate Special Committee 1992). A suitable degree of flexibility in the application of the criteria is required, while also providing a level of certainty to applicants. Such applications can be costly and an applicant must have a full understanding of the process and the likely criteria against which the application will be assessed.

The permits should allow for suspension and revocation for significant non-compliance with the relevant laws and conditions (Alaska State Senate Special Committee 1992). The conditions on which such permits are issued must be capable of alteration to meet both unexpected situations and those arising from the growth and maturity of the programme. This should include the possibility of limiting the releases consistent with the overall region and jurisdiction plan. An efficient and expeditious review process for such decisions must be included in any such regime. The scope of the availability of judicial review needs to be carefully considered. Both the originating process and a review process must recognise that there is likely to have been considerable financial outlay by the permit holder. On the other hand expectations of the inviolability of the permit should not be created.
17.3.3. Resistance from Fishers and First Nations

In many cases the potential for direct competition between aquaculture and capture fisheries is low (Morton & Tilbury 1993). There are clearly exceptions; they include salmon and prawns, and with time and the development of aquaculture they may grow. Aspects of the salmon situation are considered in the report of the Alaska State Senate Special Committee (1992). The impact of this competition can be seen particularly in the Pacific north-west where the production of significant quantities of farmed Atlantic salmon have significantly affected many facets of the marketing of salmon and consequently the potential viability of salmon fishers, particularly marginal fishers.

Two epitaphs to be found in British Columbia, where there is resistance to fish farming, are: “Friends do not let friends eat farmed salmon” and “Fish do not do drugs”. The underlying basis for the resistance is not always clearly stated; most likely, the real issue, in many cases, is the commercial impact of aquaculture on the fishers. The farmed product has a number of commercial advantages. In Scotland they have been described as lower prices, price stability, more ready availability, greater attention to quality aspects and a change in market composition (collapse of trade in frozen wild fish) (Stansfeld 1982). In British Columbia it is suggested that trolls have been affected by reduced profitability (Ellis 1996). This fails to take account of the perceived public preference for “free range” items, where there is an ability to distinguish. In Alaska, state law, apart from the Private Non-Profit Hatchery system, prohibits mariculture. The fishers have the influence to protect their local interests.

In many cases these fishers have only recently gained property rights in the fishery, a transformation from common or public property (depending on the view you take, see Bowden 1981). They are keen to preserve and protect this newly acquired property, which in many cases is now traded for a significant sum. Not only does aquaculture undermine the day-to-day viability of their business but also the long-term capital value of their newly won property. It competes with them in the use of the sea, though the actual overlap is quite small, the fishers depending on the wild fish whilst the aquaculturist depends on a very small area of the sea itself (Bowden 1981). These and other factors (e.g. the decline in catches, increased operating costs and reduced prices) have the potential to be devastating.

The resistance of fishers to aquaculture or similar practices in European communities is not new. As early as 1789, the “Book of Complaints” of the inhabitants of the Teste in France, Article 9, recorded that “fishermen suffered considerable injustice as a result of fish reservoirs on the shores of the Arcachon Basin” (Kirk 1987). As these reservoirs became more successful they came in for increasing complaint from disgruntled fishers who claimed that they were detrimental to fish stocks in the basin by reason of the practice of attracting fish
into the impoundments. Many other complaints were made about the practices adopted by these early fish farmers, which led to a Commission of Enquiry in 1854 in Bordeaux to determine whether there was any substance in the allegations. By the 1870s the complaints from the fishers appear to have ceased (Kirk 1987).

The concerns of First Nations people appear to be the interference with their usufructuary rights (Wildsmith 1982), health concerns (Ellis 1996) and those that would be described as environmental. The later include the consequential environmental impact with strong concerns about activities that might affect their economy, culture and traditions (British Columbia Salmon Aquaculture Review Committee 1997; also see quote below).

Their direct environmental concerns include the impact on the wild stocks, which have such a significant place in their culture, and the fact that farm waste has been shown to affect life on the seabed beyond the aquaculture tenure boundary (British Columbia Salmon Aquaculture Review Committee 1997). In some cases there is also a loss of access to traditional fisheries. In those situations where there is contamination, another concern is the potential impact of taking fish contaminated from feeding near or on fish farm effluent (Ellis 1996). A simple explanation for First Nations resistance was provided by the British Columbia Salmon Aquaculture Review Committee (1997, summary) in the following terms:

"First Nations have received very few, if any, benefits from salmon aquaculture as it is currently practiced, yet they have experienced a greater impact than any other group. Their involvement in decisions regarding salmon aquaculture during the last two decades has been minimal. For these reasons and technical concerns, First Nations have strongly opposed salmon farming in their traditional territories".

Whilst most of the foregoing resistance has been directed at net, cage or pen farming activities there is no reason to suggest it will not also be directed at sea ranching (see comments in Social and Economic Consideration of volume 2 of part 3 of the British Columbia Salmon Aquaculture Review Committee 1997). In some aspects the impact of sea ranching on fisheries may be more acute and in others less so than net, cage or pen culture.

17.3.4. Economic Development, Effectiveness and Sustainability

The establishment of hatcheries and the undertaking of sea ranching can provide economic development, particularly in areas once dependent on fisheries, which have since become exhausted (Harris 1999 describes this in general terms). This provides employment opportunities for the former fishers and hatchery operations can provide new employment for both male and female residents. In some areas, if the likely catches are significant, processing facilities may be also established with the opportunity for value adding (Alaska State Senate Special Committee...
In some communities aquaculture has had the opposite effect. It has caused significant unemployment for those engaged in traditional fishing (Masood 1997). In other places it has limited the access of local communities to their fishing areas. On the other hand some see the establishment of hatcheries and their product as nothing more than technology being sold by scientists to unwaried fishers and others motivated by short term objectives (Hilborn 1992, 1998b). Clearly the effects are very different in each community, for different activities and in each situation need to be assessed.

More importantly, the effectiveness of enhancement and sea ranching in many cases is still in doubt (see Kirk 1987, the articles collected in Thorpe 1980 and Stottrup et al. 1994). The risks were demonstrated recently in the release of cod stocks measured as a year two group in Norway (Smedstad et al. 1994). Whether there is success or failure will depend on the objectives and the criteria used for measuring success Hilborn (1998b).

The first year's results of the release of turbot in Spain were more promising (Iglesias & Rodriguez-Ojea 1994), as were the results of the release of cod in Limfjord sound (Stottrup et al. 1994). There are many factors to be considered in any assessment of the success or failure of such programmes including survival rates and the cost of producing the juveniles. In each case a thorough pilot study is required which should include a range of projected economic and social benefits for affected communities (Munro & Bell 1997). Considerable disruption should not occur before the effectiveness of the proposed programme is demonstrated. If the programme involves public funds then the costs and the economic benefits should be compared. This comparison should include alternative practices that may achieve similar objectives (e.g. improved management) (Hilborn 1998a, 1998b; Hilborn & Eggers 2000).

In sustainability terms, Tyedmers (2000) very recently considered the biophysical costs of producing salmon through a commercial salmon fishery and intensive salmon farming and concluded that, as currently practised, intensive salmon farming in British Columbia is the most biophysically costly and hence the least sustainable method of producing salmon. This did not apparently hold when the total feed rates used for farmed salmon fell below 1.6 to 1, or the cost of meal and fish processing wastes were biophysical free inputs.

Also of interest here were Tyedmers' (2000) observations that the biophysical cost profiles of both wild and farmed salmon can be changed and salmon farming could become more energetically sustainable, reducing the degree to which commercial fisheries depend on hatchery fish. This has adverse implications for sea ranching.
18. Some Advantages of the use of Sea Ranching

18.1. Lessening Competition on the Seafront and Other Seaside Uses

Sea-based aquaculture places considerable demands on seafront resources. These demands are both biological and physical. Many of the biological demands are considered elsewhere. The qualities that make a site suitable for fish farming (good marine water quality, accessible shoreline, access to supplies of fresh water, safe moorage and the proximity to population centres) are suitable for many other activities (British Columbia Salmon Aquaculture Review Committee 1997 referring to salmon farming).

The relatively recent appearance of fish farms in areas of the coast where several other activities already exist or where other new activities (such as marine tourism) are growing have frequently led to conflict with other users, recreational and commercial (Pt Vincent Progress Assn v DAC and Colmion Pty Ltd, [1999] S.A.E.R.D.C. 7; Ellis 1996; Millar & Aiken 1995) and in developing countries artisan fishers and subsistence seaside dwellers. The physical demands for most mariculture activities include both shore-based facilities incorporating hatcheries and sites for net, pen and cage culture systems or extensive tidal ponds. Aquaculture, particularly large farms, can impact significantly on the local scenery and amenity of the area (Millar & Aiken 1995), odour (Ellis 1996) and a greater potential for red tides. In developing countries mangrove forests and rice fields have been converted to aquaculture ponds, creating water-related problems, land-related problems, coastal zone problems, institutional problems and socioeconomic problems (Boromthanarat 1995; Isaac 1995).

The placement of pens and cages may interfere with navigation, fishing and recreational uses of the sea (Walford v The Crown Estate Commissioners, (1986) Unreported, Outer House Cases, 2 July 1986; Millar & Aiken 1995). Anchoring and similar requirements extend the sea area used beyond the physical farm itself (Ellis 1996). On the other hand, in British Columbia navigation routes, archaeological sites and commercial and sports fishing areas are rarely affected by farm locations (British Columbia Salmon Aquaculture Review Committee 1997), and this is likely to be the situation in most communities. In biological terms the coastal zone is the most important part of the marine environment for productivity, as well as biodiversity (Karakassis et al. 1999). Few authors have emphasised this aspect of the placement of aquaculture facilities and there is little in the literature on this, outside of the effects of prawn farms on mangrove swamps (of which there is considerable literature). The British Columbia Salmon Aquaculture Review (British Columbia Salmon Aquaculture Review Committee 1997) recognised that efforts are made to avoid sensitive fish and the wildlife habitat in British Columbia, but there appear to be no comprehensive studies of overlap between salmon farms and sensitive habitats. A similar contention of...
some fishers is that the activities interrupt established stock migration (Millar & Aiken 1995), but again there appears little to support it.

A matter rarely considered or discussed is the impact of other industrial users who fear that an industry such as aquaculture may force them into the expense and inconvenience of treating their effluent (Millar & Aiken 1995). It may draw attention to some of their practices, ones they prefer to remain unnoticed either because of the requirements of aquaculture or the attention the aquaculture activities focus on the environment.

Sea ranching limits the needs of such activities to hatcheries and basic land-based facilities. It does not require net, pen or cage culture facilities. It will partly alleviate some of these impacts.

18.2. Possibly Lower Capital Requirements on Operating Costs

Aquaculture facilities require considerable capital and ongoing operating costs for both shore-based facilities including hatcheries and sites for net, pen and cage culture systems, land-based pond systems or recirculating systems.

Sea ranching does not require net, pen and cage culture facilities, land-based pond systems and or recirculating systems. It will be limited to hatcheries and some on shore facilities. It saves on both the capital and the operating costs involved with such facilities. It avoids the feed costs through the grow out stage or at least reduces them significantly where acoustically trained responses are relied on. It involves additional recovery costs if the fish are harvested using conventional fishing techniques. It saves on the high-energy requirements of such facilities.

In the case of anadromous species, even many of these costs may be avoided if reliance is placed simply on the fish returning to their site of release. There appears to be little data to enable a comparison of such savings. Further, those savings need to be considered in the overall profitability of the venture. This requires an analysis of two alternative investments, one utilising a conventional net, pen or cage operation and the other using sea ranching. In the latter, the level of return and recoverability of the released fish will affect the benefits.

18.3. Possibly Greater Utilisation of the Seas

In theory, at least, sea ranching provides for a greater utilisation of the sea. It seeks to support the over-harvested population and move much of that pressure to released populations. The criticisms of that view have already been considered, including some of the new pressures and problems it creates for the over-harvested population (see section 17).
18.4. Reintroduction or Preservation of Populations

Several situations have already been described where enhancement practices have ensured sustained populations in fisheries in Japan and the Baltic Sea. The situation in Alaska is more equivocal (see section 17).

Sea ranching, as proposed in this thesis, may simply replace government and government-supported hatcheries with private hatcheries, where the operator of the private hatchery is entitled to recover the operator’s fish. Where enhancement is not already being undertaken it may assist in reintroducing or preserving populations.

18.5. Avoidance of Fish Farm Effluent Effects

The environmental impact of marine fish farming depends very much on species, culture method, stocking density, feed type, hydrography of the site and husbandry practices (one of many general discussions of the effects is to be found in Rosenthal et al. 1995). In general, some 85 per cent of phosphorus, between 80 and 88 per cent of carbon and between 52 and 95 per cent of nitrogen input into a marine fish culture system as feed may be lost into the environment through feed wastage, fish excretion and respiration (Wu et al. 1995). Cleaning of fouled cages may also add an organic loading to the water, albeit periodically. Problems caused by high organic and nutrient loadings conflict with other uses of the coastal zone (Wu et al. 1995).

The impact of net, pen or cages on the benthos can be very damaging and this is one of the most commonly cited criticisms of mariculture throughout the world. Despite the high pollution loadings, results from various studies show that some 23 per cent of carbon, 21 per cent of nitrogen and 53 per cent of phosphorous of feed input into the culture system is accumulated in the bottom sediments and that the significant impact is normally confined (within 1 km of the farm: Wu et al. 1995; within 250 metres of the cages; Johannessen et al. 1994; within 25 metres of the cages; Doughty & McPhail 1995) or at least gross degradation to within 3 metres (Henderson & Ross 1995). The major impacts on the sea bottom are usually high sediment oxygen demand, anoxic sediments, production of toxic gases, inability to reduce the increased nitrogen loading by denitrification processes and a decrease in benthic diversity (Wu et al. 1995; Christensen et al. 2000; Camargo 1992; Doughty & McPhail 1995; Findlay et al. 1995). Decreases in dissolved oxygen and increases in nutrient levels in the water are also evident, but are normally confined to the vicinity of the farm (Wu et al. 1995; Christensen et al. 2000; Camargo 1992).

The impacts on the seabed do not occur consistently, even where very low current speeds are observed, and may be partly explained by the large numbers of fish...
that feed on the farm wastes (Mac Dougall & Black 1999). Another study has found that this may lead to a change in the population dynamics of the fish in the water body, their foraging habits, habitat distribution and feed source (Gabrielsen 1999), as it provides a new and novel food source.

The use of chemicals (therapeutants, vitamins, antifoulants involving tributyltin (TBT) and the development of antibiotic-resistant bacteria Ellis 1996, though elements of this are now being reduced by greater use of vaccines, Hine 1995) and the introduction of pathogens (bacteria, viruses and parasites) and new genetic strains have also raised environmental concerns (Hine 1995). Another source of concern is the disposal of the mortalities from the process, up to 20 per cent of the initial population. Whilst there are generally processed into fertiliser or buried, there have been accusations of ocean dumping (Ellis 1996).

The stimulating effects of vitamins and fish wastes on the growth of red tide species have been demonstrated in a number of laboratory studies. Nevertheless, there is no evidence to support the suggestion that the present use of therapeutants, vitamins and antibiotics and the introduction of pathogens and new genetic strains pose a significant threat to the environment. This is heavily debated (Ellis 1996). Marine fish culture can be a sustainable development, provided pollution loadings generated by fish farms are kept well below the carrying capacity of the water body (Wu et al. 1995).

Whilst these effects may be reduced by careful site selection, control of stocking density, improved feed formulation, integrated culture (with macroalgae, filter feeders and deposit feeders) (Wu et al. 1995) and improved feeding practices they cannot be avoided altogether. Even if they are reduced, a perception will remain for some time that they are contributing to many of these problems. Others view the current practices as akin to the indiscriminate dumping of raw feedlot effluent in the sea (Ellis 1996).

Again, sea ranching avoids much of this. It is limited to the hatchery stage and where acoustically induced responses are involved, the effect is limited to the areas where feed is provided as part of the supplementation. Varying the feeding site will further lessen any adverse effect on the seabed.

18.6. Possible Lessening of the Impact of the Fishmeal Trap

There is a continuing and considerable controversy as to the impact of fishmeal requirements of aquaculture on capture fisheries (Fischer et al. 1997). Much of the controversy centres on the diversion of food fish to meal and the loss of that protein-rich food source, particularly in developing countries, in favour of high value, developed, luxury products. An extension of this controversy is the over-harvesting pressures it places on these populations (Ellis 1996).
It is quite clear that the protein requirements of most aquaculture species are more readily and easily provided by the use of fishmeal and fish oil. However aquaculturists have long recognised that this places considerable demands on the wild fisheries, which are generally in decline, and that the growth of aquaculture could accentuate the shortage of fishmeal and ever-increasing prices. This is known as the fishmeal trap.

Much of the work that is being undertaken for the advancement of aquaculture is to find suitable substitutes for fishmeal and to obtain improved feed composition and food conversion ratios (Austreng & Storebakken 1985; Alexis 1996; Gabrielsen & Austreng 1998; El-Sayed 1999; Coloso et al. 1996). These requirements vary from population to population and accordingly require significant work. Two simple examples of such improvement are the channel catfish industry and the salmon aquaculture industry. In the former, the fishmeal protein requirements have been reduced to about 8 per cent of the feed from the optimum total protein requirements of approximately 25 per cent to 40 per cent (Tucker 1985). In the case of salmonids not only are attempts being made to find substitutes for fishmeal and fish oil but food conversion ratios have been reduced in some cases from 1.5 to about 1.1 (Ellis 1996; Bjørndal 1990). Other attempts are being made to improve the effectiveness of feeding practices. Though less research on these methods has been undertaken, it is an area of intensive study (Ruohonen & Vielma 1998).

Again, sea ranching avoids much of this. The fish are released to survive in the sea; they become both predator and prey. Their reliance on fishmeal and fish oil is limited to their hatchery stage and, where acoustically induced responses are involved, the supplementation of their natural ranging.
Chapter Five
A Proposal and Epilogue

19. Issues to be Considered in any Legislative Intervention

19.1. The Nature and Form of the Legislative Intervention

This thesis proposes a legal framework for sea ranching, by way of drafting instructions for legislation to control sea ranching. The drafting instructions describe in detail the object sought to be achieved and the mechanisms for doing so without the finer or local detail required in legislation or subordinate legislation. It is an attempt to suggest in a clear statement what is intended, with particularity and clarity, recognising that it is the job of the legislative draftsperson or drafter to produce the legislation and subordinate legislation using the form and style of the office and the legislature involved (Driedger 1976).

The nature and form of the legislative intervention will be affected by many different factors in each jurisdiction where it may be considered. Two of the more common are the distribution of powers in federations and the mix of legislation and subordinate legislation required to implement a proposal. In those countries that are federations, the legislative competence of a single legislature may be inadequate to fully implement the suggested scheme. This is not taken into account in the framework proposed. It is prepared on the basis that a single fully competent legislature could implement the proposal.

The other aspect is the manner of implementation. This is a matter of style; in some jurisdictions the legislation contains most aspects of the legislative scheme with the regulations left to cover matters such as forms and simple procedural facets. A different approach is for the legislation to provide the broad general framework and principles, leaving it to the regulations or other subordinate legislation and instruments to implement much of the statutory scheme. There are also likely to be administrative requirements and practices constrained by law or convention in each jurisdiction. The drafting instructions will need to be adapted to take account of these requirements. Accordingly in some areas any drafting instructions of this nature must be very general.

In some situations it may be more appropriate to establish different management regimes for different classes of populations (e.g. anadromous species as distinct from marine species). This structure is not adopted in the proposal put forward.
A further refinement could be to include an obligation that requires the establishment of an overall management plan (using regular reviews) and the issue of licences in accordance with that plan. This approach has not been adopted on the basis that sea ranching is only part of aquaculture and there will be an appropriate management plan in the jurisdiction for aquaculture, including sea ranching. Finally, a specific decision review process may be required in some jurisdictions; others may already have a general procedure applicable to all administrative decisions (in some situations such a review may be available under the common law). The drafting instructions have not provided for them.

19.2. Purpose of the Act

Part 1 - Preliminary

1. Name

The Act could be called the Sea Ranching Facilitation Act.

2. Definitions

Definitions should be included to address the following matters:

2.1. “aquaculture” is to mean the culture or husbandry of aquatic flora and fauna;

2.2. “aquaculture facility” is to mean any place where aquaculture is being, or is intended to be, conducted, but does not include the sea;

2.3. “authority” is to mean the Minister or other agency or body that is to be responsible for the decision to issue the licence to undertake sea ranching and administer the Act;

2.4. “casual release permit” is to mean a permit issued by the authority to a person, to release fish of a prescribed class, indigenous to that part of the sea in which they are to be released, into the sea or particular parts of the sea specified in the permit at such time as may be specified and subject to such conditions as may be specified in the permit;

2.5. “commercial fisher” is to mean a person licensed to take fish for the purpose of trade or business and is to include a person who is not so licensed, but who takes fish for the purpose of trade or business but is not to include a person who operates a charter boat that is used by persons who do not take fish for the purpose of trade or business;
2.6. "indigenous species" is to mean a species that occurs naturally in the sea and is not to include one that may now occur naturally as a consequence of the introduction of the species to the area by humans or a genetically modified animal other than one genetically modified in a manner acceptable to the authority to provide a mark or to render it sterile for the purposes of sea ranching;

2.7. "licence" is to mean a licence to undertake sea ranching issued pursuant to the Act;

2.8. "mark" is to include an identification impressed or affixed on or within the body of fish to indicate ownership;

2.9. "Minister" is to mean the Minister responsible for the administration of the Act;

2.10. "natural environment" is to mean an area outside of an aquaculture facility not controlled by the person operating the aquaculture facility, whether or not the area has been altered or changed by human intervention including an area forming part of the tidal waters or territorial waters of the jurisdiction;

2.11. "precautionary approach" is to mean the approaches contemplated in the "Code of Conduct for Responsible Fisheries" and the "Guidelines for the Precautionary Approach to Capture Fisheries and Species Introduction" as published by the Food and Agriculture Organisation of the United Nations as modified, varied or amended from time to time;

2.12. "non-indigenous species" is to mean a species that is not an indigenous species;

2.13. "sea" is to mean the tidal waters of the jurisdiction as well as the territorial waters of the jurisdiction and extends to any part of the natural environment where a person contemplates that the fish released in that environment (other than the sea) will make their way to the tidal waters for some part of their life cycle, and where the context requires a part of the sea;

2.14. "sea rancher" is to mean a person holding a licence;

2.15. "sea ranching" is to mean that form of aquaculture in which fish are intentionally released into the sea or natural environment to feed and grow, and remain the subject of ownership of the person releasing the fish in accordance with this legislative scheme;
2.16. "species" is to include subspecies, variety, breed or a population of animals that are distinguishable from other populations of the same species, subspecies, variety, breed or population.

3. Other Aids to Interpretation

For the purposes of the Act, a fish is not be regarded as having been taken if it is taken but forthwith returned to the sea unencumbered in any way and with as little injury as possible.

4. Purpose of the Act

The purposes of the Act are to include:

4.1. the establishment of a framework for the undertaking of responsible sea ranching;

4.2. the clarification of the proprietary rights of a person engaged in sea ranching in respect of fish released by the person as part of sea ranching activities;

4.3. the clarification of the rights of a person engaged in sea ranching to release fish in the sea as part of sea ranching and to recover the fish released;

4.4. the protection of the sea and users, including the fisheries of the sea from the risks which may be associated with sea ranching; and

4.5. the regulation of the conduct of sea ranching.

5. Other Preliminary Matters

5.1. The Act is to bind the jurisdiction.

5.2. The Act is to the extent of the legislative competence of the jurisdiction to apply within and outside of the jurisdiction.

6. Delegation

The Minister is to be permitted to delegate by instrument in writing, either generally or otherwise, to appropriate persons any powers of the Minister under this Act, other than the power of delegation, subject to the usual conditions and powers of revocation.
7. Annual Report

The Minister is to be required to submit a report to the Legislature within three months of the end of each financial year as to the operation of the Act.

Part 2 - Review

8. Review

The Minister is to be required to submit reports to the Legislature within six months of the end of the fifth, tenth and fifteenth years from the commencement of the Act, of a review as to the operation and effectiveness of the Act and in particular:

8.1. whether each of the objectives of the Act are being achieved;

8.2. how the objectives of the Act may be better achieved;

8.3. any unexpected, unforeseen or adverse consequences of permitting sea ranching;

8.4. any amendments required to the Act to address the other matters the subject of the report; and

8.5. whether sea ranching should be allowed to continue.

Part 3 - Permitted Releases

9. Prohibition on Release of Fish

9.1. Subject to the following exceptions, there must be an absolute prohibition on a person releasing or permitting fish to escape into the sea, or depositing fish in the sea where those fish have been kept apart from their natural habitat. The failure to comply with this requirement is to constitute an offence.

9.2. A person is to be permitted to release fish in the sea for the purpose of sea ranching, if licensed to do so under the Act.

9.3. The authority or another governmental agency may, after consultation with the Minister, release fish in the sea.
9.4. The authority may on written application and payment of a prescribed fee issue a casual release permit.

9.5. The authority is to be permitted to vary or revoke a condition of a casual release permit, or impose a further condition.

9.6. The holder of a casual release permit must comply with all conditions of the permit. The failure to comply is to constitute an offence.

Part 4 – Licensing of Sea Ranching

10. Prohibition on Sea Ranching otherwise than in Accordance with Act

Sea ranching is not to be undertaken in the jurisdiction otherwise than in accordance with the Act. The failure to comply with this requirement is to constitute an offence.

11. Prohibition of Unlicensed Sea Ranching

A person is not to carry on or be engaged in sea ranching unless the person is the holder of a licence. The failure to comply with this requirement is to constitute an offence.

12. Licensing of Sea Ranching

12.1. An application for a licence is to be made to the authority in such manner and form, contain such information and be accompanied by such papers and documents (including photographs) as are required by the Act.

12.2. An application for a licence must contain the following information:

(a) the name and address of the applicant;  
(b) the species to be released;  
(c) the number of each species to be released in each year;  
(d) the area of the sea in which the releases are to made;  
(e) the time or times when the releases are to made;  
(f) the likely migratory patterns of the species to be released;  
(g) the methods to be used by the sea rancher to recover the fish released by the sea rancher;
(h) the acoustic or other devices that are intended to be used as part of the sea ranching activities to be undertaken;

(i) the method of marking or branding the fish to be released;

(j) the source of the fish to be released;

(k) the methods to be used by the applicant to ensure the disease-free status of the fish to be released;

(l) the methods to be used to ensure a suitable genetic mix of the population to be released;

(m) the methods to be used to ensure minimum reproductive capacity of the fish to be released;

(n) a basic management plan for the proposed sea ranching operations and its conduct;

(o) details of all other licences the applicant will require to undertake the sea ranching activities and appropriate indications from the relevant authorities that those licences have or are likely to be granted to the applicant;

(p) the experience or qualifications of the applicant to undertake sea ranching; and

(q) such other matters as may be prescribed.

12.3. An applicant for a licence must, if the authority so requires:

(a) furnish the authority with such further information, papers or documents as the authority specifies and are required by the Act; and

(b) verify in the manner prescribed, any information furnished for the purposes of the application.

12.4. An applicant for a licence is at the time of making the application to pay to the authority such application fee (if any), as may be prescribed.

13. Grant of Licence

13.1. An application for a licence is to be determined by the authority subject to and in accordance with the provisions of the Act.

13.2. An application for a licence is only to be granted if the authority is satisfied, having regard to the other matters that the authority is required to have regard to by the Act:
(a) that the species to be released are suitable for release in the sea or an area of the sea;

(b) that the number of the species to be released by the applicant together with the number permitted to be released by sea ranchers will not adversely impact on the sea or an area of the sea, its fisheries and other users of the sea; and

(c) whether it is inappropriate to issue further licences for an area of the sea.

13.3. The authority must, in considering whether or not to grant a licence, have regard to:

(a) the preservation of the wild species of fish as a priority;

(b) the aquaculture management plan of the jurisdiction;

(c) the possible spread of disease by the released fish;

(d) the impact on existing wild populations and the fisheries;

(e) the impact that the release of fish may have on the sea and on other users of the sea;

(f) the impact on the gene pool of an existing species by the release of fish;

(g) the carrying capacity of the sea or the areas of the sea to be utilised for sea ranching;

(h) the likely predation impact of the number of fish to be released in the sea or an area of the sea;

(i) the overall trophic effect of the fish to be released in the area of the release and adjacent waters;

(j) the likely competition between the released fish and the wild populations;

(k) the impact on the ability to manage the wild populations of fish;

(l) the ability to readily identify and distinguish the released fish from other released fish and the wild fish to facilitate the management of the various populations;

(m) ensuring an appropriate balance is maintained between the wild species and the released fish having regard to the priority to be afforded to the wild species;

(n) any economic benefits or dislocations that will be suffered by the communities in the area where the fish are to be released and/or recaptured;
any likely impact that the proposed sea ranching activity will have on neighbouring jurisdiction or any other jurisdiction likely to be affected;

the basic management plan submitted by the applicant;

the information provided by the applicant either in the application or in response to a request of the authority;

the suitability of the applicant to undertake sea ranching;

such other matters as the good management of a fishery of a mixed stock of wild and released fish may require; and

such other matters as may be prescribed that are not inconsistent with the foregoing.

13.4. The authority may, in considering whether or not to grant a licence, have regard to:

(a) the compatibility of the release activities with existing fisheries management plans;

(b) the financial viability of the applicant;

(c) the future production projections and management plans of the applicant;

(d) the marketability of the product;

(e) the likely economic effectiveness of the proposed sea ranching activity;

(f) a suitable cost-benefit analysis of the proposal of the applicant;

(g) proposed ongoing and genetic monitoring programmes of the applicant;

(h) any public cost-benefit analysis of the proposal of the applicant;

(i) the regional community benefits;

(j) the likely cost of any rehabilitation that may be required in the event of a failure of a sea rancher;

(k) the order of lodgement of the applications for a licence for an area;

(l) any lump sum payment offered by the applicant for the grant of the licence; and

(m) such other matters as may be prescribed.

13.5. The authority in considering the foregoing matters is not only to consider the impact and effect of the species and number proposed to
be released by the applicant but also that of all existing licence holders.

13.6. The authority must not grant a licence for the sea ranching of a non-indigenous species unless:

(a) a full environmental impact assessment of the proposed releases accompanies the application;

(b) the environmental assessment has been the subject of an independent review undertaken by an independent expert appointed by the Minister;

(c) notice of the application, of the availability of the environmental impact assessment and the independent review is made public by advertisements appearing in newspapers published in the jurisdiction and in the area where the releases are proposed to be made;

(d) the public has been allowed the opportunity to make written submissions to the authority on the proposal of the applicant;

(e) after receiving public comments, the authority has published a report of its preliminary view as to whether a licence should be issued having regard to the information accompanying the application, the independent review, the public comment and the assessment of the authority as to whether the proposed releases will have a substantial adverse environmental impact on the sea and the area in which the releases are proposed to be made;

(f) a public hearing has been conducted by the authority on the report of its preliminary view as to whether a licence should be issued;

(g) the authority ensures observance of any international treaty obligations that affect the jurisdiction relating to the translocation or introduction of non-indigenous species;

(h) all existing applicable protocols or guidelines of the jurisdiction or international organisation in relation to the translocation or introduction of non-indigenous species have been considered by the authority; and

(i) the authority is satisfied that the proposed releases will not have a significant adverse environmental impact on the sea and the area in which the releases are to be made.

13.7. The authority need not determine entitlement to licences in the order of receipt of the applications for the licences.
13.8. An applicant for a licence shall not in connection with the application make a statement that is false or misleading in a material manner. The failure to comply with this requirement is to constitute an offence.

14. Approach to the Issue of Licences

14.1. Precautionary Approach

The authority is to be guided by the precautionary approach in the consideration and issue of all licences, permits and exemptions.

14.2. Effect on Fishing Industry

The authority in the exercise of its power to issue licences is to maintain an even balance between the interests of sea ranchers and commercial fishers, neither seeking to protect or favour commercial fishers in the consideration of whether a sea ranching licence is to issue, but having appropriate regard to their interests.

15. Specific Licence Conditions

A licence issued by the authority is to specify:

(a) the area of the sea where the sea rancher may release fish;
(b) the species of fish that the sea rancher may release in the sea;
(c) the number of fish of a species that the sea rancher may release in any one year and if licensed to release fish at more than one site the number that may be released at each site;
(d) the time or times when the releases may be made or a method for determining those times;
(e) the methods to be used to mark the fish;
(f) the methods to be used by the sea rancher to recover the fish released by the sea rancher;
(g) the acoustic or other devices the sea rancher may use as part of sea ranching activities;
(h) the sources that may be used for the supply of the fish to be released;
(i) all other licences the sea rancher is required to maintain to undertake the sea ranching activities;
that the sea rancher is to undertake the activity complying with the basic management plan that accompanied the application as amended from time to time with the approval of the authority;

that the sea rancher is to provide an annual management plan to the authority within the time prescribed and in the manner prescribed, not inconsistent with the basic management plan as amended from time to time in the manner provided for in the Act;

the sea rancher is to undertake the activity in accordance with the annual management plan unless varied with the approval of the authority;

the methods or procedures required of the sea rancher to ensure a specified genetic mix of the fish to be released;

the methods to be used to ensure minimum reproductive capacity of the released fish;

that the management regime for wild populations is to be afforded priority in management and accordingly the rights of the sea rancher may be adversely affected by decisions in relation to that management;

to pay the annual licence fee prescribed at the time specified in the licence;

to pay a lump sum fee on the grant of the licence; and

such other matters as may be prescribed by regulation.

16. General Licence Conditions

The authority is to be permitted upon granting a licence to impose a condition on the licence, not inconsistent with the Act, being a condition

directed towards conserving, enhancing or managing the living resources in the sea;

requiring the provision of a performance bond;

related to the purposes and implementation of the requirements of the Act;

reporting on releases and recaptures of sea-ranched fish; and

that is reasonably necessary to carry out the purposes of the Act.

17. Variation of Conditions

17.1. The authority is to be permitted to vary or amend the conditions of the licence at any time for any of the same reasons or purposes as specified in the Act for the imposition of a condition.
17.2. The power of the authority to vary or amend a condition of a licence is to apply to a condition notwithstanding that the effect of the condition is to prevent for a specified period:

(a) the retaking of the fish released by the sea rancher that could otherwise be lawfully taken pursuant to the licence; or

(b) the release of further fish by the sea rancher whether by reference to sites, numbers, populations or time or a combination of them.

17.3. The authority is not to:

(a) impose a condition that has the effect described in clause 17.2; or

(b) vary a condition so that it has that effect, except with the approval of the Minister.

17.4. Before giving approval under clause 17.3 the Minister is to:

(a) give the holder of the licence and any organisation representing sea ranchers (if one exists) a notice in writing setting out the condition to be imposed or the manner in which a condition is to be varied, as the case may be, and the reasons for the proposed action; and

(b) not later than 14 days after giving the notice, to consult or use the Minister’s best endeavours to consult with the holder of the licence and the organisation of sea ranchers.

17.5. The decision of the Minister may be the subject of an appropriate review process.

18. Term of Licence and Renewal

18.1. A licence, subject to the Act, is to be in force from the day specified in the licence until the expiration of the term prescribed for licences.

18.2. The term that may be prescribed for licenses must not be less than five years.

18.3. The holder of a licence may apply for and be granted a renewal of the licence.

19. Endorsement and Failure to comply with Licence Conditions

19.1. The conditions of a licence are to be endorsed on the licence.
19.2. The holder of a licence is not to contravene, or fail to comply with, a condition of the licence. The failure to comply with this requirement is to constitute an offence.

20. Surrender, Suspension and Revocation of Licence

20.1. The holder of a licence may at any time surrender the licence in writing to the authority.

20.2. A court convicting a person of an offence against the Act is to be authorised, if it thinks fit, in addition to imposing any other penalty, to make an order suspending for a period or periods specified by the court, or until the further order of the court, a licence held by the person.

20.3. A court convicting the holder of a licence of an offence against the Act is to inform the authority and the authority is to cause the conviction to be recorded on that licence.

20.4. A court convicting the holder of a licence of an offence against the Act must, in addition to imposing any other penalty, if the holder has two previous convictions for offences against the Act, cancel the licence.

21. Transfer and Charging of Licences

21.1. A licence may be transferred with the consent of the authority.

21.2. The authority is not to consent to a transfer unless the authority is satisfied as to:

(a) the suitability of the proposed transferee to undertake sea ranching; and

(b) such of the matters as the authority may have regard to on the granting of a new licence, in respect of the transferee.

21.3. Where the holder of a licence dies, the licence is to vest in the personal representative of the deceased as part of the estate of the deceased but may not be transferred or sold by the personal representative of the deceased in the course of the administration of the estate except with the consent of the authority.

21.4. The holder of a licence is to be permitted to charge a licence but not mortgage it by way of transfer. A chargee of the licence may not
transfer the licence in the exercise of the powers of the chargee except with the consent of the authority.

21.5. Where a sea rancher has charged the licence and the charge has been noted in accordance with the Act, the exercise by the chargee of any rights under the charge are to constitute and be deemed to constitute the exercise of those rights by the sea rancher and are to be exercised subject to the Act and the terms of the licence charged.

21.6. Where the licencee is a body corporate, a change in membership of an interest greater than ten per cent in the body corporate may not be effected without the consent of the authority.

22. Setting of Fees for Licences

22.1. The annual licence fee for a licence is to be prescribed.

22.2. The annual licence fee for a licence is to be commensurate with those payable by commercial fishers for access to the natural resources of the sea, after allowance for any additional costs incurred by the sea rancher and any lump sum payment made on the grant of a licence.

23. Marking of Devices

A sea rancher is to ensure that all devices used by the sea rancher in or about the sea bear the licence number of the sea rancher in the manner prescribed. The failure to comply with this requirement is to constitute an offence.

Part 5 – Property Rights

24. Property in Released Fish

24.1. Fish released into the sea by a sea rancher in accordance with the licence of the sea rancher are to remain the personal property of the sea rancher.

24.2. The transfer of a licence of sea rancher is to be deemed to constitute a transfer of the property of the sea rancher in the fish released by the sea rancher in the sea.

24.3. Other than as allowed by the Act persons releasing fish in the sea are to cease to have any property in the fish released.
25. No Property in Progeny in Sea

A sea rancher is not to have any property in the progeny, in the sea, of any fish released by the sea rancher.

26. Marking of Released Fish

A sea rancher is to mark all fish released by the sea rancher in accordance with the terms of the licence of the sea rancher.

27. Recapture of Released Fish

27.1. A sea rancher may recover the fish released by the sea rancher in accordance with the terms of the licence of the sea rancher.

27.2. A sea rancher is not to be required to obtain or maintain any licences under any other legislation to undertake the recapture of the fish released by the sea rancher, if recaptured in accordance with the terms of the licence issued under the Act.

28. Commercial Fishers not to Take or Interfere with Released Fish

A commercial fisher is not to take or interfere with any fish released by a sea rancher and marked as required by the Act. The failure to comply with the requirement is to constitute an offence.

29. Non-Commercial Fishers’s Rights

A person, other than a commercial fisher, may take and convert to that person’s own use, free of all claims of the sea rancher, any fish released by a sea rancher and marked as required by the Act, to the extent permitted by the laws relating to fishing and the limits prescribed by those laws.

30. Interfering with Marks

A person is not to:

(a) remove, obliterate or interfere with a mark; or
(b) otherwise process or dismember any fish with the intention of removing, obliterating, interfering with or discarding any mark;

of any fish released by a sea rancher and marked as required by the Act. The
failure to comply with this requirement is to constitute an offence.

31. Right to Use the Sea

31.1. Fish released into the sea by a sea rancher in accordance with the licence of the sea rancher may forage, graze and otherwise utilise the sea and the non-tidal waters of the jurisdiction in all respects as if they were wild fish.

31.2. The sea rancher is not to be taken to commit a civil or criminal wrong or infringement of any other statute or rights of a person by the release of fish in accordance with the licence of the sea rancher. Nothing in this provision is to be taken to exonerate a sea rancher from any civil liability caused by the negligence of the sea rancher.

31.3. The actions of fish released into the sea by a sea rancher in accordance with the licence of the sea rancher are not to constitute a civil or criminal wrong by the sea rancher or infringement of any other statute or rights of a person.

Part 6 – Operational Provisions

32. Other Licences

32.1. A sea rancher is to be required to register the marks of the sea rancher in accordance with other applicable legislation for the use of brands or marks. The provisions of such legislation are to be amended to the extent necessary to facilitate that use and to provide that where an internal mark is used on fish that cannot be readily detected by an acceptable and practical method then in addition to the internal mark an acceptable external mark is also to be applied. If there is no such legislation then the necessary provisions are to be included in the Act with similar provisions for the use of both external and internal branding.

32.2. A sea rancher proposing to use an aquaculture facility of the sea rancher for the production of fish to be released is to obtain and maintain all necessary approvals and permits under the applicable legislation for the operation of those aquaculture facilities. The failure to comply with this requirement is to constitute an offence.

32.3. A sea rancher requiring the exclusive occupation of an area of the sea for the undertaking of any activities in connection with sea ranching is to obtain and maintain the necessary lease, licence or permit under the
applicable legislation for that purpose. The failure to comply with this requirement is to constitute an offence.

32.4. A sea rancher proposing to process fish that the sea rancher has recaptured must obtain all other licences required under any other Act for the undertaking of that activity.

33. Requirements of Sea Rancher Prior to Release of Fish

A sea rancher must prior to the release of any fish in the sea:

(a) be satisfied that the fish to be released are free of disease;
(b) be satisfied that the release of the fish in the sea will not constitute a breach of any of the terms of the licence of the sea rancher; and
(c) give the authority three clear business days notice of the time and place where the sea rancher intends to release the fish in the sea and the number of fish the sea rancher proposes to release on that occasion.

The failure to comply with this requirement is to constitute an offence.

34. Prohibition on the Release of Certain Fish

34.1. Subject to 34.2 a sea rancher must not release fish in the sea that the sea rancher has reasonable grounds to suspect or ought to have reasonable grounds to suspect:

(a) are suffering from or infected with any disease;
(b) are not marked in accordance with the requirements of the Act;
(c) do not have a suitable genetic mix; or
(d) have usual reproductive capacity.

The failure to comply with this requirement is to constitute an offence.

34.2. The regulations may prescribe those diseases which a fish may be suffering from or infected with at the time of release and the extent of any such infection.

35. Cessation of Activities of Sea Rancher

35.1. If as a consequence of:

(a) the death of the sea rancher;
(b) the winding up or liquidation of a sea rancher;
(c) the insolvency of a sea rancher; or
(d) the suspension or cancellation of the licence of a sea rancher;

the authority is of the view that the sea rancher will not recover the
fish released by the sea rancher then clauses 35.2 and 35.3 shall apply.

35.2. The authority may recover or authorise a person to recover the fish
released in the sea and to sell those fish as and when it sees fit. If
there is no ready market for the fish the authority may dispose of those
fish in such manner as it may think best including the payment of a
person to dispose of them.

35.3. Any proceeds of sale of the fish so authorised shall be applied in
payment of all expenses in connection with such recovery and sale.
The balance may then be held by the authority to meet any costs of
any further recovery or sale or remedying any breach of any
conditions of the licence holder and after that the balance shall be paid
to the former sea rancher.

36. Performance Bonds

The authority may require as a condition of the licences of sea ranchers that
the sea rancher provide the authority with a performance bond in a sum
specified by the authority in favour of the authority, that may be called on by
the authority in the event of the breach of a condition of a licence or the
occurrence of any of the events referred to in the proceeding clause. The
proceeds of the bond or so much as is required shall be applied in remedying
the breach or, in the event of the authority being required to recapture the
released fish of the sea rancher, any shortfall in the proceeds of the sale of the
recapture or the costs of the recapture where they are disposed of other than
by sale.

Part 7 – General Provisions

37. Minister to Promote Public Awareness of Sea Ranching

37.1. The Minister is to promote by suitable publicity campaigns the benefit
of sea ranching.

37.2. The Minister is by suitable publicity campaigns to make the public
aware that fish released as part of sea ranching remain the property of
the sea rancher, other to the extent provided by the Act.
38. Exemptions

38.1. The Minister may, by notice published in the appropriate government journal, exempt any person or class of persons from any specified provisions of the Act, other than those affecting the property of sea ranchers.

38.2. An exemption so made may be made subject to such conditions as the Minister thinks fit and specifies in the notice.

38.3. The Minister may, by a further notice published in the appropriate government journal, vary or revoke an exemption or a condition of an exemption or impose a further condition.

38.4. A person to whom an exemption applies must not contravene, or fail to comply with, a condition of the exemption. The failure to comply with this requirement is to constitute an offence.

39. Return of Licences etc.

39.1. The authority may, by notice in writing, require the holder of a licence, permit or exemption to return to the authority the licence, permit or exemption at a place and within a period specified in the notice:

(a) if the licence, permit or exemption is suspended or cancelled; or
(b) for the purpose of varying or revoking a condition of the licence, permit or exemption or imposing a further condition; or
(c) in the case of a licence, for the purpose of enabling a conviction for an offence to be recorded on the licence.

39.2. A person given a notice under this provision must not fail to comply with the notice. The failure to comply with this requirement is to constitute an offence.

39.3. Where the authority has required the return of a licence, permit or exemption under these provisions but has not received the licence, permit or exemption within the period specified in the notice, the licence, permit or exemption is, if it has not already been suspended or cancelled, suspended from the expiration of that period until it is returned to the authority.
40. Register of Licences

40.1. The authority is to maintain a register of all licences in such form and containing such information as the authority thinks appropriate.

40.2. The register of licences maintained by the authority is to be available for public inspection.

40.3. The authority is to be required, on application by the sea rancher and payment of the prescribed fee, to make a notation on the register of licences that a specified person nominated by the sea rancher has a charge on the licence.

40.4. Where

(a) the register of licences includes a notation of a charge; and
(b) proceedings for an offence against the Act are commenced against the sea rancher in respect of sea ranching activities,

the authority is to give or cause to be given to the person specified in the notation written notice of the particulars of the alleged offence.

40.5. Where the register of licences includes a notation of a charge the authority must, on application by that person or on receipt of such evidence as is satisfactory to the authority that the charge has been discharged, remove that notation from the register of licences.

41. Confidentiality

41.1. A person is not to divulge information obtained in the administration of the Act except

(a) as authorised by or under the Act;
(b) with the consent of the person from whom the information was obtained or to whom the information relates;
(c) in connection with the administration of the Act; or
(d) for the purposes of any legal proceedings arising out of the administration of the Act.

The failure to comply with this requirement is to constitute an offence.

41.2. The Act is to provide that, notwithstanding any other law to the contrary, the Minister or authority is not to be the subject of an order
or other requirement to produce to a court or administrative body any information contained in a return furnished by a sea rancher under the Act.

42. Evidentiary Provisions

Suitable evidentiary provisions that aid in the proof of a breach of the Act in accordance with the usual practice of the jurisdiction are to be included.

43. Corporations and Employees

Suitable provisions imputing the wrong of an employee, agent or director of a corporation to the employer, principal or corporation, as the case may require, in accordance with the usual practice of the jurisdiction, are to be included.

44. False and Misleading Information

A prohibition on the giving of false or misleading information in connection with the Act in accordance with the usual practice of the jurisdiction are to be included. The failure to comply with this requirement is to constitute an offence.

45. Inspectors

Suitable provisions allowing for the appointment of inspectors under the Act or the appointment of inspectors under other Acts, including powers of access, giving of directions, the appropriate powers to seize property used in aid of or in connection with an offence against the Act are to be included in the Act, in accordance with the usual practice of the jurisdiction.

46. Regulations or Other Subordinate Legislation

46.1. The appropriate body is to be authorised to make such subordinate legislation as is contemplated by the Act or is necessary or expedient for the purposes of the Act.

46.2. Without limiting the generality of the foregoing the subordinate legislation may:

(a) prescribe the annual licence fees;

(b) prescribe fees to be paid on application for a licence, permit or exemption under the Act and may provide for differential
application fees depending on the nature of the application, permit or exemption or classes of them; and

(c) provide for the payment, recovery, waiver or reduction of any fees.

46.3. Without limiting the foregoing the appropriate body is to be authorised to make subordinate legislation that:

(a) prescribes the records to be kept by sea ranchers, the manner of maintaining them and the length of time they are to be retained;

(b) prescribes the returns to be provide by sea ranchers, the timing of those returns and the information to be included in those returns;

(c) permits authorised officers to have free access to the premises of the sea rancher for the purpose of inspecting and taking copies of the records of the sea rancher;

(d) prescribes the measures to be taken for the prevention, elimination or control of disease in released fish;

(e) prescribes measures relating to maintaining genetic diversity;

(f) prescribes measures for ensuring that the fish to be released have no reproductive capacity;

(g) prescribes measures relating to the impact on an area of the sea where feed or other forms of attraction or inducement are used to train or encourage the return of released fish;

(h) prescribes measures limiting or controlling the use of acoustic or other devices used by sea ranchers where they may impact on wild fish or other aquatic animals;

(i) requires a sea rancher to notify the authority of the occurrence of disease or symptoms of disease in released fish or fish that the sea rancher is keeping in contemplation of releasing pursuant to a licence;

(j) prescribes the measures that the authority or an authorised officer may take where fish to be released are suspected of suffering a disease;

(k) prohibits, restricts or regulates the sale or processing of released fish;

(l) prescribes the powers of authorised officers for the detection, prevention, elimination or control of disease in released fish or fish that may be released;

(m) prescribes and provides for the measures to be taken and the powers of the authority and authorised officers for the recovery,
eradication, condemnation or containment of fish released in
breach of the Act or any licence conditions; and
(n) prescribes and provides for penalties for any breach of, or failure
to comply with, any subordinate legislation.

46.4. Any subordinate legislation made under the Act may:

(a) be of general application or limited according to the persons or
things, classes of persons or things, times, places or circumstances
to which they are expressed to apply; and

(b) make provision for facilitating the proof of the commission of an
offence against the subordinate legislation.

19.3. Brief Commentary on Drafting Instructions

The purpose of these notes is to provide a brief commentary on some aspects of
the drafting instructions with some attention on the more significant or unusual
elements. They are not intended to constitute an explanatory memorandum that
may accompany the legislation on its introduction to a legislature.

The drafting instructions contemplate that there is an authority that will be
allocated responsibility for the administration of the Act. It does not seek to
establish such an authority, obviously that can be undertaken and provided for in
the drafting instructions, if considered more appropriate. The definition of
indigenous species includes a reference to a genetically modified animal and
regards the animal as non-indigenous save where the genetic modification is
solely intended to facilitate identification and constitutes a mark. As a genetic
modification may have multiple purposes, it has been left to the authority to
determine whether the marking is effected in an acceptable manner.

Whilst this thesis has indicated that it is preferable to avoid the use of the word
“species” it has used that expression, primarily because of its accepted use, but in
an expanded manner, so as to include not only breeds and varieties but
populations of animals that are distinguishable from other populations, consistent
with the discussion in the preceding chapters.

The purposes of the Act have been kept brief and simple. A simple review of the
effectiveness of the legislative scheme has also been included. The drafting
instructions require a review to be undertaken by the Minister, leaving it to the
Minister as to how the review is to be undertaken. The drafting instructions could
more fully describe the consequences of any such review. As currently drafted, it
could be criticised as creating an element of uncertainty.

The drafting instructions have recognised that, in addition to sea ranching
releases, other permits may need to be issued to persons to permit the release of fish in the sea. The instructions do not seek to control such activities, but simply require consultation with the Minister prior to the release of any such fish. They are not expressed to be matters that are to be considered in the issue of sea ranching licences. It is assumed that the Minister will act on advice in the course of those consultations and that if the Minister recommends a particular course of conduct the agency proposing to release the fish will comply.

The scheme adopted for the grant of licenses requires the authority to have regard to certain matters, permits it to have regard to other matters and requires it to undertake a specified process in the case of applications for the release of non-indigenous species. These provisions, including the matters the authority must or may consider and the conditions to which the licence is subject, cover many of the matters discussed in this thesis, though in broad terms. One example is the obligation of the authority to consider the impact on the wild fishery: this is addressed in the licence conditions to be imposed. It requires that priority is to be given to the wild populations. Most of the remaining provisions relating to the licenses are of an administrative nature and would be found in any similar licensing scheme of this nature. There is an express acknowledgment of the right of the licence holder to charge the licence by way of security. The provisions relating to the setting of the annual licence fees reflect the view of this thesis that sea ranchers and fishers should be treated on a consistent basis.

The property provisions reflect the views set out in this thesis. A matter of a practical nature, which is not discussed in this thesis, is who is to be entitled to the fish in the sea on the transfer of a licence. The simplest approach is to regard the fish released in the sea as part of the stock in trade of the sea rancher and to make the property follow the licence. If this approach is not adopted then further provisions will need to be included describing the rights of the former licence holder to recover the fish that were released by the sea rancher, and how they are to be distinguished. The other significant limitation placed on the property rights of a sea rancher is the denial of the right to the progeny born in the sea. This is consistent with the approach of requiring minimal reproductive capacity in the fish released. The rights accorded to commercial fishers and non-commercial fishers reflect the views described in this thesis. It has also been necessary to provide the power for the authority to deal with those fish in the sea, where the sea rancher is no longer entitled or capable of recovering them.

A clear right to use the sea for sea ranching is provided in favour of a licence holder. There is however an express exclusion for any consequences arising from the negligence of the sea rancher. Accordingly, if the sea rancher is negligent in the release of fish and others suffer damage as a consequence, then the sea rancher will have the usual liability.
As the undertaking of private sea ranching and the retention of property rights by sea ranchers in most jurisdictions is likely to be new and novel, the drafting instructions include a provision requiring the Minister to undertake a suitable publicity campaign to acquaint both the public and the commercial fishers with the status of fish marked in accordance with the scheme.

The legislative scheme contemplated by the drafting instructions does not seek to supplant the operation of all other Acts relating to aquaculture and the need to obtain other leases or licenses to use the land or part of the sea on the basis of exclusive occupation or possession. The sea rancher is to be subject to those other legislative and administrative requirements.

The general nature of the proposed drafting instructions precludes a consideration of interaction with other legislative schemes. The instructions suggest that certain provisions are to prevail to the complete exclusion of others. Again that can be given effect in various ways. It can rely on the implied repeal of those other provisions or be addressed by express provisions providing for the repeal of such provisions or their express interaction. These are matters of style and practice to be left to each individual situation. The remaining provisions are intended to either reinforce the earlier provisions or are of an administrative nature.

19.4. Epilogue

This thesis has reviewed the history and development of the English common law principles applicable to the ownership of animals from the time of Bracton to the modern day. It has drawn on the modern decisions to put forward new tests and criteria for determining those animals that may be the subject of absolute property interests. It emphasises that the tests are no longer based on whether the animal is good for food or draught. The tests are applicable to animals both terrestrial and aquatic.

The thesis then considered the right of the sea rancher to use the sea at common law. It described and discussed a number of the environmental, economic and social interests that may be adversely impacted by sea ranching and some of its advantages. It has concluded with drafting instructions for a legislative framework for sea ranching drawing on the consideration of those matters. Those drafting instructions provide a broad framework for the management and interaction of sea ranching. They do so on the basis that sea ranching is only one facet of aquaculture, an activity that is growing dramatically and projected to make a significant contribution to future seafood production. They reflect the views that absolute property rights may currently subsist in a few fish populations in a few communities and address the level of uncertainty that prevails as to whether a population may now be the subject of absolute property and secondly the ability to retain ownership of a population of animals using marks in sea
ranching. The drafting instructions seek to ensure a clear right to use the sea, recognising however the many different environmental issues that will arise from that activity. Without a single coherent adequate policy delivered by a single authority prospective sea ranchers will encounter many arms of government with an interest and desire to be heard.

Sea ranching in the manner considered by this thesis is only the next step on from hunting and gathering. It is part of the progression that will occur in the sea as has occurred on land. In time governments will freely alienate the soil of the sea and the water column above it. The owner of that soil will be restrained and controlled in the use of the water column, in much the same way as modern laws restrict the use of land and the various discharges that may come from that land. The sea is no longer free for all to use and abuse and with time proprietorship will be created to ensure maximum utilisation by persons who have an interest in utilising, managing and preserving their portion of the soil of the sea and consequently the sea itself.

The undertaking of sea ranching has long been discussed. As described at the outset, most papers discussing the law and sea ranching or more generally aquaculture usually describe the division of the animal kingdom in the law into two groups, domitae naturae and ferae naturae, and place fish in the later. They then describe the consequences of those classifications. Even the few texts on the law and animals do not usually do much more. Some quote Blackstone (1765-1770), others the Roman law principles and then explore aspects of the rules. Wildsmith (1982) provides a discussion and a number of cases illustrating the principles and problems for the aquaculturist. None of the commentators appear to attempt to examine how the principles came into the common law, the development of those principles since their adoption up to the modern period, nor consider from a practical aspect why in England after an early recognition of many animals as domitae naturae few were subsequently recognised. None appear to consider the role of the peculiarly common law sub-classification of ferae naturae propter privilegium and the role it played in maintaining that situation. Until there is a closer examination of court rolls and in particular any available records from the county courts, it will remain a matter of conjecture as to whether the law described by Bracton (1250) was indeed the common law of the time or merely his transcription of the Roman law or some combination, as suggested in this thesis.

A number of texts have a formulation of the modern tests as they see them, with a short discussion in support. None seek to detail what may constitute exploitation for the purpose of the tests. Occasionally there is a discussion as to the scope of the population but usually in species terms. The appropriateness of the term “species” is not usually questioned and little if any consideration is given to the place of feral animals or hybrid animals.
None of the commentators reviewed that include a formulation then seek to apply those formulations to populations of fish. Those formulations usually occur in strictly legal texts. Again a number of commentators have considered aspects of the right to use the sea in more general terms; there is usually little further analysis of the principles applicable to sea ranching. This thesis has against that background sought to examine a number of issues affecting aquaculture and enhancement practices as basis for formulating a framework for sea ranching.

The right to use the sea has expanded in some jurisdictions to embrace other commercial activities, as the need arose, but the reason and nature of the limitation on the use of the sea rather than the soil is far less clear, as has been demonstrated. This is another matter that requires further consideration.

This thesis has also highlighted that there are many uncertainties that could be the subject of further research. The management of mixed stock fisheries will create many difficulties. Anderson (1985) has sought to explain their operation in economic terms for Pacific salmon; the situation in respect of highly fecund marine serial spawners is likely to be very different, and possibly even more complex.

A number of the environmental impacts of aquaculture have been used to explain the advantages of sea ranching. Further research on many of those matters may suggest other methods to improve aquaculture and consequently obviate the need to consider sea ranching. As important, is obtaining a better understanding of the effect of the enhancements programmes that have already been undertaken (e.g. the enhancement activities in Alaska). Whilst substantial sums are spent on those programmes, it appears far less has been spent on evaluating the results or establishing ongoing monitoring programmes. An understanding of those results will also assist in the consideration of the effectiveness of sea ranching and its impact.

Without certainty of rights for sea ranchers and the rights *inter se* of sea ranchers and fishers, there is a real risk of damaging disputes between them and as important the potential for significant damage to the environment and the survival of the diverse fish populations. Neither the potential for those adverse interactions nor the possibilities offered by sea ranching can be ignored.
Glossary of Terms

Abandonment. Very little discussion occurs in texts and the cases as to what is required for the loss or abandonment of a chattel. The issue in this context is whether the release of an animal constitutes an abandonment or loss of the property interest. As already mentioned, the Theft Act 1978 (United Kingdom) regards the loss or abandonment of a *ferae naturae* as the loss of property.

On abandonment the chattel becomes ownerless and will belong to the first taker (Vaines 1962). It is the discarding of the item with the intention to deny any right or claim. A loss is not sufficient to cause a loss of property at common law for civil purposes (see Smith 1994; Vaines 1962).

The release of an animal or permitting an animal to come and go without the intention of abandoning an animal will not, by itself, give rise to a loss of property in an animal.

Action on the case. In early English law an action lay only if a writ was obtainable from the Chancery and writs were obtainable only for recognised causes of action. In later periods the clerks of Chancery began to issue writs when someone had suffered loss or damage in a form similar to that issued for trespass but omitting the words *vi et armis* (with arms) (Walker 1980) as an action on the case.

Allele. An alternate form of a gene (Tave 1993).

Altered selective forces. Means the usual forces of selection in genetics have been altered in a particular situation.

Animus revertendi. Is applied to *ferae naturae* which have the intention to return which is demonstrated by their habit of doing so (see section 9.2).

Anadromous. Fish that ascend rivers from the sea for breeding.

Avers or Averia. The word cattle, is commonly used as the rough English equivalent for a curious and important law-French word avers (Latin, averia), which covers all domesticated creatures that are part of the productive stock of the farm (Williams 1939).

Benthic. Relating to or occurring at the bottom of a body of water or in the depths of the oceans.

Benthos. Organisms that live on or in the bottom of a body of water.
**Caudal peduncle.** The narrow section of the body of a fish that connects the main body of the fish to the tail.

**Chose in Action.** These are personal rights of property claimable or enforceable by legal action, as distinct from choses in possession, things capable of physical possession. This includes a great variety of rights of an intangible character, such as debts, claims under insurance policies and shares in companies (Walker 1980).

**Common of Fishery.** A common of fishery appears to be much the same as a free fishery, namely a non exclusive right to fish in a particular place. The term is also generally used to express the right acquired by tenants of a manor to fish in the waters of the Lord (Coulson and Forbes 1902).

**Common Law.** The reference to the common law in this thesis is usually a reference to the English common law. They are the general rules common to the whole of England, developed and administered by the royal courts. Those rules are now found in many other countries, including Canada, Australia and the United States. Unlike the civil law, it does not have codes covering large areas of the law and setting down the rights and duties of persons in general terms, basing judgements on abstract principles. The common law looks heavily to a system of precedent. It moves empirically from case to case, from one real-life situation to another (Walker 1980).

**Curia Regis.** In the widest sense, the curia regis was the feudal, Norman, version of the National or Great Council of England.

In a narrower sense, it denotes the smaller select group of members of the larger body which met much more frequently to assist the king and carry on the government. In both senses, it was itinerant, following the king on his travels. The distinction between the two kinds of curia developed and became more important, the larger curia being feudal councils and the smaller rather administrative or legislative boards and courts of law.

By the end of Henry III’s reign, the curia regis as a superior court had become permanently divided into three courts, each with defined sphere of competence: the Exchequer, dealing with fiscal matters, the common pleas, dealing with civil disputes between private individuals and the King’s Bench, at first actually and later in theory a court held in the King’s presence charged with all remaining business including criminal matters (Walker 1980).

**Detrivores.** Animals that consume detritus.

**Demurrer.** A plea by one party that the other party’s pleadings, even if proved, do not entitle that party to succeed and the first party is entitled in law to succeed on the facts alleged and admitted by the other. Demurrers have been abolished in most common law jurisdictions.
Distress. Distress is an ancient common law self-help remedy. It permits a person in appropriate circumstances to seize the goods of another to secure certain obligations. At common law the distress could not be sold in many situations (Comyns 1822). The modern situations in which distress may be levied are limited to rent and damage feasant.

Distress Damage Feasant. This ancient common law remedy allowed the owner of land to seize any chattel found about his land as security for the payment of damages, until the damages were paid. It was only security, so there was no power of sale (Theobald 1929). Whilst the item was distrained, the cause of action of the distrainor for damages, was suspended (Lehain v Philpott, (1875) L.R. 10 Ex. 242; Boden v Roscoe, [1894] 1 Q.B. 608). It was commonly applied to animals, especially a cattle trespass.

Distress damage feasant was clearly applicable to those animals that were *domitae naturae* but not to those animals in which there was no property (e.g. rabbits, see Coney's Case; Cooper v Marshall, (1757) 1 Burr. 261, 97 E.R. 303; Williams 1939).

Detinue. One of the earliest common law forms of action in English law, which lay for the recovery of chattels wrongfully detained by the defendant or for their value and for damages for their detention. The basis of the action is the unlawful failure to deliver up the chattels when demanded (Walker 1980).

Dominum. Is the absolute ownership of land or goods, with full rights of possession and use. It may be distinguished from feudal rights under which the lord and tenant or superior and vassal simultaneously enjoyed certain rights of ownership in the land (Walker 1980).

Domitae naturae. Are those populations of animals recognised by the common law as the subject of an absolute proprietary interest.

Execution. A general term for the enforcement by a public officer of the judgments or orders of the courts (Walker 1980).

Ejusdem Generis. Of the same kind. An aid to the interpretation of written instruments to the effect that, where general words follow an enumeration of a particular kind, the general words are understood to be limited to the same general kind (Osborn 1964).

Enhancement. In the context of natural fisheries, enhancement is the practice of releasing large numbers of young fish to survive in the sea, in order to supplement natural stocks.

Estray. An old English term for a stray (see strays).

Ferae naturae. Are those animals that are not members of the populations that are *domitae naturae*.
Founder effect. The loss of genetic variance that occurs when a population is started with a small number of broodstock (Tave 1993).

Free Fishery. A free fishery, sometimes also called a common of fishery, is a fishery in a certain place, not exclusive, but coextensive with the rights of others. It may exist in tidal waters, to the exclusion of the public; in which case it resembles a several fishery, except that it is enjoyed by two or more persons. It may exist in the owner of the soil of non-tidal waters in conjunction with others, or it may exist in two or more strangers, to the exclusion of the owner of the soil. The main distinction between a several and a free fishery is that one is exclusive and the other is not (Coulson & Forbes 1902; also see Moore & Moore 1903 and Chitty 1812).

Fry. Recently hatched or juvenile fish.

Game of swans. Sometimes said to be the collective noun for swans. On a more technical level it is all of the swans in a given area marked with the same mark, and so the property of a single owner (Ticehurst 1957).

Genetic Marking. Genetic marking is the process whereby distinctive genetic differences among populations that do not exist naturally are bred into one or more of the population. Genetic marks are usually detected in fish by means of protein electrophoresis. The major advantage of genetic markers is that they are heritable. In theory, once a population has been marked, the marker will be inherited from generation to generation, provided it is not maladaptive (Gharrett and Seeb 1990).

Judicial notice. The knowledge that is attributed by law to judicial persons and that does not need to be proved by evidence in the particular case (Walker 1980).

Justice in Eyre. In the reign of Henry I, some of the justices of the curia regis were sometimes required to visit communities, to collect revenue, determine disputes as to amounts, punish frauds by sheriffs and hear pleas, civil and criminal. In 1176, Henry II divided England into six circuits for fiscal and judicial purposes, assigning to each three itinerant judges. This system was abandoned by the end of the fourteenth century (Walker 1980).

Limited area licence. A fishing licence that permits fishing within a prescribed area or body of water.

Limited entry licence. A fishing licence issued to a limited number of people. The exploitation of the natural resource is limited by restricting the number of persons who may harvest that resource.

Malic enzyme. Enzymes catalysing the reversible oxidative decarboxylation of l-malic acid are widely distributed. These enzymes are distinct from malic dehydrogenase,
which catalyses the reversible oxidation of L-malic acid, and are referred to as 'malic' enzymes. *(Oxford English dictionary 1992)*.

**Mansuetae naturae.** Tame by nature. The term is used in the context of animals such as dogs, cows or horses in the liability area of the common law (Osborn 1964).

**Noxal.** In this context, noxal liability is the liability that an animal or slave incurs for the wrong committed by the animal or slave. The owner of the animal or slave may satisfy the liability for the wrong committed by surrendering the animal or slave to the person wronged, the animal or slave or alternatively may buy-off the liability by paying the damages. This right or liability passed with the slave or animal on a sale (see Holmes 1881; Williams 1939).

**Obiter.** An abbreviation for *obiter dictum*, meaning any statement on a point of law in a judgment in a case that is not part of the principal reason for the decision (Walker 1980).

**Occupatio.** The form of acquisition of wild animals not possessed by anybody is styled *occupatio*. It was the acquisition of ownership of a *res nullius* by the taking of physical control of it (Watson 1968). It was not limited to *ferae naturae* but extended to any chattel that was ownerless.

**Off flavour.** The muddy flavour sometimes encountered in freshwater fish and believed to be caused by geosmin.

**Otolith Marking.** The otolith is an ear-stone, one of the calcareous bodies, often in the shape of rhombic crystals, found in the inner ear of vertebrates and some invertebrates. In fishes it is often of great size, in the higher vertebrates small particles *(Oxford English dictionary 1992)*. The otoliths are the only permanent and persistent structures present in the earliest life stages of fish; they offer the only possibility for producing a unique and endogenous mark at those stages (Brothers 1990).

**Parr.** A young salmon actively feeding in fresh water.

**Prerogatives of the Crown.** An expression that refers to the pre-eminence that the sovereign enjoys at common law over and above all other persons in right of the royal dignity including all the special dignities, powers, privileges and liberties allowed by law to the person in right of the Crown. It is created and controlled by the common law and modified in some cases by statute (Walker 1980).

**Prescription.** The creation or extinguishment of a right or obligation by the lapse of time.

**Ratione impotentiae.** By reason of the impotence or inability. In the context of this thesis it means an interest in those young animals that are in the nest and by reason of
their immaturity are unable to leave the nest (see section 9.4.3).

**Ratione soli.** By reason of the soil. In the context of this thesis it means an interest in an animal that arises through possession of land (see section 9.4.2).

**Received law.** The law of an English colony received from England on its establishment. English law (both statute and common law) is adopted on the establishment of a colony where there is no existing body of law. Only so much of the law of England that is appropriate to the infant colony is adopted.

**Replevin.** This was a process that the common law provided for the owner of chattels to obtain the redelivery of those items wrongfully distrained (Sellon 1813) or taken from the owner (Walker 1980). The applicant had to find sufficient security for the damages and costs and undertake to pursue an action against the person claimed to have wrongfully taken the goods (Walker 1980).

The process is dependent on the proprietorship of chattels. There must be an absolute or at least special property (Sellon 1813). Accordingly, if replevin was available then that was an indication that a property interest subsisted in the item. But replevin was not simply available to the owner. It was available to the person in possession (YB (1505-1506) 21 Hen. 7, 14b and Coke 1628; Williams 1939).

**Res Judicata.** Once a matter or issue between parties has been litigated and decided, it cannot be raised again between the same parties, but other parties are not so bound. Effectively, a judicial decision is conclusive unless reversed and its veracity cannot be contradicted (Osborn 1964).

**Res nullius.** An item that belongs to no one, such as a wild animal. Ownership of the thing may be acquired by taking possession of it.

**Retention of Title Clause.** A clause included in a contract for the sale of property whereby the vendor of the property retains title to the property the subject of the sale until the fulfilment of a particular condition or the happening of a certain event. It is now quite common for contracts for the sale of goods in commercial situations to include clauses that the purchaser shall not acquire title to the goods until the purchase price is paid to the vendor or the goods are sold to a third party. The risk of loss as distinct from title, however, usually passes to the purchaser on delivery.

**Scienter.** At common law, a person was liable for the harm done by a domestic animal if he knew that it was liable to do harm of that kind. Proof of the knowledge of that propensity was called proving the **scienter** (Walker 1980).

**Seining.** To fish with a seine (a form of net).
Several Fishery. A several fishery is a right of fishing in a particular place exclusive of all others. This right may exist in tidal waters as a franchise to the exclusion of the public, in which case it is sometimes called a free fishery. It exists prima facie in the owner of the soil of non-tidal waters, in which case it may be called a territorial fishery by some (Coulson and Forbes 1902).

Smolt. A young salmon or sea trout undergoing the process of smoltification.

Smoltification. The process whereby young salmon or sea trout undergo a biological change that enables them to migrate from fresh water to sea water.

Solum. The soil under a body of water, sometimes used in connection with the seabed.

Stew. A pond or tank in which fish are kept until needed for the table, late middle English (Shorter Oxford English dictionary 1970).

Strays. Are valuable animals found wandering and ownerless in a manor or lordship (Walker 1980; Chitty 1820). Blackstone (1765-1770) says they are any valuable domestic animal found within any manor or lordship where it had no right to be and is not claimed by the true owner.

A swan may be an estray, but apparently no other fowl (The Case of Swans). Strays and avers covered different classes of animals. In some jurisdictions specific legislation was introduced fairly early in the establishment of the colonies vesting the property in strays in the Crown (see South Australian Ordinance No. 5 of 1840 and Act No. 20 of 1858 dealing with stray and unbranded cattle). In most of these jurisdictions strays wandering at large and not on Crown land are now governed by impounding statutes.

Suas or suos. His, her, its or their. Commonly used to signify the ownership of property.

Swan upping. The catching and taking up of swans and cygnets from the water (Ticthurst 1957).

Teleost. A group of fish that have a skeleton composed at least in part of bone rather than cartilage, including the large majority of living species of fish (The Macquarie dictionary 1997).

Tithes. Tithes were originally a mere ecclesiastical revenue and only ecclesiastical persons had the capacity to take them. They were the tenth part of all fruits and profits due to God and the church for the maintenance of the church and clergy.

The legal obligation to pay most tithes was effectively abolished (by a combination of the Tithe Act 1836, the computation and substitution of tithes under that Act for tithe rentcharges and the extinguishment of most of them by the Tithe Act 1936). They have a
history of some eleven hundred years and developed considerable complexity (see Godolphin 1687; Bacon 1832; also see appendix one).

**Trespass.** In modern law trespass is a voluntary wrongful act against a person or the disturbance of a person's possession of property against the person's will. There are three kinds of trespass, namely to the person, to goods and to land.

**Trophic level.** One of the hierarchical strata of a food web characterised by organisms that are the same number of steps removed from the primary producers (*Merriam-Webster's collegiate dictionary & thesaurus 2001*).

**Trover.** A common law action for the recovery of damages for the conversion of personal property, the damages are generally measured by the value of the property (Garner, 1999).

The form of action derived from the action on the case taking its name from and based on the fiction that the defendant had found trouvé (goods) and then converted them to his own use. It is now called conversion.

It lies where a person has converted or wrongfully appropriated goods to his own use or the use of another, or wrongfully deprived the owner of the use or possession of them or destroyed them (Walker 1980).

**Usufruct.** In Roman law, the right to use and enjoy the property of another, usually for life, without the right to change the character of the property (Walker 1980).

**Vindicatio.** In Roman law the action by which the owner of a thing could assert title to it against anyone having possession (Walker 1980).

**Waste.** An act doing lasting damage to the freehold or inheritance of land, or anything that alters the nature of the property. Voluntary waste includes pulling down a house, converting arable land into pasture, and opening new mines or quarries. Permissive waste is an act of omission, such as allowing a house to fall for want of necessary repairs (Osborn 1964).
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APPENDICES OF
SEA RANCHING AND ASPECTS OF THE COMMON LAW
A PROPOSAL FOR A LEGISLATIVE FRAMEWORK

by

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SEA RANCHING AND ASPECTS OF THE COMMON LAW
A PROPOSAL FOR A LEGISLATIVE FRAMEWORK

Appendix One

Property Interests and Identification

1. Property Interests and Identification

The thesis has considered why it is appropriate to create property interests in animals, described features of the relationship between ownership and possession and discussed the impact of the individuation of the law on aspects of the proprietorship of animals. In sections of the thesis reference is made to various remedies, actions or other attributes of the rights of a person in respect of animals.

The following paragraphs explain some of those remedies and actions and consider a few further remedies, actions or attributes that assist in determining the nature of the interest in a particular animal or population of animals (i.e. domitae naturae or ferae naturae). They are only a few of the remedies and actions that highlight this matter. Some also demonstrate a few of the changes that have occurred since the time of Bracton.

2. Distress, Distress Damage Feasant and Replevin

Distress is an ancient common law self-help remedy. It permits a person in appropriate circumstances to seize the goods of another to secure certain obligations. At common law the distress could not be sold in many situations (Comyns 1822). It is an extra-judicial means of enforcement. It must be strictly implemented. It was once levied in many situations most of which are now obsolete (they included rent service, heriot service, suit service, rent charge, an amerciament in a court leet for the relief of the lord, damage feasant, by a bailiff by virtue of the office, and certain other matters by prescription (Comyns 1822)). The modern situations involving levying distress are limited to rent and damage feasant.

It is a remedy that should only be exercised sparingly. Distress for rent is now usually governed by statute, in those jurisdictions where it has not been abolished. The rules relating to the taking of distress for rent are extensive (see Wellings 1978).

For these purposes distress could only be levied (Coke 1628, 47a; also see Viner 1793 and Comyns 1822):
of a thing whereof a valuable property is in some body, and therefore
dogs, bucks, does, conies, and the like that are ferae naturae cannot
be distreyned.

The rule that such animals were not distrainable was based on the premise that no-
one could have valuable property in them. This was said to be too general in
1737. So it was held in Davies v Powell, (1737) Will. 47, 125 E.R. 1048 (see
quote in section 1.4 of the thesis) that deer could be distrained, and so the class
was considerably extended.

Comyns (1822) drew a distinction between deer in an enclosed ground and those
in a park in many cases (see discussion in the thesis in sections 8.4 and 9.4). In
the latter case they remain ferae naturae, as did rabbits in a warren. He also
stated that there could not be distress of poultry or fish (relying on Coke 1641a),
but even that must now be doubted, particularly of poultry, (see table 6 of
the thesis).

The availability of distress indicated that an animal was classified as domitae
naturae, at least up to Davies v Powell. After that it extended to ferae naturae in
which there was a prevailing property interest, that is, to animals of value.

The common law remedy of distress damage feasant, another form of distress,
allows the owner of land to seize any chattel found about the land as security,
until compensation is paid. It is only security, so there is no power of sale
(Theobald 1929). Whilst the item is distrained, the cause of action of the
distraintor for damages is suspended (Lehain v Philpott, (1875) L.R. 10 Ex. 242;
Boden v Roscoe, (1894) 1 Q.B. 608). It appears to be a remnant of its noxal
history; the thing is retained as security to answer for the liability. Once given up
the remedy by action against the possessor becomes available. The animal may
be recovered by its owner by making an estimate of the damage and tendering the
estimated amount, whatever the nature of the distraintor’s money demand (Sorrell

Subject to some qualification, the chattel may be animate or inanimate (Bromhall
v Norton, (1682) T. Jo. 193, 84 E.R 122; Sparks v Keeble, (1724) 8 Mod. 330, 88
the remedy may have been limited to animals in earlier times (Williams 1939) and
extended to other chattels, throughout the period of its extended availability it has
been more commonly applied to animals. Normally it was the next step where
there was a cattle trespass. A landowner suffering a cattle trespass was not
obliged to take the animals but could chase them out of the land (Tyringham’s
Case, (1584) 4 Co. 37a, 76 E.R. 973; Rea v Sheward, (1839) 2 M. & W. 424, 150
E.R. 823).

The damage may be to the land or animals on it (Theobald 1929). The item must
be distrained whilst doing damage or about to do damage (Theobald 1929), and
only for that damage (Ambergate Ry Co v Midland Ry Co, (1853) 1 E. & B. 793,
118 E.R. 964; Boden v Roscoe). The damage may amount to eating the herbage
Aspects of this remedy can be traced back to the laws of King Ine and probably even further (Williams 1939; Holmes 1881). There appears to be no limitation on those things of value that can be seized by way of distress damage feasant unlike those that may be seized for rent (Comyns 1822 suggests some limitations; Williams 1939 discusses why some of the limitations may not have applied). The modern decisions question the scope of the remedy in respect of inanimate things and the requirement that there be damage (Arthur v Anker, [1996] 2 W.L.R. 602; Lloyd v Director of Public Prosecutions, [1992] 1 All E.R. 982).

Distress damage feasant was clearly applicable to those animals that were domitae naturae (usually expressed in terms of avers). It has been applied to animals outside the class of avers, but within the class domitae naturae such as dogs and cats (Bunch v Kennington, (1841) 1 Q.B. 678, 113 E.R. 1291), but its application in this situation may be questioned. In respect of animals ferae naturae, Williams (1939) suggested that it did apply to those animals in which there is a qualified property. He specifically referred to reclaimed hawks, ferrets, bees and deer (Comyns 1822 supports some of these suggestions).

Distress damage feasant did not initially apply to ferae naturae (e.g. rabbits) (Coney's Case, (1587) Godb. 122, 78 E.R. 75; Cooper v Marshall, (1757) 1 Burr. 261, 97 E.R. 303; Williams 1939). There was no need for such a remedy in the case of ferae naturae that were not the subject of a qualified property right; the landowner was free to take the animals and profit from them. Williams (1939) suggested that distress did not extend to those animals because replevin could not be obtained in respect of them.

In Lindon v Hooper, (1776) 1 Cowp. 414, 417-418, 98 E.R. 1160, 1162, Lord Mansfield was attributed as describing the process as “a peculiar system of strict positive law” and then further:

_Distraining cattle, doing damage, is a summary execution in the first instance. The distrainer must take care to be formally right; he must seize them in the act; upon the spot: for if they escape, or are driven out of the land, though after view, he cannot distrain them. He must observe a number of rules in relation to the impounding and manner of treating the distress._

_The law has provided two precise remedies for the proprietor of cattle which happen to be impounded;_

1st, he may replevy: and if he does, upon the avowry, he must specially set out a right of common, or some other title, as a justification of cattle being where they are taken. or,

2ndly, if he does not choose to replevy, but is desirous to have his cattle immediately re-delivered, he may make amends, and then bring
an action of trespass for taking his cattle; and particularly charge the
money so paid by way of amends, as an aggravation of the damage
occasioned by the trespass. To such an action the distrainer pleads
that he took them doing damage, so the plaintiff must specially reply
the right or title which he alleges the cattle had to be there.

An item taken distress damage feasant must be impounded. There is a
considerable body of law as to how the item is to be impounded, whether in a
pound covert or overt, and the many matters incidental to the impounding, as well
as the timing and manner of the tender of amends (Theobald 1929; Sorrell v
Paget). As noted in Lindon v Hooper, the owner of the cattle has two courses
open. The owner may seek the remedy of replevin or may make amends and
bring an action in trespass (Gibbs v Cruikshank, (1873) L.R. 8 C.P. 454).

If the animal gets back to the owner, the distress is abandoned, but rescue and
pound breach are severely punished (Theobald 1929). If the distress is wrongful,
then the owner may retake the item by force (The Company of the Proprietors of
the Parrett Navigation Company v Stower, (1840) 6 M. & W. 564, 151 E.R. 537;

In Reid v Fulton, (1870) Mac. 734, it was decided that the law relating to
impounding of cattle damage feasant was inapplicable to the circumstances of
New Zealand and not received as law of the colony. In some jurisdictions
specific legislation was introduced fairly early in the history of the colony, vesting
the property in strays in the Crown (e.g. South Australian Ordinance No. 5 of
1840 and Act No. 20 of 1858). Subsequently, laws relating to the impounding of
strays were introduced in most Australian colonies.

Replevin is the process that the common law provides for the owner of chattels to
obtain the redelivery of those items wrongfully distrained (Sellon 1813) or taken
(Walker 1980). The applicant has to find sufficient security for the rent and costs
and undertake to pursue an action against the person claimed to have wrongfully
taken the goods (Walker 1980).

The process is dependent on the proprietorship of chattels. There has to be an
absolute or at least special property (Sellon 1813). Accordingly, if replevin is
available then that is an indication that a property interest subsists in the item (i.e.,
that the animal is the subject of property). But replevin is not simply available to
the owner. It is available to the person in possession (YB, (1505-1506) 21 Hen. 7,
14b; Coke 1628, 145b; Williams 1939).

In summary, the criteria for the remedy of distress includes that the animal is one
of value, the application of which highlights the classification of the animal,
particularly prior to Davies v Powell. It was a significant remedy in respect of
animals. So a res nullius cannot be taken distress damage feasant nor is replevin
available.
3. Strays and the Role of the Pound

Strays were valuable animals found wandering and ownerless in a manor or lordship (Walker 1980; Chitty 1820). Blackstone (1765-1770) said they were any valuable domestic animal found within any manor or lordship where they had no right to be and were not claimed by the true owner.

A swan may be an estray, but apparently no other fowl (The Case of Swans, (1592) 7 Co. 15b, 77 E.R. 435). Strays and avers covered different classes of animals. The reason suggested by Chitty (1820) (based on Blackstone 1765-1770) is that cattle and swans are of a domestic nature, so the owner's property is not lost by their temporary absence. They are of sufficient value for the lord to keep them for the required period of a year to perfect the title of the lord. Their value at any time before the end of the year is likely to exceed the cost of the lord keeping them. They are worth redeeming. They are the animals in which there appears to be an absolute property, domitae naturae, a property interest that is not lost by their absence. This is significant in the case of swans, unless a temporary absence merely implies animus revertendi (see appendix two).

Strays belong to the Crown by the prerogative or to a lord of the manor by virtue of a grant from the Crown or a prescriptive right. In order that the king or lord obtain an absolute property they must be proclaimed as a stray in a church and two market towns adjacent to where they were found and remain unclaimed for a year and a day (Walker 1980; Chitty 1820; Theobald 1929). At the expiration of that period they belong absolutely to the king or lord, but not before, and if the procedure is not strictly complied with they do not become the property of the lord or king (Chitty 1820; Theobald 1929; Brownlow v Lambert, (1599) Cro. Eliz. 716, 78 E.R. 950).

If the stray again strays, before the title of the person first taking it is perfected, then any person entitled to take strays will be entitled to take it to the exclusion of the person who first took it (Chitty 1820; Theobald 1929; Pleydell v Gosmoore, (1623) Hut. 68, 123 E.R. 1106). It may be assumed that, if the animal commits a cattle trespass in doing so, the owner of the land may take it distress damage feasant. It may be replevined by the owner, but it is not clear whether a person who had possession of a stray had a sufficient possessory interest to do so. It may be assumed that as the person with the next best interest the person may do so, notwithstanding that the interest is insufficient against another person taking it as a stray. In the former situation it is only taken as security. There appears to be no direct authority, though in YB (1521) 12 Hen. 8, 9, Eliot J. said if a horse strays it belongs to you as long as it remains with you. If you do not take it as a stray and it goes into the land of another that person may take it as a stray (assuming an entitlement to take strays). Anyone taking a stray has the next best title against everyone but the true owner.

If the owner of the animal claims it before the expiration of a year and a day, proves ownership and pays the expenses of its maintenance and the proclamation,
then the owner is entitled to recover the animal (Theobald 1929; Chitty 1820). The person claiming ownership must supply reasonable evidence of ownership by marks or otherwise (Taylor v James, (1608) Godb. 150, 78 E.R. 91; Theobald 1929).

The person taking the stray must retain possession in a place open to the public (Theobald 1929; Chitty 1820). That person must feed and preserve the animal from injury. Much like animals impounded, the animal cannot be used but may be milked to preserve it (see section 8.8 of the thesis; Theobald 1929; Chitty 1820).

Very much more recently it was suggested that feral domitae naturae bred and living in the wild state could be an exception to the rules. At the same time the court recognised that the common law had long dealt with this problem by regarding the animal as a stray (if not already taken distress damage feasant) (Reeve v Wardle, Ex parte Reeve, (1960) Q.L.R. 143). It is however doubtful that this prerogative was received law in the colonies (Renfree 1984), most likely for reasons similar to those discussed in Reid v Fulton (see above).

4. Tithes and Taxes

The liability for tithes and more recently the liability for taxes are sometimes mentioned as indicia of the classification of property rights in animals. There is little direct authority on this. At least one commentator has attempted to draw greater implications from the differing treatment of animals in connection with the payment of tithes (the domestication criteria of Thrupp 1865, who is cited by Williams 1939).

But even this indication is fraught with many difficulties. In Filow’s Case, Y.B. (1521) 12 Hen. 8, 3a (Williams 1939, 139) Eliot J., dissenting, said: “Also dogs and cats are not tithable, for the lord spiritual would not have vermin as tithes, for apes and marmosets are only vermin”. Some years later in an action for failure to deliver up a dog belonging to the plaintiff, the defendant claimed that dogs do not pass by the grant of omnia bona et catalia (i.e. all my goods and chattels), being not tithable nor assets (Ireland v Higgins, (1588) Ow. 93, 74 E.R. 925). This reflects the view that dogs were ferae naturae (see Williams 1939).

The legal obligation to pay most tithes was effectively abolished (by a combination of the Tithe Act 1836, the computation of tithes under that Act for tithe rentcharges and the extinguishment of most of them by the Tithe Act 1936). They had a history of some eleven hundred years and developed considerable complexity (see Godolphin 1687 and Bacon 1832).

Tithes were first imposed over the whole of England by King Ethelwolb by Royal Charter in favour of the church in about 855 AD (having been first introduced into Mercia in the reign of King Offa in 786 AD). Various laws were made both
before (particularly by King Alfred) and after the Conquest regulating many aspects of the payment of tithes. Many of the dooms after King Ethelwold deal with aspects of tithes and their manner of payment (see collection and translation by Thorpe 1840; Godolphin 1687).

Tithes were originally a mere ecclesiastical revenue and only ecclesiastical persons had the capacity to take them. They were considered not as a secular duty or as issuing out of the land but as collateral to the estate of the land and paid by the laity in return for the benefit they derived from the ministry and care of their spiritual pastors (Bacon 1832).

The nature of tithes was almost entirely changed in the time of Henry VIII. With the dissolution of the monasteries, Henry VIII took the benefit of their tithes and made grants of them to lay persons. So it became necessary to secularise them, and endue them with all the qualities of real property. By 32 Hen. 8, c. 7 tithes in the hands of laypersons were treated like any other kind of property (Bacon 1832).

Tithes were divided into three types. The first were praedial tithes. They arose either from the fruits of the ground such as corn, hay, hemp and the like or the fruits of trees and orchards. The second were personal tithes, arising from the profits that come by the labour and industry of a person, such as the products of a carpenter or by the buying, selling or merchandising of goods. The third are mixed tithes, arising partly from the ground and partly by human industry (e.g. certain animals, milk, cheese and the like) (Godolphin 1687).

Some tithes were due by common right and others by custom (Bacon 1832). A personal tithe was only paid on the clear gain (i.e. the net profit) (Bacon 1832). Many things were liable for the payment of tithes by the ecclesiastical law that were not payable under the common law (Bacon 1832). Tithes were usually payable in kind, being the “tenth part of the annual fruits, either of the earth, or of beasts or a man’s labour and industry” (Godolphin 1687, 354). In the later period, tithes payable in respect of the young of animals were paid in money where there were less than ten (Brinklow v Edmonds, (1731) Bun. 307, 145 E.R. 683). But tithes payable by custom were to be determined by custom and usage (Bacon 1832 and authorities cited by him).

So tithes were payable (excluding plough beasts and those animals eaten in the home) on sheep, horses, cattle, cows, calves, colts, kids, pigs, fowls and others (as described in and collected from Godolphin 1687).

Ferae naturae were not titheable (including dogs and cats), “until they become tame and profitable to the owner, that is reduced to tameness and property” (Godolphin 1687, 405). Tithes were not payable on turkeys (initially, but this later changed, as discussed in the following paragraph), pheasants and partridges. Bucks, does, pheasants, rabbits (see further discussion below in this appendix) and venison, though not titheable, could be given in satisfaction or payment of
tithes (*The Case of the Dean and Chapter of Norwich*, (1595) Ow. 74, 74 E.R. 911; Bacon 1832; *Case of Tithes, The*, (1628) Het. Rep. 14, 124 E.R. 303). Godolphin (1687) also asserts that the assizes of the forests and other records suggest that tithes had been paid even of deer.

Tithes were payable for the young fowls but not for *ferae naturae* or for birds kept for pleasure (Bacon 1832 and authorities cited by him). Eggs served for the tithe of the tame and domestic fowl according to custom where their chickens did not serve as the tithe (Godolphin 1687). So partridges and pheasants were said not to be tithable because they were *ferae naturae* even where the pheasants were kept in enclosed woods with their wings clipped (Bacon 1832 and authorities cited by him). But a personal tithe may have been payable in respect of pheasants and partridges (Godolphin 1687). Initially turkeys were regarded as *ferae naturae* (*Hugton v Prince*, (1595) Moo. 599, 72 E.R. 783; Godolphin 1687), but later the view taken was that they were as tame as hens and other poultry so a tithe became payable (*Carleton v Brightwell*, (1728) 2 Peere Wms. 462, 24 E.R. 815).

In the case of pigeons there is considerable conflict. A tithe is not due when they are used for personal consumption but it is if they are sold (Bacon 1832 and authorities cited by him; *The Case of Tithes of Pidgeons and Accorns*, (1628) Het. 27, 124 E.R. 314; *Flower v Vaughan*, (1654) Het. Rep. 147, 124 E.R. 412). Tithes were said to be payable of pigeons and for rabbits in one case (*Jones v Gastril*, (1618) 2 Roll. 2, 81 E.R. 620), though elsewhere this is doubted, (*Badgerly v Wood*, (1693) 12 Mod. 47, 88 E.R. 1156). Yet Godolphin (1687), suggests quite clearly that a tithe is payable of pigeons, save for those consumed in one's own house.

Whilst ducks would be the subject of tithes as fowl (*Brinklow v Edmonds*), it is not due of the ducks in a decoy pond or of tame ducks kept for the service as decoys (Bacon 1832 and authorities cited by him). The profit of the decoy would have constituted a personal tithe.

Rabbits in a warren were the subjects of personal not praedial tithes. Otherwise they were only titheable by custom as *ferae naturae* (see Godolphin 1687 and the cases cited by him; *Jones v Gastril*).

The payment of tithes on fish appeared to be a matter of custom and varied considerably. Fish taken out of a pond or an enclosed river were liable for tithes (Bacon 1832, however, gives no authority and the side note suggests this is by no means clear; Godolphin 1687) (it is possible that the profits of the pond constituted a personal tithe). Fish taken out of the sea or an open river were not the subject of tithes because they were *ferae naturae* (Bacon 1832 and authorities cited by him). It was held in one case that the parson cannot have the tithe of pilchards taken in the sea, because the sea is not within any parish (*Holland v Neale*, (1603) Noy 108, 74 E.R. 1073). But tithes were found due from the produce of a river in Ireland (*The Case of the Royal Piscary of Banne*, (1611) Davies 55, 80 E.R. 540).
A few years later an application was brought to stay an appeal in Ireland for tithes of fish taken in the sea, because fish in the sea or great rivers were *ferae naturae*, and not titheable. It was also contended that the sea was not within any parish. Notwithstanding those matters, the court preferred to stay the proceedings, observing that tithes of fishes were usually paid in Ireland and in Cornwall. Tithes for fishing in the sea were paid to the parson of the parish where they were landed, and it was the custom in Yarmouth that tithes should be paid for herrings *(Anon., (1624) Cro. Car. 264, 79 E.R. 830).*

This view altered, and tithes were not payable for trout taken in a river, eels or rabbits in a warren, notwithstanding the custom in some places *(Dawes v Huddleston, (1634) Cro. Car. 339, 79 E.R. 897).* So by the turn of the following century, no tithes were due for fish of common right, but they could be due by custom *(Anon., (1704) 6 Mod. 223, 87 E.R. 974).*

However doubts remained. In an action for the tithe of fish due by custom, it was argued that double tithes could be paid for fish taken at sea, brought to land and sold within the parish or fish sold at sea from a vessel from the parish or taken by inhabitants of the parish. Three judges were of that view, the Chief Judge dissenting *(The Earl of Scarborough v Hunter, (1719) Bunb. 43, 145 E.R. 589).*

Another action for tithes was based on the custom of payment by every proprietor or occupier of any fishing boat, fishing net or other fishing craft, usually tied, moored or kept within any part of the rectory or parish (when not used in fishing), in respect of fish taken in the bay, or adjoining seas, with such boats, nets or fishing craft, except fish used for bait for fishing, and fish meshed in seines. The court found for the rector *(Gweavas v Kelynac, (1727) Bunb. 239, 145 E.R. 660).* Clearly such tithes were still being received fifty years later *(R v Carlyon and Clerk, (1789) 3 Term. 385, 100 E.R. 634).*

Both honey and beeswax were the subject of tithes, but the bees themselves, being regarded as *ferae naturae*, were not the subject of tithes *(Bacon 1832 and authorities cited by him).*

Tithes were not always paid in the manner prescribed by law. Sometimes the liability for the tithe was compromised or arrangements were made for its payment in other ways, a practice that is mentioned in a number of decisions (again there were many rules in respect of such compromises and arrangements) *(Godolphin 1687).* In *Winter v Lovedais, (1589) Ow. 34, 35, 74 E.R. 880,* the court held that a recipient of tithes need not pay other tithes “but buck and doe”, for, though they are not titheable, they may be paid by composition. In *The Case of the Dean and Chapter of Norwich,* the same was said in respect of a shoulder of a buck or doe, but tithes were not due for venison so they were not tithed in specie. In a similar manner, partridges and pheasants in a garden were not titheable, but they can be paid in lieu of tithes, and should be supplied dead to the parson. The qualification that they be supplied dead would distinguish them as
personal property reduced into possession, though this was not mentioned by the commentators.

As can be seen from the foregoing and the thesis, the nature of the tithe payable and the manner of payment can also provide assistance in determining the nature of the property interest in animals.

5. **Crown Ownership of *Ferae Naturae***

The franchises have been briefly discussed in the thesis (see section 9.3). There is clearly a view that at one stage they may have been founded on the concept that the Crown had proprietorship in all *ferae naturae*, though now they can be justified by reference to dominion. Support for the former view can be found in both Bracton and Blackstone (see following discussion). The view itself is highly contentious, but may not have been out of favour with the Normans or many of the princes of Europe of the time. The dooms of King Cnut include an acknowledgment of the right of a subject to hunt in the person’s own woods and fields and a prohibition on hunting in the woods belonging to the king (Thorpe 1840, 421). There is however no statement as to what constitutes the king’s hunting. Does it mean any hunting outside one’s own land or is it limited to hunting on the king’s land (which appears the more likely)?

If the proposition that the Crown was the owner of all *ferae naturae* was correct and there was no right in the public to take *ferae naturae* then aspects of the thesis may be flawed, at least up until when the view changed. The change is not particularly obvious from the cases or the commentators reviewed.

Notwithstanding the comments of both Bracton and Blackstone, the strength of the comments from others would suggest that the Crown was never the proprietor of all *ferae naturae* (for a modern assertion that the Crown was the owner of all *ferae naturae*, see Hanson et al. 1974). This view in part undermines the basis for the grant of the privileges, unless you accept the dominion view and that the courts subsequently developed the basis, nature and extent of the proprietorship in those animals in a franchise. This is the more likely occurrence. No doubt other propositions can also be developed.

It is unclear whether Bracton believed that the Crown was the proprietor of all *ferae naturae*. The following is the relevant extract from Sir Travers Twiss’s translation (1250, 2:f8b):

> The dominion over things by natural right or by the right of nations is acquired in various ways. In the first place, through the first taking of those things, which belong to no person, and which now belong to the king by civil right, and are not common as of olden time, such, for instance, as wild beasts, birds, and fish, and all animals which are born on the earth, or in the sea, all in the sky, or in the air.
The following extract is from Bracton in Samuel Thorne’s translation edited by Woodbine (1250, 42):

*By the jus gentium or natural law the dominion of things is acquired in many ways. First by taking possession of things that are owned by no one, [and do not] now belong to the king by the civil law, no longer being common as before, as wild beasts, birds and fish, that is, all creatures born on the earth, in the sea or in the heavens, that is, in the air, no matter where they may be taken.*

As can be seen in the second of the quotations there is a suggestion that certain words should be inserted, with the effect of reversing the intent, as discussed below. Otherwise, Bracton (1250), based on the first quotation, appeared to assert that all wild animals belong to the Crown. If that is the case, then what follows is nonsense or, as Maitland (1895, 103) said, “Does he really mean to say that the king is the owner of the field mice and the sparrows; that if a man kills an adder the dead body belongs to the king?” Maitland (1895) put forward other views. This is a debate that remains unresolved to this day. On the view of Vinogradoff (1923), the “not” is not a blunder and he supported the grant of the franchises. Kantorowicz (1941) suggested a mere change in punctuation, which Richardson (1965) rejected.

Britton (1290) was clearly at odds with Bracton (1250) on the ownership of *ferae naturae* in their “natural state”. Britton (1290) asserted that they are no-one’s property nor are they within the gift of anyone. A person taking those animals acquires property so long as the person keeps them, unless taken in a forbidden place or warren (Britton 1290). Fleta (1290) referred to the possibility of the Crown’s ownership, but in an evasive manner, implying it did not exist or no longer exists.

Blackstone described the situation in a number of different places (1765-1770, 2:14, 15, 391, 394, 413, 419, 4:174 and 4:415). In particular, the following comment of Blackstone (1765-1770, 2:419) emphasises his view:

*Upon the whole it appears, that the king, by his prerogative, and such persons as have, under his authority, the royal franchises of chase, park, free warren, or free fishery, are the only persons who may acquire any property, however fugitive and transitory, in these animals *ferae naturae*, while living; which is said to be vested in them, as was observed in a former chapter, propter privilegium.*

As Chitty (1812) observed, there are so many decisions and dicta (*YB* (1444) 22 Hen. 6, 9; *Anon.*, (1498) Keil. 30, 13 Hen. 7, 72 E.R. 265; *YB* (1521) 12 Hen. 8, 9) that Blackstone’s (1765-1770) observation must be incorrect.

Christian (Blackstone 1765-1770, Christian edition) observed in a lengthy note that even if the Crown did have such a right, that affords no inference that a landowner may not enjoy this right concurrently with the king. The views of Christian (Blackstone 1765-1770, Christian edition) were favourably commented
on by Chitty (1812). The matter received further attention from Holdsworth (1936) who noted that there might be some judicial support for Blackstone (1765-1770) in Boulston's Case, (1597) 5 Co. 104b, 77 E.R. 216, Cro. Eliz. 548, 79 E.R. 794; and possibly from Bayley J. in Hannam v Mockett, (1824) 2 B. & C. 934, 107 E.R. 629.

The Wild Creatures and Forest Laws Act 1971 has now put the matter beyond doubt in England. It repeals the Charter of Forests and specifically provides in section 1(1):

There are hereby abolished-

(a) any prerogative right of Her Majesty to wild creatures (except royal fish and swans), together with any prerogative right to set aside land or water for the breeding, support or the taking of wild creatures; and

(b) the franchises of forest, free chase, park or free warren.

On the authorities currently available, it must be concluded that, outside franchised areas, there were no special property rights in ferae naturae in the Crown or the grantees. The Crown had dominion, though as ruler of the land. This view finds favour in recent decisions and comments (Walden v Hensley, (1987) 163 C.L.R. 561; Pound 1954). Within the franchised areas the property rights were limited to certain animals (Manwood 1615; Chitty 1812) and there is some doubt as to their scope.

Some aspects of the Crown's and ultimately the state's right to limit and control the hunting of animals which impact on aspects of this discussion are considered in the United States Supreme Court decision of Geer v Connecticut, 161 U.S. 519 (1896). This decision considers the views of various European jurists, Blackstone and others and confirms the right of the state to limit, restrict and control the hunting and movement of game, as a matter of dominion.
Appendix Two

Some Animals on the Edge of the Classification

1. Introduction

The development of the common law in respect of a few animals helps to illustrate and emphasise a number of the threads running through the thesis. Only four animals are examined here, swans, bees, pigeons and rabbits. Deer could also have been chosen for discussion, as could turkeys. Deer, an animal of the franchises, highlights that only in more recent times has it become necessary to consider whether it is domitae naturae (see section 8.4 of the thesis). The turkey highlights a yet different issue, namely the status of an introduced animal and its quick recognition as domitae naturae in the Middle Ages.

The pigeon and the rabbit very clearly emphasise the status of two animals that were on the edge of the classification of domitae naturae. Both were significant in the production of food and other by-products during much of the period under consideration. The rabbit was an animal of a franchise. It caused considerable damage. Some rabbits were clearly domesticated by the Middle Ages (Sandford 1996). Ownership may have meant liability but, the use of the privilege avoided that problem.

Swans possibly provide an example of a population that may have once been regarded as domitae naturae but more recently have been regarded as ferae naturae. Bees create different problems, as will be discussed.

2. Swans

2.1. Use

Both the law and history of swans and more particularly the mute swan (Cygnus olor) in England is poorly documented and recorded. The role of this fowl has clearly altered, over at least seven centuries and possibly longer. Its status as a royal bird remains. Whether the mute swan was always distinguished from the other species that also visited England, the whooper (Cygnus cygnus) and Bewick’s swan (Cygnus bewickii), may at least in the case of the former also be doubted (see the account of St Hugh’s whooper by Giraldus discussed in Ticehurst 1957).

These visitors may explain some of the distinctions that are drawn in the decisions and commentaries, explaining the finding that they were wild birds and the fact that the property only remained whilst they were in the neighbourhood. The local population is likely to have long been marked and was taken for granted. These
visitors were a bonus. A distinction was not drawn on a species basis, at least in taxonomical terms; they formed part of the one population.

It was only by the seventeenth century that swans were kept primarily for their beauty and magnificence rather than their status, the larder, profit and as gifts (Ticehurst 1957), although, like peacocks, the young continued to be eaten, at least for a while. They were considered a noble dish for times of great entertainment. They were traditionally eaten at Christmas and at large banquets (Ticehurst 1957). They were brought home at Michaelmas to fatten like geese (Seebohm 1927). The extent of this can be seen in the requirement of Henry III of at least 125 swans for his Christmas festivities of 1251 and the feasts of the serjeants of the Inner Temple at Ely House of 10 to 14 November 1531 of 156 swans (Ticehurst 1957).

With the introduction and breeding of the turkey in England around the start of the sixteenth century (see section 8.4 and table 6 of the thesis) the use of swans as table fowl began to decline (Ticehurst 1957). Swans are not mentioned by Godolphin (1687) in his consideration of the law relating to tithes, though it is possible, because of their classification as royal fowl, that they were excluded at an early stage.

Swans were kept in three different ways. Some were kept in close confinement, sometimes in a swan house or swan pit. In the latter they were usually held in large numbers, where they fed better. By keeping well-grown cygnets, the naturally preferred size for sale for consumption, in swan houses and swan pits they could be made available as and when required for both the household and the market. This also avoided the limitation on taking swans in open waters outside upping time, other than in the presence of the deputy swan master and other owners of games of swans (or their swan herders) (Ticehurst 1957).

In such confinement swans were fed and some accounts from the period are available to demonstrate the extent of that feeding (commonly with malt, barley or oats). For some decades commencing in the early nineteenth century, the swan pit of St Helen’s Hospital, Norwich operated as a profitable venture, receiving swans at a fixed charge for fattening, usually between Michaelmas and Christmas (Ticehurst 1957).

A pair or two of swans were also kept on a moat or pond. Such birds would usually be pinioned to limit their escape. In such confinement they remained the property of the person confining them. If they escaped and were unmarked, the owner was entitled to retake them, provided the pursuit was continuous (this requirement appears to rely on Bracton 1250, and required immediate pursuit, otherwise they became the property of the Crown; Ticehurst 1957; The Case of Swans).

The third situation involved keeping swans in open and common waters pinioned and marked. This practice appears to have been adopted, prior to the statute of 22
Edw. 4, c. 6, by various persons (see recital in the statute and Ticehurst 1957). It facilitated the raising of swans, recognising their territorial instinct and need for large tracts of water (Ticehurst 1957). Once marked with a lawful mark and swimming in open and common rivers they remained the property of the owner of the mark (The Case of Swans). Rarely did a subject obtain the right to take unmarked swans in the waters of a particular area (Ticehurst 1957), those grants being capable of proof by the original written grant or prescription (The Case of Swans). Swans in open and common waters were usually left to find feed for themselves, but during hard winters they were fed and the ice cleared about their waters (Ticehurst 1957).

Each of the foregoing assumes that property rights were not limited to those holding a grant from the Crown and possibly a swan mark. Theobald (1929) stated, without authority, that a subject could have property in swans that had become domesticated and lived in private waters. This appears to be supported by The Case of Swans. The statute of 22 Edw. 4, c. 6 had been repealed by this time and the common law position prevailed; however the position is not clear. Ticehurst (1957) does not suggest how much domestication is required in this situation. His description of these different situations appears to adopt the same view as Theobald (1929), on at least one occasion. However a little later Ticehurst says “although no subject could have any property in swans except by grant from the Crown, this limitation seems to have been entirely disregarded, so that to all intents and purposes ownership was restricted only by a man’s means and the availability of the necessary accommodation” (Ticehurst 1957, 18).

2.2. Status

The recognition of the status of swans as a royal fowl has been traced to at least sometime prior to 1186 (Ticehurst 1957). The effect of this status is to render all unmarked and unpursued swans on open and common waters the property of the Crown (subject to any other grants by the Crown to the contrary) on the basis that one unmarked white swan was indistinguishable from another (The Case of Swans). Whilst this may be overstating the position, it again emphasises that the ability to identify the animal is particularly pertinent in this area of the law.

As royal fowl swans occupied a special position. Unlike the prerogative in respect of royal fish, which was the subject of a particular statute of 17 Edw. 2, c. 11 (1324) (whether it was a statutory recognition and extension of a common law right is unclear), no statute can be found as the basis for the prerogative in respect of swans (now being merely preserved by the Wild Creatures and Forest Laws Act 1971 (UK)). Though some statutes did regulate aspects of the proprietorship of swans and the use of swan marks, the bulk of the regulation, which appears to be substantial, is to be found in the customs, proclamations and the rules prescribed by the courts of swan-mote and the master of swans.

In many respects the administration of this prerogative was much like that of the forests. There were courts (the extent of which is uncertain). Ticehurst (1957)
traces aspects of the history of the courts whilst Coke (1641b) stated that the King's Swanherder did not have a court, but did not appear to suggest that courts in connection with swans were not held. He was most likely referring to a standing court. The swanherd court may have been an occasional court arising out of a commission issued by the Crown (see Ticehurst 1957 and Doyly 1632 referring to the precedents for commissions for keeping swanherd courts). There were laws, although the customs and laws relating to swans have not received the same recognition as the forest laws nor the recognition that they were a separate body of law from the common law. There was also a master of swans and deputies (Coke 1641b noted the existence of this ancient office, Ticehurst 1957 described the earliest definite appointment as being 3 May 1361 and The Case of Swans also recognised the position).

Unlike the animals of the forest the Crown retained the ownership of all unmarked and unpursued swans at large in a proprietary sense (e.g. distinguished from dominion for conservation) whilst the Crown had no proprietorship in the animals of the forest once they freely left the forest (see discussion in section 9.3 of the thesis and section five of appendix one).

Another important difference was the existence of swan marks. Whilst formal registration did not come until after 22 Edw. 4, c. 6, there were a number of swan marks then catalogued, including those belonging to earlier generations, some of which can be traced back to the latter part of the fourteenth century (Ticehurst 1957). Ticehurst (1957) further asserted that the marks went back considerably further and offered a number of instances in support, including a theft of swans and the removal of their mark in 1276 and a deed of 1230 referring to a swan mark. The statute 22 Edw. 4, c. 6 clearly recognised the existence and effect of the then current use of swan marks.

As already mentioned, by the statute of 22 Edw. 4, c. 6 (which was repealed by 1 & 2 Geo. 4, c. 32 (1821)) the proprietorship of swans and the use of swan marks was limited to persons satisfying a property qualification of freehold estates to the value of five marks (with a specific exception for the son of the king). Those not satisfying the requirement were compelled to dispose of their games of swans or see them seized. In doing so the statute recited that marks and games of swans were in the hands of persons of little reputation, suggesting that many held them (see quote in section 10.2 of the thesis). Thereafter the ownership of swans was limited, at least by statute. Two later statutes prohibited the taking of swan's eggs (i.e. 11 Hen. 7, c. 17 (1496) and 1 Jac. 1, c. 27 (1617)).

Further regulation of the keeping of swans and swan marks was introduced by a series of ordinances, proclamations and orders. Whether these later instruments reflected the existing customs or introduced a new regulatory regime or a combination of both is unclear. Even the authority by which some appear to have been issued is not apparent. Many of these early ordinances were limited in their application to particular waters or areas (Ticehurst 1957). In the reign of Edward VI a set of orders was issued by way of Proclamation of the Privy Council to
apply to the whole of the Fenland area (Ticehurst 1957). In 1584-85 (27 Elizabeth I) a proclamation was issued to apply to the whole of England. Whilst in terms similar to earlier proclamations of more limited application, it enlarged on the scope of the matters covered. Several further like proclamations appear up to 1625 (Ticehurst 1957).

In 1632 the then Master of Swans caused to be printed a small pamphlet entitled “The orders lawes and ancient custommes of swanns” (Doyly 1632). Whether it is merely to be regarded as a consolidation of the existing laws, proclamations and customs or something more is not altogether apparent. The introduction by the Master of Swans acknowledged that there were differences from other orders (though he suggested these were, in form rather than much substance) and directed that these provisions were to be observed by all deputy masters. This set was republished in 1664 with minor differences. Notwithstanding these orders of general application, local orders could still be made, provided they were not inconsistent (Ticehurst 1957).

In these orders many aspects of the keeping of swans and the use of the marks were regulated. Ticehurst (1957) observed a fourfold purpose of these laws and customs; the maintenance of the prerogative, restricting the ownership to those enfranchised, the protection of the fowl and the safeguarding of the owner’s rights and prevention of fraud.

Some of the matters specifically addressed include: payment of a once in a lifetime fee to the Crown to maintain the game (in the nature of a franchise fee); providing for how a person not entitled to ownership of a swan may keep it until it is disposed of in the prescribed manner; unmarked swans to be taken for the Crown and marked; the apportioning of the cygnets between the respective owners and landowners; the time for marking of swans and the maintenance of records of the marks; the maintenance of records of numbers upped; the payments to be made to the master of swans for the services of the master of swans; unpinioned and marked swans to be subject of a further fee; a person taking a flying swan being required to deliver it to the master of swans on pain of a penalty of forty shillings; dealing with double marked or embezzled swans; marking of swans is to occur in the presence of the master of swans or a deputy; no swan is to be killed in upping time unless the master of swans or a deputy is present; the preservation of the brood and the payment to be made for a swan leaving private waters for common waters.

Another example of the regulation of dealing in swans is the Statuta Poletriae of the City of London. It regulated between 1274 and 1415 the price of swans as food, initially at three shillings, raised in 1370 to four shillings and reduced in 1388 to three shillings and four pence. The price paid for swans elsewhere varied between six shillings and eight pence and three shillings and sixpence (Ticehurst 1957).
So what was the status of swans? Were they *domitae naturae, ferae naturae* or is neither truly applicable? Ticehurst (1957) regularly described them as being kept in a semi-domestic state and occasionally mentions a domestic state. At other times he refers to the current population of wild birds as derived from the domestic or semi-domestic birds. Williams (1939, 30) said: “one might suppose from the Year Books that they were the subject of absolute property.” In support of that he refers to the *Registrum Brevium* (folio 109a) and the argument of Fairfax Serjeant in *YB* (1472) P 12 Edw. 4, 4b, speaking of swans together with horses and cows, and two Year Book decisions for trespass for taking of swans. Those decisions would suggest that they were regarded as the subject of ownership (*YB* (1429) 7 Hen. 6, 27b and *YB* (1484) 2 Ric. 3, 15b) and possibly absolute ownership. The latter decision was cited with approval in *The Case of Swans*.

Trespass could be brought for the taking of swans (*YB* (R.S.) (1294) 21 & 22 Edw. 1, 527), replevin was availed of in *Anon.*, (1306) (R.S.) 33-35 Edw. 1, 121 and they were taken as distress damage feasant in *YB* (S.S.) (1311) 5 Edw. 2, (31) 4, (all noted in Williams 1939). The comments of Ticehurst (1957) suggest that there were various proceedings for larceny of swans in the thirteenth and fourteenth centuries. A swan was the only fowl that could be a stray, as described earlier in these appendices (see section three of appendix one). It was the only fowl of sufficient value to be so regarded. This however appears anomalous. If a swan was marked then the owner could be discovered by the mark. If the swan was unmarked then, at least in common rivers and waters, it belonged to the Crown without a need to regard it as a stray. If the right to take strays had been granted to a lord of the manor then a situation could arise that a stray unmarked swan could be seized by the lord of the manor in the exercise of the grant, so the need for distinction may be justified. Another reason is that as a stray it could be taken and there was no obligation to seek out the owner.

Chitty (1820) (appearing to rely on Blackstone 1765-1770) regarded swans as *domitae naturae*, being of the same reclaimed nature as cattle and animals the property in which is not lost by reason of a temporary absence. Yet Blackstone (1765-1770) contemplated the existence of wild swans. Any person, according to Blackstone (1765-1770), can take a wild swan, mark it and set it free in common waters and property continues (no reference was made to the swan being the king’s property in that state). According to Blackstone the mark only prevails whilst the swan is in the neighbourhood (this appears to be an adaptation from the *Digest*, Justinian 553a, 41,2,3). Similar propositions can also be found in Hale (1736). Hale (1736) puts forward a number of propositions regarding larceny of swans. One is that there are wild swans of which larceny cannot be committed. If a swan is tamed and domesticated or marked and penned then the taking of the swan may constitute larceny. This is qualified in respect of flying swans that range abroad out of the precincts or royalty of the owner (which may be the source and justification of the qualifications of Blackstone 1765-1770 in respect of leaving the neighbourhood, for the person killing and taking them cannot know
they belong to another). The authorities cited are Coke (1641a), “Dalt. Cap 103(5)” and The Case of Swans.

There are contrary suggestions that swans are not domitae naturae. Bracton (1250, in the Twiss translation) refers to swans at the same time as referring to those animals the subject of animus revertendi (e.g. deer and pigeons; Thorne does not refer to swans but to peafowl in his translation of Bracton (1250)). As discussed in the thesis, animus revertendi is usually only seen as relevant in the context of ferae naturae, thus implying that they were regarded as ferae naturae in his time. Though as can be seen in some of the decisions in the Middle Ages the concept was also occasionally used in connection with domitae naturae. In YB (1528) 19 Hen. 8, 2, Fitzherbert and Inglewood J.J., who were in the minority, spoke of swans in the same breath as herons, bucks and hinds that are domestic. This implies that they are ferae naturae that have been tamed rather than domitae naturae. Williams (1939) suggested that The Case of Swans contemplates that property may be lost in some situations and therefore they were ferae naturae. Williams (1939) also noted that Lambard (1614) distinguished between swans and poultry, the latter being generally accepted as domitae naturae (an earlier edition of Lambard 1581-82 does not appear to mention swans in this manner).

A third possibility is that it is inappropriate to regard swans as falling into the usual classification. All swans unmarked in open waters belonged to the Crown, unless the subject of fresh pursuit. There were no ownerless swans in England in the sixteenth century (Ogilvie 1984, relying on Ticehurst 1957). If the common law is concerned with distinguishing between those classes of animals the subject of absolute ownership and those that may otherwise be regarded as ownerless or the subject of limited rights, for whatever reason, then the principle has no application to swans.

The Case of Swans, in describing the grant of the right to take unmarked swans in open waters, referred to the swans the subject of that right as being variously wild or ferae naturae. In one place the court in The Case of Swans, (1592) 7 Co. 15b, 18a, 77 E.R. 435, 439 stated: “for the effect of the prescription is to have all wild swans, which are ferae naturae and not marked”. Was the court stating that there are swans both ferae naturae and domitae naturae or are all swans ferae naturae and only those swans reclaimed by art and industry or marked the subject of property? This latter interest would be akin to an absolute property, where marked (The Case of Swans) and possibly suggests yet a further categorisation (Blackstone 1765-1770).

At the same time it can be said that this is no different from the rule applicable to domitae naturae, whether confined or wandering at large. All members of the population are the subject of ownership (ignoring feral animals) even if the owner cannot be found or identified (the law deals with these latter animals as strays, Reeve v Wardle). As discussed, many of the regulatory aspects and the rights already described would also suggest that swans were to be regarded as domitae naturae. If the proposition formulated in the thesis is applied to swans in England
during the period from Bracton to Blackstone, based on the foregoing anecdotal evidence, it could be suggested that they were *domitae naturae*.

If swans were regarded as *ferae naturae* then the use of marks to retain ownership will need to be recognised. This may be an exception to the general rule or a recognition that the common law will give effect to marks preserving proprietary interests in *ferae naturae* at large without *animus revertendi* (the statute 22 Edw. 4, c. 6 only regulated aspects of the use of swan marks) (see section 10 of the thesis). Such a mechanism facilitates the conduct of the industry having regard to the needs and habits of the animals.

The rules relating to the division of the progeny of swans are also exceptional, providing for division between the owners of the parents and where the swans rear their young on a stranger’s land then the stranger is entitled to the third and least valuable cygnet (*The Case of Swans*). Hussey J. said that the owners shall have two cygnets and the owner of the land the third cygnet, which shall be of least value and if the owner of the land seizes one, the owner of the land does so at the owner of the land’s peril (*YB* (1484) 2 Ric. 3, 15b). Various rules were developed to deal with the difficulty of uneven numbers and the consequent division required (Ticehurst 1957).

Swan marks constituted an item of personal property capable of assignment and devolution (see the examples described by Ticehurst 1957; *The Case of Swans*). The assignment or devolution of a mark also takes with it all swans bearing the mark. The leasing of swan marks and the game was fairly prevalent in the sixteenth century (Ticehurst 1957; *The Case of Swans* involving the leasing of a mark). In those situations the benefit of the progeny passed to the lessee who was usually only bound to maintain the original numbers.

A couple of United States decisions have noted the status of swans. In *State v Lee*, 41 So. 2d 662 (1949) *Wharton’s Criminal Law* (Wharton & Kerr 1912, 2: 1106) is quoted as stating that larceny at common law could be committed of swans lawfully marked, although at large in a public river; or whether marked or not, if they are in a private river or pond, without specifying any authority. In the earlier decision of *Fleet v Hegeman*, 14 Wend. (N.Y.) 42, 46 (1835) the court, having described the principles applicable to *ferae naturae* and *animus revertendi*, said: “The right of the plaintiff to the oysters is within the reason of these principles. They have been reclaimed, and are as entirely within his possession and control as his swans, or other water fowl that may float habitually in the bay.”

### 3. Bees

#### 3.1. Use

The principal species that is discussed in this context is the European honeybee *Apis mellifera*. Whilst other *Apis* species are also the source of honey and wax
and other species have more recently been kept as pollinators, this discussion will
not generally extend to them.

The relationship between people and honeybees dates from the very earliest
development of humans, though the earliest known rock paintings of honey are
from soon after the Ice Age (approximately 7000 years B.C.). It is the practice of
bees of maintaining a food store for periods of shortage and people's ability to
manipulate this behavioural characteristic that is the base of the modern honeybee
keeping industry. Former hiving practices were less well adapted to such
manipulation, but nonetheless were the source of significant produce (Crane
1984).

Much of the history of early beekeeping centres on the establishment of a
primitive form of hive (in the form of logs, mud cylinders and wicker baskets) and
the retention of the swarms that left it. More recent practices, starting with the
development of the modern hive in 1851, the discouragement of swarming and
very much more recently (since the middle of the 1900s) the instrumental
insemination of the queens and selective breeding programmes (Crane 1984) have
altered the relationship between people and bees. It is now very much more akin
to human intervention in the breeding of mammals.

The Roman writers Varro (n.d.), Pliny (n.d.) and Columella (n.d.) each deal with
the keeping of honey bees at length. Pliny (n.d.) regarded them as neither
domesticated nor wild, whilst Varro (n.d.) distinguished between wild and tame
bees. The former were those that fed in the forest and the latter those feeding in
cultivated places. Each praised the industry, social nature and the produce of
bees. Varro (n.d.) described honey as the sweetest of all things and acceptable to
gods and humans alike.

Like the Romans, the produce of bees was very important to the early Anglo-
Saxons. Honey was an article of food, necessary for brewing mead and
extensively used in medicine. In the early Celtic farm the wax was also needed
for candles for the household and later for the altar (Seebohm 1927). In the sixth
and seventh centuries bees in England were altogether wild. Any one who found
them had a right to the honey and the wax. The practice of hiving them followed
(Thrupp 1865). Much like many other activities of the Romans, aspects of the
practice of hiving bees was most likely lost at the Saxon conquest (Seebohm
1927).

In the Anglo-Saxon community the practice evolved of attributing a qualified
property right to the owner of a tree in which a wild swarm had settled for three
consecutive nights. The owner was required to discover the swarm within those
three nights otherwise the finder had a right to four pence compensation and, if it
were not paid, to keep the swarm (Seebohm 1927). By about the middle of the
tenth century there began to develop a class of persons whose responsibility was
to maintain the swarms. In such cases the lord provided a stock of bees for which
the keeper paid a fixed amount of produce for life. The bees remained the property of the lord (Thrupp 1865).

Also about this time it can be inferred that the rough constructions used to house the swarms were superseded by more regular hives. In the reign of Edward the Confessor beehives were tithed and their value and number is confirmed in the Doomsday Book (Thrupp 1865). The tithe was a praedial tithe (see section 4 of appendix one) paid in respect of the honey and wax. It was not paid on the swarms (Godolphin 1687).

Though appearing in the Doomsday Book, beehives appear on comparatively few demesne farms (in Essex about a quarter of estates where stock was recorded and in Norfolk less than one fifth). Honey was universally required and it can be supposed that on the majority of estates either the beehives were farmed out (as suggested by Thrupp 1865) or the peasants paid dues in honey (Seebohm 1927).

In the sixteenth century bees were plentiful and considered very profitable and there were continuous exhortations to keep bees in the seventeenth century. They were fed in winter, if necessary with honey and rosewater, sweet-wort from the brew-house or other substances. The washings and offal of the hives were used to make mead. Bees remained plentiful in Yorkshire and Norfolk in the eighteenth century, but were hardly to be found throughout Devon and Cornwall (Seebohm 1927).

3.2. Status

The Institutes and Digest of Justinian (553a, 553b) both mention bees having the habit of flying to and from their hives and being within the scope of animals with animus revertendi (Justinian 553a, 41,1,5 and 41,2,3) but their nature remains wild (Justinian 553a, 41,1,5). As already discussed, Daube (1959) suggested the concept of animus revertendi was extended to bees, but, because of their wild nature, the concept was changed from an incident of domitae naturae to that of ferae naturae. This recognition of their wild nature appears to be an acknowledgement of the limited scope of human intervention, yet it does not take account of what appears to have been commonly recognised in the community, namely a level of domestication (i.e. domitae naturae) as described in the comments of Varro (n.d.) and Pliny (n.d.). Obviously it is domestication in a limited sense. It highlights that the concept of domestication is a plastic concept, to be adjusted for each population.

The Charter of Forests (chap 13) preserved for a person the honey found on the person's lands. It did not mention the swarm, the bees nor the other products of bees. This, Blackstone (1765-1770) said, was used by Brooke's Abridgement (see title property, 37) (Brooke 1586), citing YB (1372) 45 Edw. 3, 24 to justify the nature of an interest in bees as ratione soli rather than relying on animus revertendi. Blackstone (1765-1770) appeared to support such a view, recognising that it may differ from the civil law. If this is the case, which may be doubted,
then the nature of the interest in bees is far more tenuous and would be lost once
the bees left the land, unless also supported by *animus revertendi* or some other
principle.

Both Blackstone (1765-1770) and Bracton (1250) recognised the right to pursue a
swarm from one’s land. This right may be differentiated from *animus revertendi*.
It is an example of the right recognised in *Sutton v Moody*, (1702) 3 Salk. 290, 91
E.R. 831 to pursue an animal onto the land of another and take it to the exclusion
of the landowner, being liable only in trespass (see further discussion below). If
this were indeed the basis of the interest, then the repeal of the Charter of Forests
would appear to have effected a significant change. However, if, as Coke (1641b)
believed, the Charter of the Forests merely was a restatement of the common law,
then the repeal may not be so significant. The concept that the interest was
*ratione soli* also appears to be at odds with the view that bees could be the subject
of larceny (see below). As discussed in the thesis, the interest in an animal
*ratione soli* was insufficient to sustain a prosecution for larceny.

Bracton (1250) also described bees as being wild by nature. The mere settling of
bees on a tree on one’s land is insufficient to gain a property interest; there must
be a hiving, there must be industry. A swarm leaving a hive remains the property
of the owner of the hive so long as the owner pursues it and overtaking it is not
impossible. If the bees are not pursued or cannot be overtaken, then they become
the property of the first taker. If one knows that they are another person’s swarm,
then one does not gain an interest and if one keeps them one commits theft (an
aspect inconsistent with an interest *ratione soli*, though *ratione soli* was not then
recognised and the distinctions of the later period may have not prevailed in
Bracton’s day). The foregoing is however subject to any custom to the contrary
(Bracton 1250).

The nature of the interest in bees appears to be a matter of few decisions until
more recently. Williams (1939) noted that the *Registrum Brevium* folio 81a
(reproduced in Fitz-herbert 1652, 165) mentioned that a swarm of bees is within
the *writ de replegiare de averijis*. He also suggested that, notwithstanding the
implication that the bees were *averia* (see *Stormer v Ingram* for a contrary
holding) and thus the subject of absolute property, *averia* was applied to a wide
class of animals. That property in bees was recognised can be seen in *Tibbs v
Smith*, (1662) Raym. 33, 83 E.R. 18; an action to arrest a judgement, alleging that
the defendant had stolen the plaintiff’s bees, an actionable statement if incorrect,
because there is property in the bees as distinct from that which cannot be stolen
(namely the trees attached to the land in which they are hived). In *Hamnam v
Mockett*, (1824) 2 B. & C. 934, 944, 107 E.R. 629, 632, Bayley J. said obiter,
“Bees are property, and are the subject of larceny.” Again these views are
inconsistent with an interest in bees being an interest *ratione soli*.

In *Quantrill v Spragge*, (1907) 121 J.P. 425 bees swarmed and alighted on a
neighbour’s apple tree. There were differences between the plaintiff and
defendant as to the plaintiff’s access to recover them. Judge Mullighan held that
the property in the bees remained with the pursuer, even whilst on the defendant’s apple tree, for the plaintiff had not lost sight of them and could identify them. This was the case even though the plaintiff could not go and take them without rendering himself liable in trespass.

In *Kearry v Pattinson*, [1939] 1 K.B. 470 the plaintiff, a beekeeper, sought damages because the defendant prevented him from recovering a swarm of bees from the plaintiff’s hive. Slesser L.J. (with whom Clauson and Goddard L.J.J. agreed) was of the view that there is really no authority for the proposition that the plaintiff had any right in law to follow the bees onto another’s land without consent. So a swarm remained a person’s property whilst the person had the right in law to pursue them. A similar view was mentioned as having been adopted in Scotland in *Harris v Elder*, (1893) 57 J.P. 553. These views could be suggested to be consistent with a lesser interest, such as *ratione soli*.

The US decisions are generally to the contrary, such as *Goff v Kitls*, 15 Wend. (N.Y.) 548 (1836) (1836) and *Brown v Eckes*, 160 N.Y. Supp 489 (1916) and were quoted in *Kearry v Pattinson*. These decisions held that if bees have been reclaimed and hived a property interest remains, notwithstanding a temporary escape. The owner must keep them in sight and mark the tree that they enter; they belong to their first owner, not to the owner of the soil. In *Goff v Kitls*, 15 Wendell (N.Y.) 548, 549 (1836) the court said:

*It is said the owner of the soil is entitled to the tree and all within it. This may be true so far as respects an unreclaimed swarm.... But if animals ferae naturae that have been reclaimed, and a qualified property obtained in them, escape into the private grounds of another in a way that does not restore them to their natural condition, a different rule obviously applies. They are then not exposed to become the property of the first occupant. The right of the owner continues, and although he cannot pursue and take them without being liable for a trespass, still this difficulty should not operate as an abandonment of the animals to their former liberty.... This case is distinguishable from the cases of Gillet v Mason, ... and Ferguson v Miller .... The first presented a question between the finder and a person interested in the soil, the other between two persons, each claiming as the first finder. The plaintiff in the last case, though the first finder, had not acquired a qualified property in the owner according to the law of prior occupancy. The defendant had. Besides, the swarm being unreclaimed from their natural liberty while in the tree, belonged to the owner of the soil *ratione soli*.*

*Brown v Eckes* supports most aspects of this approach, holding that the owner of the swarm remains the owner, even if the bees are taken by an owner of the land on which they are about, whilst the original owner continues in pursuit.

A person seeking to reclaim a swarm, so as to acquire property in the swarm, if not the owner of the ground on which they have swarmed, should at least not be a
trespasser \((R v Gadd, [1911] Q.L.R. 31; Merrils v Goodwin, 1 Root. (Conn.) 209 (1790))\). This is another example of the principle that a person cannot profit from a wrong. So a person finding a tree containing a hive on another’s land by marking the tree with initials without doing anything more does not thereby reclaim the bees. Against an owner of land the person does not acquire a right to bring an action of trespass for cutting down the tree and carrying away the bees and the honey \((Gillet v Mason, 7 Johns (N.Y.) 16 (1810); see also Merrils v Goodwin; Ingham 1900)\). Even with the licence of the landowner to remove the bees, one acquires no interest as against either a third person or another licensee, until they are hived. Two licensees stand on an equal basis, so the licensee who first takes possession of the bees becomes the owner \((Ferguson v Miller, 1 Cow. (N.Y.) 243 (1823))\).

Bees in the possession of the owner are the subject of larceny \((Ingham 1900, citing State v Murphy, 8 Blackf. (Ind.) 498 (1847))\) but it is otherwise of wild bees that have not been hived, though they are confined in a tree by the landowner \((Wallis v Mease, 3 Binn. (Pa.) 546 (1811))\). Even where a person finds bees (perhaps even wild bees) on the land of another and hives them, they are not the subject of larceny according to \(State of Iowa v Repp 104 Ia. 305, 73 N.W. 829 (1898)\) as cited by Ingham 1900.

In another American case it was held that trover for the value of bees and honey will not lie against a stranger who appropriates a hive in a box placed on the land of another without permission \((Rexroth v Coon, 15 R.I. 35, 28 A. 37 (1885))\). The decision was commented on adversely in the Harvard Law Review \((Anon. 1898-1899, 404)\).

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\text{About the honey there would seem to be even less doubt; but, strange to say, neither in this case nor elsewhere does the question seem to have been discussed how far the law about animals ferae naturae applies to their produce as eggs or honey. The reason on which the law about animals is founded is wholly inapplicable to the honey, but this case tacitly assumes no distinction is to be drawn.}
\]

Assuming that \textit{animus revertendi} is relevant to bees, it is presumed for that purpose that bees lose that instinct of returning when swarming \((Harris v Elder)\), justifying the view that at that time property is lost, another possible justification for \textit{Kearry v Pattinson}. Though, that does not appear to be the case for so long as there is fresh pursuit (see above).

More recently it has been held that a person has sufficient property in bees to support an action for their loss \((Tutton v A.D. Walter Ltd, [1986] 1 Q.B. 61)\). Bees are not to be regarded as wrongdoers; they are useful insects and that is universal. As such they are not trespassers according to \textit{Tutton v A.D. Walter Ltd}. Yet in \textit{Stormer v Ingram}, [1978] 21 S.A.S.R. 93, Legoe J. suggested that technically bees may commit a trespass. He did not consider whether a trespass by bees requires the owner to drive them onto or permit them to enter the land of another. Further, he was of the view that the owner or possessor is not liable for
cattle trespass for bees, as they are not cattle (Stormer v Ingram; Legoe J., having quoted from Williams 1939, held they are not cattle without considering the former availability of the *writ de replegiare de averijis* or discussing the matter).

As can be seen from the foregoing, bees have long been regarded in the law as *ferae naturae*. Clearly there are elements of doubt. Notwithstanding that, in *O’Gorman v O’Gorman*, [1903] 2 I.R. 589 the defendant conceded that bees were not *ferae naturae*, a matter observed in one judgement without any comment. In the later decision of *Kearry v Pattinson* they were again described as *ferae naturae* and in *Tutton v A.D. Walter Ltd* the matter was not discussed, though it was said that, whether domestic or wild, it is a useful insect. It may therefore be surprising that *Stormer v Ingram* held that *Apis millifera* are not *ferae naturae* in South Australia.

Apart from the decisions in *Tutton v A.D. Walter Ltd* and *Stormer v Ingram*, most of the decisions in respect of bees emphasise the swarm. There is a view that individual bees may not be the subject of property but only the aggregate item, which is of value, the swarm.

The special rules have developed because of the nature of the swarm. The emphasis in Justinian (553a), Bracton (1250), and Blackstone (1765-1770) appears to be on the swarm and to that extent appears to support the view that it is the swarm that is significant. The habit of an individual bee of returning is not significant. It is a view that causes one to question the analysis of Daube (1959) (see section 6 of the thesis).

So when the discussion turns to those animals with an intention to return, bees are not always included in the list. The division per *industriam* or *ratione soli* with a special rule allows this aspect to be ignored. The property in bees and their individual propensity to return is not the relevant aspect; it is the captivity and hiving of the swarm, the bulk of the mass.

Support can be found for that view in *R v Nitschke*, [1928] S.A.S.R. 229 where a bee was held not to be an animal on a prosecution for maliciously injuring or killing an animal. Piper J. said that the relevant provision is directed to animals that are individually regarded as domesticated or property, and not to members of the animal kingdom which taken singly would ordinarily be utterly valueless. This provides further support for the view that the swarm is the item of property rather than the bee.

A difficulty with emphasising the swarm was raised in *In the Proceedings of the Tribunal of Arbitration, Convened at Paris in 1893 for the Determination of Questions between the United States of America and Great Britain Concerning the Jurisdictional Rights of the United States in the Waters of Bering Sea,* (the Fur Seal Arbitration 1893) by Sir Charles Russell. The difficulty is identifying any legal ground for a distinction between property in the swarm without property in the individuals. If there is property in the individual, then there is property in the
swarm composed of those individuals. If there is no property in the individuals, Sir Charles Russell suggests, that it passes human comprehension as to how it can be alleged that there is property in the swarm or a collection of individuals. How can there be a congregation of items, each one of which is, upon the hypothesis, not property, yet when they make up the whole, which is called the swarm or herd, they become property (Fur Seal Arbitration). This view was accepted by the tribunal. Whilst this appears to be compelling, in his dissenting opinion Mr Justice Harlan expressed the view that the property subsists in the swarm not the bees. He indicated that it has never occurred to any writer or court to consider whether the owner needs to prove the ownership of each individual bee (Fur Seal Arbitration, Dissenting Opinion of Mr Justice Harlan). Proving ownership of the swarm appears to have been sufficient. Proving ownership of individual bees or of the swarm may be impossible unless the bees are marked (either externally or genetically) or otherwise distinguishable. Whilst Tutton v A.D. Walter Ltd could be said to imply the opposite, the effect of the wrong was discussed not so much in terms of the individuals, but in terms of the loss of the hives as a whole and the possible remedial action that could have been undertaken by the movement of the hives.

The swarm approach has the advantage of avoiding the concept of property in individual bees. It avoids a consideration of bees being trespassers. Others may kill the individuals, much like ferae naturae, as individuals, but not en masse. The interference with the swarm or a significant part of the swarm will constitute damage to the swarm; there is no need to consider the individuals. It further highlights that it is not in every situation that identification is necessary. It again demonstrates the law’s ability to deal with the particular populations and their particular attributes.

4. Pigeons

4.1. Use

In the non-legal context all domestic breeds of pigeons and all wild and feral populations are classified as Columba livia. The wild ancestor is considered to be the rock pigeon or rock dove of Europe. The only other species regarded as domestic in the non-legal context is Streptopelia risoria, the Barbary dove (Hawes 1984).

Pigeons relationship with humans commenced around the end of the last Ice Age. Some regard this animal as self-domesticating. It seeks out human fields and settlements. The time of domestication is placed somewhere between fifteen hundred B.C. and six hundred B.C. (Hawes 1984).

The Romans were consumers of large numbers of pigeons (Hawes 1984). Varro (n.d.) described the keeping of pigeons in detail, distinguishing between the wild and tame pigeon, describing pigeon houses in which up to five thousand pigeons
were kept at a time and the practice of cramming the squabs to fatten them more quickly. He praised the use of their manure in agriculture. Columella (n.d.) described the rearing of pigeons in much the same terms with some added suggestions, particularly for those raising pigeons in the countryside.

The *Digest* and *Institutes* of Justinian (553a, 553b) both mention *animus revertendi* in connection with pigeons (Justinian 553a, 41,1,5 and 41,2,3) but the *Digest* notes that their wild nature is of no moment because it is their custom to return. Daube (1959) suggested that initially pigeons were regarded as *domitae naturae*. It was only when the concept of *animus revertendi* was extended to bees, that pigeons came to be regarded as *ferae naturae* and the concept of *animus revertendi* was changed from an incident of *domitae naturae* to that of *ferae naturae*. Again, the comment as to wildness does not take account of an animal that appears to have been commonly recognised in the community as domesticated, as described in the comments of Varro (n.d).

In England, pigeons became popular about the middle of the thirteenth century or a little earlier, being introduced from France (Seebohm 1927; Hawes 1984). In the latter part of the thirteenth century they were bred on a large scale for their meat and appeared regularly on the lord’s table (Seebohm 1927) and that of the parson. Their droppings were highly valued as manure. This soon lead to the establishment of large numbers of dovecotes.

By the sixteenth century every farmyard had a dovecote and pigeons flourished in such multitudes that they became harmful to crops. They remained a necessity for the table (Seebohm 1927). They so flourished that it was said by early in the seventeenth century that no kingdom in the world had so many dove-houses. They only needed feeding in bad weather and their droppings continued to be valued for manure (Seebohm 1927). It has been asserted that by 1651 there existed in England twenty six thousand dovecotes (Hawes 1984).

Yet by the eighteenth century dovecotes ceased to be numerous (Seebohm 1927). Doves continued to be raised, but modern production methods are unsuited to raising pigeons. They are labour intensive, they are monogamous in their mating, the young are altricial and they require considerable space for flight (Hawes 1984).

During the Middle Ages in England there was considerable controversy about the keeping of pigeons and rabbits. This can be seen in nearly all areas of the law touching them. Both appeared to cause considerable damage to the land and crops of others. Both appear reasonably often in the reports and matters of nuisance and liability are not infrequently raised.

Both pigeons and rabbits contributed significantly to the larder. Chitty (1812) also observed that the cases are very contradictory on property in pigeons and the right to erect dovecotes. There appears to have been an early limitation on the persons permitted to erect and maintain them. So in *Bond’s Case*, (1587) Moo.
K.B. 238, 72 E.R. 553 the court said that maintaining dovecotes is considered a common nuisance and an injunction was granted against the defendant to desist from building a dovecote. Manwood C.B. said that no-one could erect a dovecote de novo other than the lord of the manor or the parson of the church and that by ancient law it was enquirable in the leet. The lord of the manor could also license persons to erect dovecotes (Bacon 1832). In Boulston's Case it was said, apparently in argument, that no-one could erect a dovecote other than the lord of the manor. If a private person erected a dovecote it was punishable in the leet as a common nuisance, but a limitation was added that no action lies upon the case by a private person in respect of erecting dovecotes.

Nowhere does there appear to be a suggestion that the right of the lord originally arose from any grant of a franchise, but there appear to be implications of that being the case or at least an attempt by the nobility and the parsons to presume a monopoly. The nobility sought to protect this monopoly in their local courts ("the leet"). Another justification for it being punishable in the leet by the lord was that it avoided a multiplicity of actions (Bacon 1832). The decisions clearly recognised that pigeons were a scourge to the countryside, consuming large quantities of crops and seed (Hawes 1984).

Yet in Moyle v Moyle, (1598) Ow. 66, 74 E.R. 905 it was suggested that if a lessee of a pigeon house blocks up the holes so that the pigeons cannot build their nests waste is committed. However, this was a case involving a lease of a manor, and one must query, having regard to the legal meaning attributed to a "manor" (see Blackstone 1765-1770 for a definition of "manor"), whether it was a decision peculiar to a manor and not one of general application. If a decision of general application it would suggest that maintaining existing dovecotes was encouraged.

This privilege of the nobility began to be restricted in the seventeenth century. In Pratt v Lord North, (1616) Godb. 259, 78 E.R. 151 Coke C.J. said: "That there is not any reason that the lord should have a dove-cote more than the tenant". Chitty (1812) suggested that, notwithstanding that view, Coke C.J. was ultimately of the opinion that the freeholder erecting a dovecote committed a common nuisance enquirable in the leet (also see case reported as Pratt v Stern, (1616) Cro. Jac. 382, 79 E.R. 326 which supports the view of Chitty 1812).

In Dewell v Saunders, (1618) 2 Roll. 3, 81 E.R. 620 the court decided that the erection of a dovecote was not a common nuisance. Montague C.J. not only stated that it was not a common nuisance but that, as the king cannot pardon a common nuisance, the grant of a privilege of erecting a dovecote could not be a common nuisance. Further, pigeons were preserved by the common law by statute and there were several forms of writ in the register (i.e. registrum brevium) for trespass in connection with dovecotes.

So in the period up to Dewell v Saunders, the common person could not lawfully maintain dovecotes without a licence from the lord or parson. Some of the earlier comments would suggest that the restriction was not observed. Nobody could
Erect a dovecote de novo. During some period they were probably regarded as a common nuisance. Pigeons caused considerable damage in the countryside. It was enquirable in the leet (Bond's Case). This rule was approved, albeit obiter, in Boulston's Case. The maintenance of dovecotes had also clearly been regarded as a privilege. It was obviously under attack from others who wished to maintain pigeons for food and manure. The attack succeeded in Dewell v Saunders but not without considerable controversy, based on the reports and subsequent conflicting views (Williams 1939).

Even after that we find Holt J. in Arnold v Jefferson, (1697) 3 Salk. 247, 248, 91 E.R. 805 attempting to indirectly preserve the privilege or monopoly (in the words of Williams 1939) in the following terms:

*a lord of a manor may build a dovecote upon his land, parcel of his manor, and this he may do by virtue of his right, as lord thereof; but a tenant of the manor cannot do it without licence, for he can have no right to any privilege that may be prejudicial to others; but this is not a common nuisance, nor punishable in the leet: but the nuisance being particular, the lord shall have an action on the case, or an assize of nuisance, as he may for building a [mill] to the nuisance of his mill.*

Whether it was truly in the nature of a privilege or monopoly is unclear. Bayley J in Hannam v Mockett clearly asserted that nobody may have any property in pigeons or rabbits without a licence from the king as they are injurious to the land of others. Whilst the relevant pages from Williams 1939 were referred to in argument in Hamps v Darby, [1948] 2 K.B. 317, there was no reference to Hannam v Mockett nor any suggestion that dovecotes could not be maintained without a licence, whether from the king or the lord.

With time the problem went away for, as described above, the keeping of pigeons declined by the eighteenth century.

4.2. Status

As for the nature of the proprietary interest there is no less controversy. Notwithstanding the considerable numbers raised and their tame disposition, Williams (1939) asserted they were always regarded as *ferae naturae*. Bracton (1250) specifically dealt with pigeons in the class of *ferae naturae* with *animus revertendi*. The common law appeared to depart from this position for some time between the time of his treatise and the decision in Dewell v Saunders.

The difference in view can be seen in YB (1478) 18 Edw. 4, 18 where the court held that an indictment was sustained for feloniously taking certain pigeons. The property in young pigeons was in the owner of the dovecote, because they could not escape and the owner could take them at any time at pleasure, *ratione impotentiae*. It was said that it was different if they were old pigeons because the law considered them to belong to no-one. They could not be taken at the pleasure
of the owner of the dovecote. The same was said of pike or tench in a river but not if they were in a trunk or pond.

In Anon., (1527) Jenk. 204, 18 Hen. 8, 2 fish in a private lake or pond were regarded in the same way as tame peacocks, tame pigeons and young hawks in the nest. They were different to pheasant, partridge, hare and rabbit kept, but not reclaimed, and not known to be so to the person stealing them (this qualification may imply an acceptance of aspects of the approach of Bracton 1250). The same applied to all wild beasts that served as food.

It may be well to remember that these two decisions were indictments for felonies. As discussed elsewhere (see section 5.5 and 10), the common law was clearly concerned with the identification of animals at large in such instances. It is this issue of identification that appears to have added to the doubt, when the pigeons were at large. This was a period when tort and crime were not so clearly separated (see section 5.5.4 of the thesis).

The other distinction already noted is between old pigeons free to come and go and those in complete captivity. In the latter case, their leaving could be controlled (East 1803). More recently, even in the former situation, when in the dovecote or other facility provided by the owner (R v Brooks, (1829) 4 Car & P 131, 172 E.R. 639) and even if free to enjoy themselves in the open (R v Cheafor, (1851) 21 L.J. Mag. 43) they were still the subject of qualified property rights. Though they were free to come and go, at times they could be taken at the owner’s pleasure and locked up. A contrary view to this latter decision can be found in the Massachusetts decision of Commonwealth v Chace, 9 Pick. (Mass.) 15 (1879), based on the difficulty of identification.

On another occasion Lord Coke argued that pigeons were ferae naturae, but a proprietary interest subsisted when they were in a person’s ground by reason of possession, so an action of trespass could be brought against anyone who took them away (Coney’s Case).

A couple of unsatisfactory aspects of the decision in Dewell v Saunders must be noted. The first is that there are a number of conflicting reports of the case, a matter that the Court of Appeal addressed in Hamps v Darby by relying on Rolle’s Report. The situation is complicated by decisions prior to Hamps v Darby based on other reports of Dewell v Saunders to the contrary. A second issue is that much of what was said in the decision as to proprietary interests may be regarded as obiter, as the decision was directed at the right of a lord of the manor to indict in the leet for maintaining dovecotes.

As Montague C.J. said in Dewell v Saunders, (1618) 2 Roll. 3, 81 E.R. 620 (see translation in Chitty 1812, 2:906-907):

[A]n action does lie for killing them out of the owner’s soil; for I see a great difference between beasts or birds, in which a man has an
absolute property, viz as long as they remain in his possession; for proprietas duplex est jure proprietatis, et jure privilegii. A man has an absolute property in pigeons; for in an action for them he shall say, 'columbas suas', as the form in the Register is. And Bracton says, 'columbae nostrae sunt eousq; habent animus revertendi.' But if a man bring trespass for taking his deer out of his park, or for killing his rabbits in his warren, he shall not say 'suas' but generally 'quaere damas,' &c.

On the other hand Haughton J. said that whilst pigeons are out of the pigeon house the owner has no property in them (Dewell v Saunders). He further said that it was shown to be a common custom throughout England that one may kill pigeons about one's land and that they have always been treated as bona nullius. Crooke J. adopted a similar view.

Dodridge J. appears to have had a view that the rights of a third person to kill pigeons is more limited, for he said that if they are on another's land doing damage he may justify the killing of them.

A few years later it was said that rabbits entering a common from adjoining land and eating the herbage may be killed by the commoner, for no-one has any property in them, and the same is the case for pigeons flying into the corn of adjoining lands, because the owner of the pigeons cannot be known (Hinsley v Wilkinson, (1633) Cro. Car. 387, 79 E.R. 938). The modern justification for killing them whilst they are doing damage on a third party's land was considered in Hamps v Darby.

So long as the bird retains an animus revertendi it is deemed to be in the proprietor's possession and the proper form of action is for trespass to the goods of a person in respect of such animals. The owner of tamed or reclaimed pigeons continues to have property in and possession (albeit notional) of birds that have flown from the dovecote, so long as they retain an animus revertendi (Hamps v Darby).

The payment of tithes on pigeons also suffered the same confusion, as described in appendix one. Generally a tithe appeared to be payable on pigeons other than for those for personal consumption (Jones v Gastril, and Badgerly v Wood).

As described in Table 6 of the thesis, pigeons in the law have long been and are still regarded as ferae naturae notwithstanding a long association with people, though there is the occasional contrary suggestion as already mentioned. They are, however, very close to the edge of that category.
5. Rabbits

5.1. Use

Rabbits have been used by people as a source of meat, laboratory animals, domestic pets and sources of fur. The rabbit for the purpose of this discussion is *Oryctolagus cuniculus*.

The Romans did not take much interest in rabbits until about 100 B.C. (Robinson 1984). Varro (n.d.) suggested that they be kept in leporaria (walled in enclosures) for food. Pliny (n.d.) mentioned them in the context of their causing famine in the Balearic Islands by destroying the harvest. The inhabitants of the islands requested the Emperor Augustus to provide soldiers to help reduce their numbers.

The process of domestication of rabbits is attributed to medieval monks. In their quest to find food other than meat, by about 600 A.D. they adopted a former Roman practice of eating the unborn or newborn young of a rabbit (an item not regarded as meat) (Robinson 1984; Sandford 1996).

Whilst it is likely that the Romans introduced rabbits to England, there is no evidence that they survived the Anglo-Saxon invasion (Sandford 1996). They were first mentioned after the Conquest as a valued form of fresh meat, particularly from the thirteenth century onwards (Seebohm 1927), and they were probably introduced from France in the twelfth century (Sandford 1996).

By the sixteenth century vast numbers of rabbits were kept in enclosed warrens for the provision of food. By the seventeenth century they were also being kept for their furs, a commodity that had become very profitable, with many of the best skins being exported. Those kept in warrens generally foraged in the warrens and were likely to be fed in winter, with hay and branches being scattered for that purpose. Specially fattened ones were kept in small hutchcs and fed a couple of times per fortnight with oats, hay and greens (Seebohm 1927; Williams 1939).

Those confined in warrens were rarely adequately confined and quite regularly escaped (Seebohm 1927) causing considerable damage to adjoining landowners and commoners (Williams 1939), as can be seen in a number of the decisions. Williams (1939, 238) described the extent of the destruction and damage caused in two instances:

> in 1341 the inhabitants of a parish in Sussex pleaded, in diminution of taxes, that their wheat had been “devoured year after year by the rabbits of the Bishop of Chichester, and thereby lessened in value £7. 6s. 8d.”; while another complained that a hundred acres of arable land, valued at £1. 5s. 0d., lay annihilated through the destruction wrought by the rabbits of the lord, the Earl of Warenne.

In the case of rabbits, unlike most animals, it is possible to provide approximate dates for the occurrence of the major coat mutations. Most modern breeds are
based on a combination of these mutations. There are innumerable breeds, but few have been in existence long enough for genetic differences to have arisen. More recent breeds have been developed for commercial meat production (Robinson 1984). In this context a breed is a group of animals, or population, which resemble each other more than they do other breeds (Sandford 1996), an aspect emphasised in the thesis.

It became the practice to obtain a franchise from the Crown, called a free warren, to keep rabbits, animals of a warren, on certain lands, without a licence from the Crown, otherwise a writ of quo warranto could issue (see Chitty 1812). With time such grants were presumed and it became possible to claim them by prescription and now abolished. The nature of these franchises is discussed in the thesis (see section 9.3).

5.2. Status

Rabbits have always been regarded as ferae naturae.

Outside of a free warren and captivity, the action for taking rabbits about land was in trespass to the land (either vi et armis or quare clausum fregit) for carrying away rabbits in a free chase (YB (1369) 42 Edw. 3, 2; Henry Archbishop of Canterbury v W.T., YB (1425) 3 Hen. 6, 55).

Brook J. in YB (1521) 12 Hen. 8, 9, said that rabbits are ferae naturae and they belong to no one. Anyone has possession of them, but when by industry and labour they are tamed, then they become the chattels of that person. They are then in that persons possession like fish and other things. After that it is not lawful for anyone to take them out of possession.

In Coney's Case, one involving a commoner killing rabbits in the common, Shute J. said that the commoner cannot take or distrain the beasts of the land damage-feasant, therefore one cannot take or destroy the rabbits which are upon the land, because one may have other remedies. The argument put by Lord Coke in that case was that rabbits are ferae naturae.

There is no tort of putting rabbits into one's land. It is unreasonable to have an action for damage done by ferae naturae in which no-one has any property. You cannot know where they come from. People suffering the damage may kill the rabbits when upon their land. They may then take them and make a profit from them (Coney's Case).

The destruction of rabbit burrows appears not to be waste because waste does not lie in respect of rabbits. One cannot inherit them, as no-one has property in them, but only possession ratione soli (Moyle v Moyle).

In an action against a commoner for killing two hundred rabbits, the commoner pleaded an interest in the common, and failed. A commoner may not justify the killing or driving away of rabbits. The Rolle's Report suggested they were
rabbits from the warren of adjoining land (according to Williams 1939). The only right of the commoner was feeding the cattle of the commoner on the herbage. The owner of the soil could keep cattle there and rabbits. Rabbits were beasts of a warren and as profitable as deer; they were not to be compared to vermin (Bell v Langdon, (1600) Cro. Eliz. 876, 78 E.R. 302).

There followed a further series of decisions adverse to commoners. In an action for trespass, the defendant, a commoner, was liable to the lord for killing and carrying away rabbits (claiming that they were taken damage feasant). After initially finding that they were *ferae naturae* and belonged to nobody, the court reversed its decision and held that so long as the rabbits are about the land they are the lord’s property. The lord may say “cuniculos suos” (i.e. the rabbits of the lord), but when they go outside the land they are no longer the property of the lord. The commoner was not entitled to kill them. If they surcharge the common the commoner has remedies (*Hadesden v Gryssel*, (1608) Cro. Jac. 195, 79 E.R. 170; *Gressil v Hoddesden*, (1609) Yel. 143; 80 E.R. 96). A commoner was also not entitled to destroy or fill up rabbit burrows (*Horsey v Hagberton*, (1610) Cro. Jac. 220, 79 E.R. 199). A commoner could not obtain by prescription, in a free warren and freehold of another, the right to hunt and take rabbits (*Samford and Havels Case*, (1612) Godb. 184, 78 E.R. 112).

The nature of the interest was further considered by Dodderidge J. (*Carrill v Pack & Baker*, (1613) 2 Bulst. 115, 80 E.R. 996), who said that by prescription, or by grant of the Crown, a person might have a warren. If the Crown does grant a free warren in land and afterwards the owner conveys the fee simple of the land, excepting the free warren, the grantor may afterwards freely make rabbit burrows in this land afresh and place rabbits in the land (*Carrill v Pack & Baker*). In *Dewell v Saunders*, Montague C.J. said if one brings an action for trespass for killing one’s rabbits in one’s warren, one may not say they are one’s own (‘suas’) but generally there is an enquiry as to the wrong committed by entering and killing them, and this emphasises the difference. Haughton J. made a comment to the same effect, namely that one may have a special property in animals, as long as they remain on the spot where one has an interest, and when they are removed then the property passes, as for rabbits in a warren (*Dewell v Saunders*).

A commoner may not meddle with the soil, so could not meddle with anything arising out of the land, or that grows, or is nourished by the land. All a commoner had was a right to have cattle feed there, and therefore a commoner could not kill rabbits there, but may bring an action on the case (*Samborne v Harilo*, (1622) Bridg. 9, 123 E.R. 1162). A copyholder of a manor brought an action against the owner of an adjoining wood for the damage done by rabbits to the common. The plaintiff was found to have no action for the plaintiff could kill them, as he pleased, as no-one had any property in them; they were *ferae naturae* (*Hinsley v Wilkinson*).

The right of the holder of a franchise became more extensive, as discussed in the thesis (see section 9.3). The limited right for the holder of a privilege to take at
least certain animals, including rabbits, was sufficient to create a limited property interest in those animals. In Child v Greenhill, (1639) Cro. Car. 553, 79 E.R. 1077 it was based on the premise that no-one else was entitled to take them. It did not apply to rabbits outside of a park, unless they were domestic. This interest, *ratione privilegii*, may also be based on other grounds, as discussed in section five of appendix one.

But, as described elsewhere, this right was extended beyond a privilege to other interests in land, as the proprietor has a possessory property in rabbits, so long as they abide there; but if they go into the land of a neighbour, the neighbour may kill them, for then the neighbour has the possessory property (*Sutton v Moody*).

So in *The Case of Swans* and in several other cases (e.g. *Carrill v Pack & Baker*), it was laid down that where one brings an action for taking away deer, hares, rabbits, etc. one shall not say “suos”, one has them only for one’s game and pleasure *ratione privilegii*, as in one’s park, warren, etc. This was justified as there were writs in the register (i.e. *registem brevitum*).

Rabbits as a species remain *ferae naturae* (if a population approach is adopted, as suggested in the thesis, then this may not apply to some breeds). They however were also heavily relied on for many centuries as a source of food and fur. They could be a scourge, and ownership in a period when there was strict liability for cattle trespass is likely to have meant that, if they were regarded as *domitae naturae* and cattle (avers), liability for the possessor would have followed. Other aspects of their behaviour also impacted on their status. The free warren, a franchise from the Crown, soon facilitated an intermediate position. It allowed the adjoining landowner to kill them but provided a more limited property interest for the owner of the free warren without liability. It did not help the commoner. Much like the pigeon, no great reliance is placed on rabbits any longer and the commons have long been enclosed. It is no longer a matter of much interest.
Appendix Three

Royalty as an Alternative to Property

1. Generally

The thesis has examined the current common law position on the ownership of animals. It has considered the development of the law both in respect of domitae naturae and ferae naturae.

It has demonstrated that those rules are sufficiently flexible to recognise that further populations of animals may be regarded as domitae naturae and that absolute property interests may be gained in respect of individual animals of those populations. The rules are not species-based. They recognise a population of animals that are useful to the community and which the community has subjugated. By recognising a class or population as within those rules it establishes the manner by which they are to be identified in the community. Those rules have focused on terrestrial animals, they are not limited to them. Indeed, it has been demonstrated that some populations of fish will satisfy the criteria put forward and be regarded as domitae naturae in several common law jurisdictions (see sections fourteen and fifteen of the thesis).

In the case of ferae naturae, animals that are contained, are the subject of the art or industry and demonstrate the requisite animus revertendi, or are branded or marked, may be the subject of a qualified property interest. Reliance simply on a natural instinct to return is insufficient. There must be a greater level of involvement. This greater level of involvement may utilise natural instinct. So animals spawned in a hatchery, taken through their early life stages and released to feed and return in accordance with their natural instinct or trained to return in response to feeding inducements remain the property of the person releasing them, provided that the person does not intend to abandon the interest. The issue becomes one of identification.

Notwithstanding the applicability of those rules to fish, most common law communities have regarded the right to fish in tidal waters as a fundamental right. The right is now attributed to Magna Carta, notwithstanding that it is not so clearly expressed there (see appendix seven). Until recently it was only limited on conservation grounds. Even with the advent of restrictions on fishing on a commercial basis the right to fish for recreational sporting purposes has been jealously guarded, though also restricted.

Even if a court rules that absolute or qualified property rights subsist in fish in tidal waters, both commercial fishers and recreational fishers are likely to regard this as yet a further diminution of their rights. Whilst sea ranchers may be prepared to accept the loss of a proportion of their fish to recreational fishers, they
are unlikely to be willing to accept that commercial fishers should have the same freedom. They are their competitors and have the potential to take a large a proportion of their fish.

One possible method of accommodating commercial fishers and sea ranching is to establish a royalty system. After all sea, ranchers are seeking a commercial return from the activity and, whilst property rights are the common method of recognising and rewarding them, another method is to assure them a return for their efforts. This concept has long been recognised in the Statute of Monopolies and has been adopted in various other laws relating to intellectual property. It is tantamount to the privatisation of enhancement programmes. This allows commercial fishers access. It is likely to be a more acceptable method where the fish are released into a body of water and the sea rancher does not continue to feed them. It may be more appropriate where the fish involved are anadromous.

Alaska has adopted a similar approach by privatising its enhancement programme, though it has allowed the fishers to effectively retain control. It has made them pay by taxing their total salmon catches. It has left room for others to be involved by allowing the individuals establishing non-profit corporations to receive salaries. It has resisted recognising a proprietary interest in the fish released, though there have been doubts about this (Utermohle 1991, see appendix four). The fish are regarded as part of the common property or communal fishery. However, this fails to recognise the creation of de facto property rights, by the combination of the area fishing licence regimes and hatchery recovery areas. The fish are anadromous, they generally return to an area (subject to strays) in which a limited group have the right to take them, before the hatchery has its share. The hatchery is limited in what it may take for brood fish and cost-recovery fish.

2. **Royalty or Like Form of Payment**

This approach is much like the approach adopted in Alaska. The principal difference is, rather than calling the payment a tax, it is called a royalty. It is only to be assessed on those fish that are released by sea ranchers and attributable to them. It is called a royalty because it is designed to give sea ranchers a return for their effort based on the value of the animal when sold in the marketplace. It would be set at a suitable rate, one designed to ensure that there is a suitable payment or compensation for those undertaking such an inherently risky business. This is unlike the system in Alaska, which seeks to impose a levy on all salmon caught by fishers to pay for the cost of their enhancement. It could be characterised as a tax, collected by the state and paid to those who undertake the activity by way of subsidy. There are no doubt other ways in which the payments may be characterised or structured. At its simplest it is a method designed to ensure a return to those who undertake this activity.
3. **Enforcement and Collection**

Its enforcement and collection, and the practicality of those arrangements, then becomes the issue. The following discussion looks briefly at a number of alternative methods of achieving that.

In an industry that is already heavily regulated, in most jurisdictions, with licensing requirements to engage in commercial fishing, licensing of gear, possibly individual transferable quotas or other limited entry rights, catch returns, licensing of processors and processor returns, there is already a system in place that will facilitate the recovery of the royalty. In those jurisdictions where there is a central marketing authority for fisheries products there is also a facility to capture the information and make the payment to sea ranchers. Whatever the arrangement, it will require legislative authority. It is assumed that this will be available if sea ranching is to be encouraged.

3.1. **Central Marketing Authority**

Some jurisdictions have historically used central marketing authorities for the sale and distribution of fisheries products (formerly in New South Wales and Queensland). In those jurisdictions where there is such an authority, there is usually an obligation on all fishers and other persons introducing fisheries products into the jurisdiction to market those products through the central marketing authority. Such authorities are currently out of fashion.

These authorities could be used to check the identifying marks of the fish that are being marketed and where they are found to be those released by a sea rancher then an appropriate royalty or payment would be remitted to the sea rancher and form part of the cost of the product. Another alternative is to deduct it from the payment made to the commercial fishers rather than incorporating it into the price. The difficulty with the latter approach is that the commercial fishers will perceive that they are bearing the payment. This may encourage resistance on their part and possibly practices of discarding at sea those fish that are likely to be the subject of the tax and therefore of lower value, particularly in seasons where there is an abundance of fish and the fishers are constrained by a quota or limit.

3.2. **Regulated Packers or Processors**

Many jurisdictions currently require that fish processors be registered and provide regular returns to the fisheries authorities in respect of all seafood products required, processed and sold (e.g. British Columbia, South Australia and Mississippi). This is a secondary means of enforcing fisheries quotas and limits. It allows for a cross check between the fishers’ returns to the fisheries authority and the actual purchases and throughput of the processors. The prohibition on unlicensed fish processors is also designed to reinforce these arrangements. There is also a public health element involved in these licensing arrangements.
Again, much as described in the preceding section in respect of the central marketing authority, these processors can undertake a convenient identification role and remit to either the registered sea rancher or to the fisheries authority any royalty for distribution to the sea rancher. In Alaska the processors collect and pay the state the tax on the salmon purchased. For the reasons already described it would appear preferable if the royalty is simply added to the overall costs of the processor. This ensures the return to the sea rancher. There are obviously costs of collection and operation. There are clearly opportunities for non-compliance.

4. Public Policy Associated with the Granting of such Rights

Governments have undertaken most enhancement programmes. In the 1800s there were several proposals for the establishment of private enhancement programmes in Canada and Norway. They were quickly taken over by government (Kirk 1987). In a number of other situations those persons undertaking a particular activity have been or may be required to undertake enhancement (e.g. those operating dams). In Japan the fisher’s co-operatives may undertake enhancement activities (Kobayashi 1980).

Clearly allowing the sea to be used by a few as a source of sustenance for their animals brings with it many policy considerations. Some of those considerations are discussed in section seventeen of the thesis. The payment of a royalty to a sea rancher for undertaking an enhancement programme is effectively the privatisation of an activity that has been historically undertaken by governments, a trend that is quite common in many of the common law jurisdictions under consideration in the thesis.

This privatisation is again exemplified by the practice in Alaska. In that state there were a number of public hatcheries operated by the state for the purposes of undertaking enhancement and the restoration of various stocks. Slowly these hatcheries have either been closed or leased to corporations operating under the Private Non-Profit Hatchery arrangements, on the basis that it is cheaper for private industry to run them. In many respects the decision is an ideological one.

Accepting that enhancement is an acceptable activity in the jurisdiction, is it to be operated by the state or by privately owned concerns? Whichever is decided to be appropriate in the jurisdiction, the next issue is how to fund the enhancement activity. If operated by the state it may be funded out of general revenue or by a specific tax or licensing fee. If operated by a private concern, the operator may be paid by the state for those activities, which are in turn funded in the conventional manner, or a royalty or tax may fund them in this more direct manner.

5. Commercial Fisheries and Sport Fisheries Reactions

Sports fishers are unlikely to resist the introduction of such a system, if their right to take fish from the enhanced fishery is no more limited than it currently is, with
bag limits and closed seasons. They may be more concerned if the effect of the enhancement is greater competition with the fish they particularly seek. If their right to take fish from the enhanced fishery is limited, then it can be expected that there will be resistance.

Commercial fishers on the other hand are likely to resist the introduction of such a regime, unless it can be clearly demonstrated to them that the cost of the enhancement will not adversely affect their interests. If it is imposed on the processors and passed on by the processors to the ultimate consumers this may be achieved. They will perceive an opportunity to catch a greater number of fish and, provided that the effect is not to depress prices overall, it will be to their advantage. If their perception is that the impost falls on them, then they are likely to resist these arrangements.

Commercial fishers may also seek to resist such activities by private enterprises that they do not control. In some jurisdictions there is clearly a degree of resentment of the activities of aquaculturists. There appear to be many reasons for this, but two of the more obvious reasons are the significant impact of successful aquaculture on prices over the long-term and the increased competition it creates for the fishers (see section 17.3.3 of the thesis). Commercial fishers are also gaining greater control of their fisheries both by individual transferable quotas and the establishment of committees for the management of the various fisheries, with a membership constituted by a significant number of fishers. They now have a proprietorial view of their interest, an intended consequence of these regimes. They are now faced with the management of the fishery. Their next step is enhancement; if the state will not enhance the fishery then, in their view, they should be entitled to do so in priority to others. They proceed on the premise that the sea once carried greater numbers of fish and they should have an opportunity to restore the numbers to those that previously existed. The only other alternative for them, in many cases, is reduced quotas whilst stocks rebuild or the acquisition of further quotas. An example of this can be seen in Alaska, where area licensing rather than individual transferable quotas has been in use for many years. It is further typified by the practice of paying the enhancement tax on all salmon landed to the regional associations on all salmon landed, those controlled by the fishers, rather than all hatcheries.
Appendix Four

Alaska’s Private Non-Profit Hatcheries

1. Introduction to Alaska’s Private Non-Profit Hatcheries

1.1. Introduction

The purpose of this appendix is twofold. The first is to describe and consider a few aspects of an existing private enhancement programme undertaken by fishers. The programme highlights a number of the issues considered in the thesis that need to be considered in any sea ranching programme. Secondly, it includes a comparison of the financial results of allowing the recognition of a proprietary interest in the released fish to a sea rancher entitled to recover the fish (whether the right is based on the fish being *domitae naturae* or *ferae naturae per industriam* is not important) and one entitled to a royalty. This is a practical demonstration of whether a royalty-based method (as discussed in appendix three) would be an effective commercial alternative to an absolute or qualified property interest.

The enhancement activities in Alaska are unusual. One of the advantages from the perspective of the thesis is the availability of a large amount of public data, which would not be usually available, as to the operation of enhancement activities. The programme is usually described as the Private Non-Profit Hatchery Enhancement Programme. It highlights that fishers in an area licensing regime have taken control of enhancement, notwithstanding the biologists’ preference for rehabilitating wild stocks over propagation (Snow 1991).

On a number of the significant issues, a review of the Alaska programme identifies some problems likely to be encountered in sea ranching and alternative methods of addressing them. It is a programme that has very clearly placed enhancement under the control of the fishers of the respective regions. Some regions have only adopted this method more recently. The programme coupled with area licensing creates a de facto property right for the corporations participating in the programme in the fish released and ultimately in the fishers either directly or through those corporations.

Under this arrangement the corporations engaging in this activity are required to undertake their activities as private non-profit corporations (i.e. the members cannot benefit directly in their capacity as members of the corporation). These corporations must file annual returns of their financial activities with the Alaska Department of Commerce and Economic Development and returns as to the release and recapture of their fish with the Alaska Fish and Game Department. The Alaska Fish and Game Department also collects information about the returns of the fish in their monitoring and management programmes. By collecting,
collating and manipulating this information it is possible to obtain a general picture as to the likely commercial consequences of attributing ownership of the fish released by these corporations and using a royalty regime.

The programme was established without particularly clear guidelines as to interaction with wild stocks. In May 1991, the Alaska State Senate Special Committee on Domestic and International Commercial Fisheries commenced a review of the programme. The final report of that review was presented in December 1992. It highlights a number of the major issues encountered in this programme. Aspects of that review are drawn on in the thesis. As a consequence of that review, a number of amendments were made to the legislation, principally to give priority to protecting the wild stocks.

The state expected that the enhancement tax would provide the necessary support, but it was not enough. The state has since provided substantial loan funds to the corporations and continues to phase out its own hatcheries or lease them to the corporations. Legislation in 1983 permitted the lease, sale or grant of state hatchery facilities to qualified private corporations (Snow 1991).

Most of the information on this programme used in this appendix was collected in 1998 and little in 1999; it has not been updated since. This appendix also describes various shortcomings in the information obtained. This appendix contains a series of tables detailing many aspects of the financial operation of the corporations drawn from their accounts that are then summarised at regional and state level. Where possible the basic unit that has been used is a hatchery, though only a few accounts enable many of the costs and expenses of a hatchery to be dissected. With further work and co-operation from the corporations a very detailed picture of their operations, in particular their financial operations, could be completed.

This appendix effectively describes the operation of a significant enhancement programme undertaken by private industry. If it were not for the legislative provision declaring the fish from the programme to form part of the common property fishery, the activities would constitute sea ranching in the terms defined by the thesis. The programme provides a useful working model of a sea ranching programme. Though operated by private industry, it is heavily dependent on government loans and its enhancement tax, as will be demonstrated.

1.2. Start of Private Non-Profit Hatcheries

By the late 1800s commercial salmon fishing was a major industry in Alaska. As in many other fisheries, concerns grew that the huge catches were beginning to deplete the fishery. Again, like many other places, this concern led to the early establishment of hatcheries and the release of a large number of very small fish as a perceived method of sustaining the resource (see Kirk 1987). The first salmon hatchery in Alaska was built by several fish processors at Karluk Lagoon on Kodiak Island in 1891 (Snow 1991).
In 1905 the US Bureau of Fisheries built the first government hatchery in Alaska. Consistent with the experience elsewhere, depletion of the fisheries continued and by the mid-1930s all private and public hatcheries had been closed. Between 1932 and 1951 the US Bureau of Fisheries approached the problem of depleted salmon runs by imposing regulations on fishers in order to decrease the commercial catch, not by encouraging artificial propagation of salmon (Snow 1991).

Salmon runs in Alaska had periods of decline in the earlier part of the 1900s and a rapid decline after 1936 that carried through into the early 1970s, as can be seen in figure 1. During the 1960s and 70s, they were in a state of depression (Snow 1991). The thirty-year consecutive high average annual commercial harvest (1945-1975) was 83,300,000 fish compared to an average annual harvest of 45,108,000 fish between 1960 and 1975 and an average annual harvest of 23,111,000 fish between 1973 and 1975 (Snow 1991).

Against that background and considerable public concern about the depressed fishery and the revival of enhancement programmes in other places, the return to the use of enhancement led to the establishment of a hatchery programme. Initially, the programme only involved state-operated hatcheries (Snow 1991).
The view that appears to have been prevalent is that, as past salmon runs had been as high as 150 million fish and there were only about 30 million fish in Alaskan waters in the early 1970s, the production of 100 million salmon through hatchery enhancement would assist in the establishment of a healthy fishery. There was however some resistance and concern as to whether hatchery and wild salmon could safely coexist, principally from the biologists of the Alaska Department of Fish and Game. The resistance from the biologists was based on a preference for rehabilitating wild stocks over the propagation of hatchery stocks (Snow 1991).

In 1972 the Alaskan constitution was amended to clarify the right of the state to impose limited entry restrictions on access to fisheries. In 1973, legislation implemented limited entry in the commercial salmon fishery. The object was to achieve increasing economic returns for the commercial fishers. Shortly thereafter the United Fishermen’s Association was established in Alaska and became one of the driving forces behind Alaska’s salmon hatchery programmes (Snow 1991).

At the same time legislators formed the view that the private sector would be more efficient than the government in the operation of hatcheries. It was also perceived that the operation of private hatcheries could be funded from the harvest of returning fish and a tax to be imposed on the fishers who had access to the hatchery production. In this way the burden was shifted from the general public to the people who derived the direct benefit (Snow 1991).

This encouraged fishers’ organisations to build and operate private non-profit hatchery facilities. Apparently there was great enthusiasm about the prospect of private non-profit hatcheries from fishers’ groups, education centres, native corporations and the legislature itself (Snow 1991).

1.3. Prohibition on Aquaculture Pen Farming

The State of Alaska has for many years imposed an absolute prohibition on commercial finfish culture (Alaska Statutes, Title 16, 40.210).

From an outsider’s perspective there appears to be no justification peculiar to Alaska for this approach. The usual ecological reasons are commonly put forward (see section seventeen of the thesis for a discussion of some of those issues), though more significantly it appears that the prohibition exists because of the level of influence of the commercial fishers, the perceived risk of competition from aquaculture and its effect of lessening prices.

Whilst this approach may have been justifiable at times, having regard to the current level of globalisation of the production of salmon, the growth in the production levels and the ease with which salmon can be generally exported into other markets, it may no longer be so. Further, many of the environmental reasons used for not allowing significant fish farming appear to be eroded or inapplicable where there is extensive enhancement.
1.4. Ongoing Review

During 1996, the Salmon Industry Response Cabinet, a body established by the Governor of Alaska, created a hatchery policy group. It was formed to investigate the salmon industry concerns about the possible effect salmon hatchery production was having on salmon markets and to make recommendations to address problems identified during the course of the investigation (McNair 1997).

The recommendations of the hatchery policy group included an examination of the use of audits of hatchery survival rates and techniques, budget forecasting, socio-economic benefit, marketing, cost recovery, self-sufficiency and a benefit-cost analysis. Ways to accomplish this last recommendation are being explored. A further recommendation was that a general review of the salmon hatchery-related statutes and regulations be undertaken to determine their present day relevance and need. Many other recommendations relating to the operation of the regional associations, planning and the loan repayment facility were made (McNair 1997).

1.5. Financial Information Available and Limitations

Each private non-profit hatchery is required to file an annual report with the Alaska Department of Commerce and Economic Development. The form of the report requires considerable financial information about the operation of each of those corporations and in particular a dissection by each hatchery and their other operations. This requirement is found in Alaska Statutes, Title 16, 10.470(b).

The obligation appears to have first been imposed in 1974 and has been the subject of a number of subsequent amendments. Notwithstanding that, compliance with these requirements appears to have been irregular. In many of the earlier years there is no information available on the individual hatchery corporations files with the department and, where it is there, it is sparse. In more recent years the information is usually in the form of a full set of accounts with notes, sometimes accompanied by audit reports. In many of these cases the format suggested by the Department of Commerce and Economic Development is not followed. Accordingly there is no uniformity in the nature or quality of the information.

By approaching the various corporations directly and seeking to fill in the many gaps that exist some further information has been obtained. Notwithstanding these approaches, there remain considerable gaps; accordingly the information presented is incomplete to that extent. In a couple of cases further information was provided on a confidential basis, so it has not been used.

A number of other difficulties were encountered with the information available and other adjustments have been made for the purpose of this exercise. These include:
Some corporations are using an accruals method, whilst others are using a cash basis of accounting. Generally, no attempt has been made to make any adjustments for the difference in approach.

Some corporations initially did not depreciate their plant and equipment.

No separate enhancement information is available for the Sheldon Jackson College. It appears to be included in the overall accounts of the college and could not be separately identified.

Where depreciation has been calculated, it has not always been allocated between hatchery and other operations.

In some accounts, administration costs are separately identified and, where that has occurred, an attempt has been made to allocate those administration costs on a pro rata basis amongst the hatcheries and other special projects.

Administration costs are usually not separated in the case of single hatchery corporations.

Various special projects have been undertaken that involve other forms of enhancement (e.g. lake fertilisation). In some cases those costs are clearly identifiable and have been classified as “other” and excluded from the computations. In other cases, costs attributable to those activities are not always clearly separable.

Interest expense receives differing treatment in the various accounts. Attempts have been made to separately identify an interest expense and exclude it from the overall expenses.

In some cases the interest expense has been accrued, notwithstanding that it may not be payable and may not always be sufficiently identifiable to be excluded.

In many cases the sources of revenue can be separately identified. However occasionally that is not possible, and there may be items of revenue in the “other” item that are more properly to be classified under one of the other headings used.

The value of infrastructure does not always include the land component.

The value of plant and equipment in some cases can be distinguished between special projects, administration and hatchery plant and equipment and in others it cannot.

The enhancement tax and early assessment procedure are regarded as one and excluded.

The financial periods in respect of which the accounts have been prepared vary considerably, not only between the corporations but also in respect of the same corporation over the life of the corporation. In more recent times most appear to be using a 30 June financial year.

No amount has been included for harvest costs where the hatchery is regarded as having a property interest.
The workings are based on information available up to May 1998.

Where there is no information in some intervening years for some corporations an attempt has been made to supplement that missing information by dividing the difference between the two relevant available figures by the number of years involved and using those figures as the steps between those available. This avoids the wild fluctuations that otherwise occur by leaving the missing years out.

The value of the fish in all cases has been ascertained by dividing the cost-recovery fish harvest numbers by the cost-recovery harvest value as provided by the spreadsheets of the Alaska Department of Fish and Game. This may not adequately deal with the proceeds from roe fisheries and may undervalue the fish in other situations.

An attempt has been made to allocate the financial information amongst the various classifications adopted and to adjust it where necessary to fit those classifications. In some cases this may have involved arbitrary adjustments or attributions.

In many cases it was also necessary to identify and dissect the revenue from the various sources and the expenses before interest and tax. Most of these corporations appear to have been accepted by the United States Internal Revenue Service as non-profit organisations for taxation purposes, so matters of taxation are simplified. Interest has been excluded, where possible, consistent with common commercial practice in comparing businesses (i.e. to obtain earnings before interest and tax). This arguably has the effect of understating the cost of the fish produced.

The release and recapture data was provided by the Alaskan Fish and Game Department in two Excel files. Those files are in the same format as published by the Alaskan Fish and Game Department in their annual reports relating to the Alaska fisheries enhancement programme. That information allows a dissection between various uses and between those salmon caught in the common property harvest, those allowed through to spawn and those the subject of hatchery utilisation. The basis on which these figures have been calculated and allocated is to be found in the various reports of the Alaska Department of Fish and Game.

With the financial information and the release and recapture data, a series of Excel spreadsheets have been developed and a number of simple Visual Basic programmes written to facilitate the required adjustments. Some of the release data provided has been extracted from the Excel files provided by the Alaska Department of Fish and Game and allocated to each of the hatcheries releases for each of the years of operation as private non-profit hatcheries. A similar process has also been adopted with the returns. In the case of some hatcheries that were already operating (generally by the state) there are returns for the first year of operation by the private non-profit corporation. This has been allowed to continue on the assumption that the benefit of earlier releases passed effectively with the hatchery; practically it is not possible to dissect and exclude them.
An attempt has also been made to allocate the returns to a likely year of release. The basis on which this has occurred is more fully described in table 1. The return rate by region and species is not available for the private non-profit hatcheries. The foregoing, whilst reflecting the cost of the fish released, does not reflect the harvest cost of the fish assumed to be recaptured. An attempt was made to attribute the operating costs during the relevant period to the fish recaptured. It must be appreciated that many assumptions have been made in doing this. It is primarily based on a review of the timings described for different populations in *Pacific salmon life histories* (Groot & Margolis 1991).

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</tbody>
</table>

2. **Legislative Basis and Administration**

Apart from statutes and regulations of general application including those peculiar to non-profit corporations the following are particularly relevant to the private non-profit hatchery system:

- Alaska Statutes, Title 16. Fish and game;
- Alaska Statutes, Title 43. Revenue and taxation;
- Regulations of the Alaska Department of Fish and Game, Chapters 40 and 93;
- Regulations of the Alaska Board of Fisheries, Chapters 18, 21, 24, 33, 40 and 41;
- Regulations of the Department of Commerce and Economic Development, Title 3 Banking, Securities, Small Loans, and Corporations, Chapters 81 and 89.

Alaska Statutes Title 16 requires fish stocks in the state to be managed consistently with the sustained yield of wild fish stocks and enhanced fish stocks (see later discussion in respect of this). Such management is also to have regard to the requirements of hatcheries for broodstock and selling fish produced by the enhancement project, that are not needed for broodstock, to obtain funds for the conduct of the hatchery (AS 16.05.730).
The enhancement programmes are based on the regions of the state. The Alaskan Fish and Game Commissioner is required to designate such regions for the purposes of salmon production and to ensure the development of a comprehensive salmon plan for each such region. The plan is to provide for both public and private non-profit hatchery facilities. The plan is to be developed by regional planning teams consisting of departmental personnel and appropriately qualified representatives of the regional associations (AS 16.10.375).

The commissioner is also required to assist and encourage the formation of regional associations for the purpose of enhancing salmon production. The associations must be composed of representatives of the region's commercial fishers and other groups interested in fisheries. The board of directors must include no less than one representative of each user group. This includes sports fishers, processors, commercial fishers, subsistence fishers and representatives of local communities. It may include others (AS 16.10.380).

The associations may apply for permits to construct, operate and conduct salmon hatcheries. The regional association must become a non-profit corporation if it wishes to have a preferential right to hatchery sites under the regional salmon plan (AS 16.10.400).

The sitting of the hatchery must be on a freshwater stream whose source's minimum flow exceeds one cubic foot per second. Such a permit may only be issued if the commissioner has classified the stream as suitable for enhancement purposes. This generally requires that there are no substantive natural runs (Snow 1991). Prior to the development of such a plan, the commissioner is restricted in issuing permits, unless satisfied that there is a substantial public benefit in the issue of the permit and it would not jeopardise natural stocks (AS 16.10.400).

The statute also contains some very general provisions relating to the conduct of hearings before the issue of permits, the conditions on which permits may be issued and the alteration, suspension or revocation of permits (AS 16.10.410-430). More of the substantive procedural provisions are found in the regulations.

As to the proprietorship of the released fish, the statute is delightfully obscure. The provision is in the following terms:

Section 16.10.440. Regulations Relating to Released Fish.

(a) Fish released into the natural waters of the state by a hatchery operated under AS 16.10.400-16.10.470 are available to the people for common use and are subject to regulation under applicable law in the same way as fish occurring in their natural state until they return to the specific location designated by the department for harvest by the hatchery operator.

(b) The Board of Fisheries may, after the issuance of a permit by the commissioner, amend by regulation adopted in accordance with AS 44.62 (Administrative Procedure Act), the terms of the permit
relating to the source and number of salmon eggs, the harvest of the fish by hatchery operators, and the specific locations designated by the department for harvest. The Board of Fisheries may not adopt any regulations or take any action regarding the issuance or denial of any permits required in AS 16.10.400-16.10.470.

It will be necessary to return to the meaning of this provision.

The statute contemplates that there will be restrictions on the source and number of salmon eggs taken by the hatchery operators. The direction is that the salmon eggs to be utilised by a hatchery operator must first be taken from stocks native to the area in which the hatchery is located and only from other areas with departmental approval (AS 16.10.445).

The surplus funds from hatchery operation are to be expended on other fisheries activities of the regional associations (AS 16.10.455).

Clearly there was a concern that the hatchery corporations may compete with the fishers, so a provision restricts the hatchery corporations in the selling of their fish, it is in the following terms:

Section 16.10.450. Sale of Salmon and Salmon Eggs: Use of Proceeds; Quality and Price.
(b) Fish returning to hatcheries and sold for human consumption shall be of comparable quality to fish harvested by commercial fisheries in the area and shall be sold at prices commensurate with the current market.

The statute also contains a number of further administrative provisions. It provides for the inspection of hatcheries by the Alaska Department of Fish and Game (AS 16.10.460). The hatcheries are required to file annual reports with that department in connection with the release and recapture of salmon (AS 16.10.470) and, in addition, to file an annual financial report with the Department of Commerce and Economic Development (AS 16.10.470).

The same title, Chapter 10, provides for a fisheries enhancement loan programme. A revolving loan fund is established and provisions relating to the use, distribution, management and repayment of those loans are prescribed (AS 16.10.500–620).

The right to take salmon from special harvest areas is separately regulated in Chapter 43 of the Alaska Statutes, Title 16. In particular, it limits permits to one year only and provides that they are non-transferrable (AS 16.43.400–440). It specifically limits the application of the proceeds of sale, in the following terms:

Section 16.43.420. Disposition of Fish.
Fish caught under the authority of a special harvest area entry permit are the property of the permit holder. The permit holder may sell the fish if the proceeds are used in the manner described in AS 16.10.450.
The regulations of the Alaska Department of Fish and Game governing private non-profit salmon hatcheries set out, as would be expected, the procedure for, the permit application process and the guidelines and procedures regarding the operation of such hatcheries. They deal with such matters as: application assistance, management feasibility analysis, the permit application, the application fee, the acceptance determination, the regional planning team review, additional information requirements, review and approval schedules, completeness determination, public hearings, review and determinations, reconsideration and permanent revocations (5 Alaska Administrative Code 40.100-240).

A series of general regulations deal with the non-transferability of permits, preference rights in respect of potential hatcheries sites, basic management plans, hatchery inspection, annual management plans, notice of permanent alteration, performance review, reporting on mortality, surplus salmon eggs and the exchange of information between government departments (5 AAC 40.800-990).

The waste of salmon is prohibited, but allowance for disposal in certain limited situations includes disposal of salmon carcasses in the case of pink and chum salmon from a roe recovery fishery, undertaken by a hatchery operator (5 ACC 93.310-390).

The Alaska Board of Fisheries regulations also deal with the relevant management plans in respect of the salmon fishery. In some cases they include a value allocation between different types of fishing activity (i.e. seine, hand and power troll and drift gill net) (Chapters 18, 21, 24, and 33).

The regulations of the Alaska Board of Fisheries, however, do restrict the extent to which a private non-profit hatchery may not only take wild fish, but also recover their own fish. The regulations are in Chapter 40 and the most pertinent of them is in the following terms:

5 AAC 40.005. General.
(a) The harvest of salmon inhabiting the water of the state, regardless of whether the salmon are naturally or artificially propagated, may be conducted only pursuant to regulations adopted by the Board of Fisheries.
(b) The harvest of salmon returning to a private nonprofit salmon hatchery will be governed by regulations adopted by the Board of Fisheries. The board will, in its discretion, develop harvesting regulations after review of the harvest plans or other materials, information, and testimony, if any, presented by the regional associations, hatchery operators, the Department of Commerce and Economic Development, the Department of Fish and Game, fishermen, and other interested parties.
(c) Where hatchery returns enter a segregated location near the release site and can be harvested without significantly affecting wild
stocks, a special harvest area may be designated by regulation adopted by the board, within the hatchery permit, or by emergency orders issued by the commissioner.

(d) A private nonprofit hatchery permit holder and his agents, contractees, and employees may harvest salmon for the hatchery only in the applicable special harvest area. This does not prevent a special harvest area from being open to commercial, sport, or subsistence fishing or any combination thereof to the extent provided in regulations adopted and orders issued under this chapter. Harvesting of salmon within the special harvest area, whether by the hatchery operator or the common property fisheries, will be opened and closed by regulation or emergency order.

The regulations in Chapter 41 restrict the transportation, possession and release of live fish transplanted for or cultivated for human consumption or sport fishing purposes or as part of an aquaculture programme for scientific, educational or propagative purposes. The various limitations and restrictions on importation and release are directed at translocations and disease control (5 ACC 41.070-080).

The Department of Commerce and Economic Development regulations detail the fisheries enhancement loans and grants process (3 ACC 81.010-090). A salmon enhancement tax within the range of one to three per cent is authorised on a regional basis. The tax in each case is imposed on a fisher holding a limited entry permit to take fish (AS 16.43).

The scheme of the legislation requires the buyer (processor) to collect the enhancement tax. The tax is only imposed if there is a region designated by the commissioner, there is an association in the region and the regional association approves the imposition of the enhancement tax. For a tax to be imposed, there needs to be a majority vote of the eligible permit holders. In a like manner, the tax may be terminated (AS 43.76.010–040).

As already mentioned, it is the buyer of the fish who is required to collect the enhancement tax at the time of purchase and to remit the total salmon enhancement tax collected during each month to the department. Initially these funds form part of the general funds of the State of Alaska. The state may appropriate these revenues towards the purpose of providing finance for qualified regional associations based on the fisheries resources caught in that region, rather than the value of the fisheries resources sold in that region, if those values differ (AS 43.76.010–040).

The tax however does not apply to the salmon harvested under a special harvest area entry permit. The method of determining the value of the fish and the imposition of the tax is also prescribed by statute (AS 43.76.010–040).

A further tax of one per cent of the value is also imposed for salmon marketing purposes. The buyer who acquires the salmon collects it in a similar manner. Whilst the proceeds of this tax are deposited in the general fund, the legislature
may appropriate the revenue generated by that tax to the Alaska Seafood Marketing Institute for the purpose of supporting the institute’s marketing programme (AS 43.76.110–130).

3. Hatchery Details

From the establishment of the programme up until 1998, forty-one permits were issued for the operation of hatcheries under the private non-profit scheme. Of these, seven were issued to regional associations and three to non-regional corporations for the operation of state hatcheries.

Twenty-eight of the permitted hatcheries were in operation as at May 1998, (McGee 1998, personal communication). In 1983, further legislation was passed permitting the lease, sale or grant of state hatchery facilities to qualified private non-profit hatchery permit holders (Snow 1991). As at May 1998 permits for two additional state-owned hatcheries were pending.

Table 2 sets out details of the private non-profit hatcheries permitted since the inception of the programme:

Table 2
PNP Hatchery Development

<table>
<thead>
<tr>
<th>Hatchery</th>
<th>No.</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bell Island</td>
<td>30</td>
<td>Issued 1990</td>
</tr>
<tr>
<td>Burnett Inlet</td>
<td>5/40</td>
<td>Issued 1976 and closed and reopened under different management 1997</td>
</tr>
<tr>
<td>Burro Creek</td>
<td>12</td>
<td>Issued 1980</td>
</tr>
<tr>
<td>Cannery Creek</td>
<td>26</td>
<td>State constructed 1978, contracted out 1988</td>
</tr>
<tr>
<td>Crittenden Creek</td>
<td>22</td>
<td>Issued 1983 and revoked 1996</td>
</tr>
<tr>
<td>Deer Mountain</td>
<td>37</td>
<td>State constructed 1954 and contracted out 1994</td>
</tr>
<tr>
<td>Eklutna</td>
<td>17</td>
<td>Issued 1982</td>
</tr>
<tr>
<td>Esther</td>
<td>20</td>
<td>Issued 1983</td>
</tr>
<tr>
<td>Favorite Bay</td>
<td>18</td>
<td>Issued 1982 and revoked 1996</td>
</tr>
<tr>
<td>Gastineau</td>
<td>25</td>
<td>Issued 1987</td>
</tr>
</tbody>
</table>

Continued on next Page
<table>
<thead>
<tr>
<th>Hatchery</th>
<th>No.</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulkana</td>
<td>39</td>
<td>State constructed 1973 and contracted out 1991</td>
</tr>
<tr>
<td>Gunnuk Creek</td>
<td>7</td>
<td>Issued 1977</td>
</tr>
<tr>
<td>Haines Projects</td>
<td>34</td>
<td>Issued 1992</td>
</tr>
<tr>
<td>Hidden Falls</td>
<td>28</td>
<td>State constructed 1978, contracted out 1988</td>
</tr>
<tr>
<td>Kitoi Bay</td>
<td>29</td>
<td>State constructed 1953, contracted out 1988</td>
</tr>
<tr>
<td>Klawock</td>
<td>36/38</td>
<td>State constructed 1977, contracted out 1993 and management changed 1995</td>
</tr>
<tr>
<td>Kowee Creek</td>
<td>6</td>
<td>Issued 1976</td>
</tr>
<tr>
<td>Main Bay</td>
<td>31</td>
<td>State constructed 1980 and contracted out 1991</td>
</tr>
<tr>
<td>Medvejie</td>
<td>16</td>
<td>Issued 1981</td>
</tr>
<tr>
<td>Meyers Chuck</td>
<td>10</td>
<td>Issued 1979 and revoked 1992</td>
</tr>
<tr>
<td>Neets Bay</td>
<td>19</td>
<td>Issued 1983</td>
</tr>
<tr>
<td>Perry Island</td>
<td>1</td>
<td>Issued 1975</td>
</tr>
<tr>
<td>Pillar Creek</td>
<td>38</td>
<td>State constructed 1988 and contracted out 1991</td>
</tr>
<tr>
<td>Port Armstrong</td>
<td>13</td>
<td>Issued 1981</td>
</tr>
<tr>
<td>Port Camden</td>
<td>23</td>
<td>Issued 1985</td>
</tr>
<tr>
<td>Port Graham</td>
<td>33</td>
<td>Issued 1992</td>
</tr>
<tr>
<td>Port San Juan</td>
<td>2</td>
<td>Issued 1975</td>
</tr>
<tr>
<td>Salmon Creek</td>
<td>9</td>
<td>Issued 1979 and revoked 1981</td>
</tr>
<tr>
<td>Salmon Creek</td>
<td>14</td>
<td>Issued 1981 and revoked 1988</td>
</tr>
<tr>
<td>Sandy Bay</td>
<td>4</td>
<td>Issued 1975 and revoked 1988</td>
</tr>
<tr>
<td>Santa Anna</td>
<td>21</td>
<td>Issued 1984 and revoked 1996</td>
</tr>
<tr>
<td>Sheep Creek</td>
<td>11</td>
<td>Issued 1979</td>
</tr>
<tr>
<td>Sheldon Jackson</td>
<td>3</td>
<td>Issued 1975</td>
</tr>
<tr>
<td>Snettisham</td>
<td>39</td>
<td>State constructed 1979 and contracted out 1996</td>
</tr>
<tr>
<td>Solomon Gulch</td>
<td>15</td>
<td>Issued 1981</td>
</tr>
<tr>
<td>Trail Lakes</td>
<td>27</td>
<td>State constructed 1981 and contracted out 1988</td>
</tr>
</tbody>
</table>

Continued on next Page
Table 2—Continued

<table>
<thead>
<tr>
<th>Hatchery</th>
<th>No.</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutka</td>
<td>32</td>
<td>State constructed 1975, contracted out 1991 but PNP permit issued 1994</td>
</tr>
<tr>
<td>Whitman Lake</td>
<td>8</td>
<td>Constructed 1978</td>
</tr>
</tbody>
</table>

4. Regional Associations

As contemplated by the Alaska statutes the commissioner divided the state into a number of regions. Those regions are the Southeast, Prince William Sound, Cook Inlet, Arctic-Yukon-Kuskokwim and Kodiak/Chignik/Alaska Peninsula regions. The Southeast region is further divided into the northern and southern areas, with two regional aquaculture associations.

Within those regions the following aquaculture associations have been established:

- Kodiak Regional Aquaculture Association Inc;
- Chignik Regional Aquaculture Association;
- Prince William Sound Aquaculture Corporation;
- Cook Inlet Aquaculture Association;
- Southern Southeast Regional Aquaculture Association, Inc;
- Northern Southeast Regional Aquaculture Association, Inc.

As will become apparent from the further discussion and as is to be expected, commercial fishers dominate these corporations. So far private non-profit hatcheries have not been established in the Arctic-Yukon-Kuskokwim, and Alaska Peninsula areas.

4.1. Membership

The constitution and by-laws of only two of the regional associations in fact provide for members. They are the Kodiak Regional Aquaculture Association Inc and the Chignik Regional Aquaculture Association. The rules of both of these corporations are in similar terms.

The membership of the corporation is to consist of representatives of commercial fishers, subsistence fishers, seafood processors and other parties interested in enhancement activities. The Chignik Regional Aquaculture Association also specifically contemplates representatives from sports fishers, local governments and local native corporations.

The other regional associations do not provide for membership or corporators.
4.2. Boards

Commercial fishers dominate the board of each of the regional associations based on the provisions of the respective constitutions. The constitution and by-laws prescribe (as at June 1998), in each case, the number of commercial fishers to be on the board and distribute the seats generally between seiners and gill-netters. In some cases trollers also have specific representation. Each also makes provision for other forms of representation. Table 3 summarises the position in each of the regional associations.

Table 3
Composition of Board of Directors

<table>
<thead>
<tr>
<th>Regional Association</th>
<th>Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cook Inlet Aquaculture Association</td>
<td>Not less than 7 nor more than 29. Not less than fifty-one per cent to consist of commercial salmon fishers holding a valid limited entry permit. Some to be nominated by commercial fishing organisations and five elected at large. Other users permitted to select a director.</td>
</tr>
<tr>
<td>Kodiak Regional Aquaculture Association, Inc.</td>
<td>Not less than 9 or more than 15. Not less than sixty per cent to be representatives of commercial fishers. Three to be elected by purse seiners, one by beach seiners and one by setnetters. One by the United Fishermen's Marketing Association, Inc. Others as solicited by the board from other groups affected by enhancement such as sport, subsistence, seafood processors, etc.</td>
</tr>
<tr>
<td>Prince William Sound Aquaculture Corporation</td>
<td>Not more than forty-five. With 27 Area E commercial salmon entry permit holders comprising 13 seiners, 13 drift gillnetters and one set gillnetter. Also 18 non-permit holders with not less than one for each of regional and village native corporations, municipal corporations, seafood processors, sports associations and up to four with aquaculture knowledge.</td>
</tr>
</tbody>
</table>

*Continued on next Page*
### Table 3 — Continued

<table>
<thead>
<tr>
<th>Regional Association</th>
<th>Directors</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northern Southeast Regional Aquaculture Association, Inc.</strong></td>
<td>Not less than 9 or more than 75. Not less than fifty one per cent to consist of bona fide commercial salmon fishers divided amongst seiners, trollers and gillnetters. Others to be solicited by the board from other groups directly affected by the salmon industry including regional and village native corporations, municipal corporations, seafood processors, sports associations, subsistence fishers and persons with aquaculture knowledge.</td>
</tr>
<tr>
<td><strong>Southern Southeast Regional Aquaculture Association, Inc.</strong></td>
<td>Not less than 15 or more than 21. Thirteen at least to consist of bona fide commercial fishers including four seiners, four power trollers, four gillnetters and one hand troller. Others to be representative of groups directly affected by the salmon industry including one from subsistence fishers, one from sports organisations, one from regional and village native corporations, one from municipal corporations, one from the Chamber of Commerce, one from salmon processors and two from the community at large.</td>
</tr>
<tr>
<td><strong>Chignik Regional Aquaculture Association</strong></td>
<td>The board is to consist of 11 members. Fifty-one per cent to consist of bona fide holders of Alaska Commercial Fisheries Entry Commission Chignik Salmon Purse Seine permit. One from each of local city or village council governments, the regional and village native corporations, the subsistence users, the seafood processors and the sport fishers.</td>
</tr>
</tbody>
</table>

### 4.3. State Supervision

The state has a very limited direct supervisory role of the operations of the regional associations. However, it can achieve a level of control through a number of mechanisms.

In the first instance the issue of a permit and the conditions attached can allow for a level of control. The annual reporting requirements enable the state to monitor
aspects of the activities of the regional associations. The extent to which that occurs is not apparent, though the lack of returns available for many years would suggest that monitoring based on that information was not undertaken.

The hatchery operations are to be undertaken in accordance with the basic management plan approved by the commissioner at the time of the issue of the permit. Thereafter the regional associations are required to provide annual management plans and to conduct the hatcheries in accordance with such plans.

Ultimately if the operator of the hatchery fails to perform according to the conditions under which the permit was granted, then the permit may be altered, suspended or revoked in accordance with the statute.

The operations of the hatchery must be also undertaken in accordance with the salmon management plan for the respective area.

The other area in which the state achieves a level of control in many cases is through funding. The state has provided significant loans to many of the hatcheries (see later in this appendix).

5. Non-Regional Corporation Structure

In the late 1990s there were 11 non-regional corporations with permits to operate hatcheries. One corporation has not been included in the computations. Little information is available about it.

This group of non-regional corporations can be split into two further groups. One of the sub-groups comprises various community organisations ranging from local government bodies, regional progress associations, tribal corporations and one college of advanced education. The other sub-group is sometimes called "mom and pop operations". In some cases the operations are somewhat wider than strictly family operations.

The nature of those operations has been characterised, from the little information that is available from public records, in table 4.

Table 4
Nature of the Non-Regional Corporations

<table>
<thead>
<tr>
<th>Name</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Aquaculture Corp</td>
<td>Little available information.</td>
</tr>
</tbody>
</table>

Continued on next Page
Table 6 - Continued

<table>
<thead>
<tr>
<th>Name</th>
<th>Nature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burro Creek Farms</td>
<td>Appears to be a true “mom and pop” operation as all the current directors are from the same family. Incorporated in 1978.</td>
</tr>
<tr>
<td>Chignik Regional Aquaculture Association</td>
<td>Little available information.</td>
</tr>
<tr>
<td>Douglas Island Pink and Chum, Inc</td>
<td>Appears to have a wide base for its support with 27 directors. No other indications apart from size of operation, which is significant. Incorporated in 1977.</td>
</tr>
<tr>
<td>Kake Non Profit Fisheries Corporation</td>
<td>Appears to be a corporation established under the auspices of a municipal authority. Initial loans from the City of Kake and Kake Tribal Hatchery Corporation. Incorporated 1977.</td>
</tr>
<tr>
<td>Ketchikan Tribal Hatchery Corp</td>
<td>A corporation established by the Ketchikan Indian Corporation. Incorporated in 1994.</td>
</tr>
<tr>
<td>NERKA, Inc</td>
<td>Difficult to determine nature of the corporation and its date of incorporation.</td>
</tr>
<tr>
<td>Port Graham Hatchery Corporation</td>
<td>Appears to be a regional development body. Incorporated in 1985.</td>
</tr>
<tr>
<td>Prince of Wales Hatchery Association</td>
<td>Appears to have some association with City of Craig. No other indication. Incorporated 1996.</td>
</tr>
<tr>
<td>Sheldon Jackson College</td>
<td>Operates an apparently sizeable hatchery operation as part of a training course. No indication as to value etc.</td>
</tr>
<tr>
<td>Valdez Fisheries Development Association</td>
<td>No indication as to basis of establishment. Incorporated in 1980.</td>
</tr>
</tbody>
</table>
Many of these non-regional corporations appear to be dominated by commercial fishers, based on the occupations of the directors in the returns filed.

6. Funding

6.1. State and Private Loan Funding

As the private non-profit hatchery programme developed, the initial expectations of private funding for the establishment and the combination of enhancement tax and fish sale revenue for operations were found to be inadequate. The legislature therefore established a fund for this purpose in 1975, with funds for the construction of private non-profit hatcheries in the form of state loans (Snow 1991).

In 1977 a revolving loan fund within the Department of Commerce and Economic Development was established to ensure that further funds were available (Snow 1991). The extent of the borrowing by the corporations in the programme from the state is detailed in figure 2.

Figure 2. Amount of State Loans to Corporations in the Programme

The extent of state financing as a percentage of the total financing to all corporations in the programme can also be seen in figure 3. It highlights the reliance on state loans, which rarely constitute less than 90 per cent of the total loan funds (there are particular inadequacies in the 1983 information).
The extent of state financing of the non-regional associations as a percentage of the total financing to all corporations in the programme can also be seen in figure 4 (there are particular inadequacies in the 1983 information also used in this figure.).

Figure 3. State Funding as a Percentage of Financing from the State

Figure 4 highlights an increased reliance on state loans by all corporations, which climbed to 90 per cent of the total loan funds by 1996, and a retreat of private funding.

Figure 4. Percentage of Total Funding to Non-Regional Corporations
6.2. Regional Association Recurrent Funding

The regional associations were authorised by legislation in 1976 to assess a fisheries enhancement tax. In 1980 the method of imposing salmon enhancement taxes on fishers was refined as a consequence of legal proceedings challenging the constitutional validity of the assessment system (Snow 1991).

The source of operating funds for most of the corporations in the programme, as originally envisaged, is some combination of the enhancement tax, sales of fish taken for the purpose of cost recovery, a roe fishery, occasionally interest and other items. The other items can quite often include grants, contracts for other enhancement activities and occasionally donations.

The regional associations are the only recipients of the enhancement tax. The total from all sources during the period 1975-1997 can be seen in table 5.

Table 5 includes a number of adjustments to deal with missing information. It may not therefore reflect the actual amounts. Further, the value of fish is taken to be the average achieved per species by the hatchery (where possible it is the actual amount but in some years it is taken from a common year where it is not otherwise available). Failing that, the price and average size for the region is taken from the Alaska Fish and Game Department reports.

Table 5
Regional Association Source of Revenue (1975-1997)

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>Amount USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancement tax received</td>
<td>79,025,000</td>
</tr>
<tr>
<td>Terminal fish revenue</td>
<td>67,769,890</td>
</tr>
<tr>
<td>Grants</td>
<td>11,905,066</td>
</tr>
<tr>
<td>Interest</td>
<td>8,103,499</td>
</tr>
<tr>
<td>Other</td>
<td>9,547,200</td>
</tr>
</tbody>
</table>

Figure 5 depicts the revenue from the various sources over the history of the regional corporations and the significance of the enhancement tax.

Figure 5 depicts the revenue from the various sources in USD millions and figure 6 as a percentage of the total annual revenue over the history of the regional associations. The significance of the enhancement tax can again be seen.
The regional associations dominate this programme. Until very recently they derived in excess of ninety per cent of the revenue of the industry. The revenue of the regional associations (excluding the enhancement tax), as a percentage of
the total revenue of the corporations in the programme is described in figure 7. In the latter few years it appears to be declining, but that is partly attributable to a lack of figures from the Prince William Sound Aquaculture Corporation in each of 1995, 1996 and 1997.

Figure 7. Regional Association Proportion of Revenue

Figure 8 depicts the historical cost of the property used by the regional corporations (after depreciation) (excluding that leased from the state) as a percentage of all total property of the corporations in the programme.

Figure 8 further highlights the dominance of the Regional Corporations, though declining.
6.3. Non-Regional Corporations

In respect of operating revenue, the non-regional corporations' sources of funds are generally the same as the regional associations, save that they do not receive any part of the enhancement tax. The revenue of the non-regional corporations over the period in the programme has been very small, as described in figure 9.

![Figure 9. Non-Regional Corporations' Total Revenue](image)

6.4. Total Property Employed by all Corporations

Figure 10 depicts the historical cost of the property used by all corporations in the programme (both before and after depreciation).

![Figure 10. Property Employed in PNP Corporation Hatcheries](image)
The historical cost of the property used by all corporations in the programme (both before and after depreciation) is significant and in the late 1980s grew quickly, as can be seen in figure 9. It represents a significant investment in this method of endeavouring to maintain adequate stocks of Pacific salmon.

6.5. Other Financial Benefits

In 1979 legislation was enacted authorising the issue of special harvest area entry permits to private non-profit hatchery operators. Prior to this, the private non-profit hatchery operators were not allowed to harvest their own broodstock or cost-recovery fish. They engaged appropriately licensed fishers to harvest these fish (Snow 1991) and incurred this expense.

The annual value (based on prevailing prices) of that broodstock is depicted in figure 11 and totals USD32,186,205 and the annual number taken for broodstock is in figure 12 and totals 22,705,605 fish.

The right to take the broodstock from the fishery without cost is another indirect source of revenue (i.e. cost saving). It is not reported as an expense by the corporations in their accounts nor considered as such in this appendix.

6.6. Some Significant Features

The private non-profit hatchery programme has over its life released a very significant number of salmon into the waters of Alaska. A summary of aspects of those releases is to be found in table 6 and figures 13 and 14.

Table 6 shows that in the period between 1975-1997 in excess of 13.9 billion salmon have been released under this programme.
Table 6
Release by PNP Hatcheries (1975-1997)

<table>
<thead>
<tr>
<th>Species</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pink</td>
<td>9,381</td>
</tr>
<tr>
<td>Chum</td>
<td>4,145</td>
</tr>
<tr>
<td>Coho</td>
<td>136</td>
</tr>
<tr>
<td>Chinook</td>
<td>52</td>
</tr>
<tr>
<td>Sockeye</td>
<td>188</td>
</tr>
</tbody>
</table>

Figures 13 and 14 depict annual release by species and show a very significant increase in the number of fish being released in 1988 and subsequent years, consistent with the increased investment in the property of those corporations in that period.

Of the regions, the corporations in Prince William Sound have released 43 per cent of the total releases, followed by those in the Northern Southeast region, which have released 28 per cent of the total releases.

Figure 15 depicts the percentage release by region.
Figures 16 to 20 depict the percentage release by species in each region.
Figure 17. South Southeast Species Releases

Figure 18. North Southeast Species Releases
Figure 19. Cook Inlet Species Releases

- Pink
- Chum
- Coho
- Chinook
- Sockeye

Figure 20. Kodiak Species Releases

- Pink
- Chum
- Coho
- Chinook
- Sockeye
The annual returns over the same period by species are set out in figures 21 to 24.
As will be seen from table 6, pink and chum salmon make up the bulk of the releases, constituting 97 per cent. In Cook Inlet and Kodiak, however, releases of sockeye constitute 55 per cent and 29 per cent respectively.

The annual returns in figures 21 and 23 are allocated between the fish attributed to the common property fishery, broodstock, cost recovery and those allowed through to spawn (i.e. they are not recaptured). An attempt has been made to
place a total value on the fish returning by species in figures 22 and 24. No attempt has, however, been made to deflate the values in those figures by reference to any form of price index. The value that has been attributed to these returns has been ascertained in the manner described above.

The total enhancement tax (including assessments collected by the associations prior to the challenge to that procedure) paid to the regional associations during this period on the salmon caught in their regions amounted to USD79,025,000 in total. The amounts paid in total and by regions by year are depicted in figure 24.

![Figure 24. Enhancement Tax Paid to Regional Associations](image)

6.7. Cost of Releases

At various points in the thesis and these appendices the possibility of undertaking sea ranching as an alternative to net pen aquaculture is mentioned. One of the perceived advantages of sea ranching is that the fish are released at a suitable age to grow on naturally available feeds. The rancher is freed of the cost and expense of maintaining the fish during this growth phase and most importantly providing the feed for the fish. The costs of the sea rancher therefore occur during the hatchery stage prior to release and during recapture.

An attempt to determine the cost of the salmon in the year of release has also been undertaken. This effectively attributes the total hatchery costs and in some cases a proportion of the administration costs to the releases in that year. It ignores the fact that the growth of fish released may have straddled two financial years. It
assumes that all fish are released effectively within twelve months and the same cycle is effectively adopted in each year.

Another shortcoming of this approach is that it assumes that there are no significant changes in the size or methods of production from year to year, which is obviously not the case. There are also distortions caused by small numbers in start-up years. Some hatcheries may produce more of a species that is difficult to raise. Notwithstanding those shortcomings, the method at least provides some indication as to the likely cost of the fish released. It requires further review and upgrading to be meaningful.

Table 7 describes the incidence of those costs within monetary ranges over the whole period. Whilst attempts have been made to undertake the calculations by hatchery, it currently appears that there are too many distortions to rely on that. So the following table is based on the corporation information. It will be appreciated that with such large numbers of fish being released the price per release can be very small. Effectively, 47 per cent of the fish recovered cost less than a one USD and 81 per cent less than five USD, where information is available.

Table 7
Cost of Releases

<table>
<thead>
<tr>
<th>Range USD</th>
<th>Number</th>
<th>Percentage of All</th>
<th>Effective Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>insufficient information</td>
<td>569</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>0–1</td>
<td>56</td>
<td>8</td>
<td>47</td>
</tr>
<tr>
<td>1–5</td>
<td>41</td>
<td>6</td>
<td>34</td>
</tr>
<tr>
<td>5–500</td>
<td>22</td>
<td>3</td>
<td>19</td>
</tr>
</tbody>
</table>

The foregoing, whilst reflecting the cost of the fish released, does not reflect the cost of the fish recaptured. To do the latter, some attempt must be made to attribute the operating costs during the relevant period to the fish recaptured. Whilst returns to specific hatcheries and different species will vary very considerably, an attempt has been made to attribute to the recaptured fish a time of release and a cost of production in that period. It must be appreciated that, in doing so, many assumptions have been made and the results are accordingly very approximate.

The assumptions used in allocating a time of return of the released fish by species are set out in table 1. Further, a number of other distortions arise by reason of the fish having been released in years prior to the operation of a hatchery by the private non-profit corporation (e.g. where the hatchery has been transferred from the state to a private non-profit corporation). So far no attempt has been made to deal with that particular situation, save to exclude attributing any returns to years prior to the commencement of the operation of the hatchery by the corporation. Again, the analysis is at corporation level rather than the hatchery level and again
it must be taken to provide an indication only; it also requires considerable further review and refinement to be more meaningful.

Table 8 also suggests that the cost of 64 per cent of the returning fish is less than five USD with the cost of 32 per cent being in the range of five USD to two hundred and fifty USD.

Table 8  
Cost of Returns

<table>
<thead>
<tr>
<th>Range USD</th>
<th>Number</th>
<th>Percentage of All</th>
<th>Effective Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>insufficient information</td>
<td>582</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>0 – 5</td>
<td>68</td>
<td>10</td>
<td>64</td>
</tr>
<tr>
<td>5 – 250</td>
<td>34</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>250 – 500</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

6.8. Financial Comparison of Approaches

The financial information that has been collated can also be used for a further comparison of two different situations considered in the thesis and these appendices. One considers the financial position in each year of each of the private non-profit hatchery corporations on the basis that they were absolutely entitled to all returning fish; they may be regarded as *domitae naturae* or *ferae naturae per industriam*. The other possibility assumes a royalty system is in operation, as already described, and seeks to identify the proportion of the catch required to give a return of 12 per cent of the value of the property employed by the corporations after allowing for all expenses. It does not seek to identify the royalty rate required in each year by each hatchery to achieve that return. Though that could be undertaken, it was unnecessary for the simple comparison sought in this exercise. In each case the enhancement tax revenue of the regional associations and all grants are excluded from the revenue. Interest revenue is not excluded. The price used for the fish is calculated in the same manner as already described. Another inadequacy of the calculations, as mentioned, is that the harvesting and processing costs of these additional fish is not allowed for in the costs. Considerable further work is required to refine this analysis and the results are intended to be indicative only.

The calculation results in three different situations. The first is where the financial result of a corporation in a financial year exceeds the financial position of the corporation entitled to recover all returning fish or receiving a royalty. The second situation is where in the particular financial year the financial position on a full recovery of returning fish exceeds the actual operating costs and the royalty basis. The third is where the expenses plus a 12 per cent return can be achieved and some amount remains from the value of the total returns of the hatchery releases (i.e. there is something left for the common property fishery).
Table 9 sets out the results of that analysis of the first two propositions. It shows that in approximately 69 per cent of the situations the private non-profit hatchery corporations would have been better off if they were entitled to exclusively recover the released fish including those harvested in the common property fishery.

Table 9
Comparison of Results Under Different Property Regimes

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate Information</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>Actual Results Highest</td>
<td>55</td>
<td>31</td>
</tr>
<tr>
<td>Property Rights Highest</td>
<td>122</td>
<td>69</td>
</tr>
</tbody>
</table>

In respect of the third proposition it was found that in the 132 situations for which there is a result, the required return would have required in excess of 75 per cent of the returning fish on 77 per cent of the occasions. This would suggest that a simple royalty system based solely on the returning fish would need to be very high, leaving minimal remaining value for the fishers. This situation is likely to be unacceptable to the fishers. It also would be very difficult to set a suitable royalty in advance.

The foregoing does not take account of the economic and social consequences of fishers being denied access to those fish. On the other hand, the fish would still require harvesting, so to that extent there would be a utilisation of some of the existing fishing capacity. Further analysis is required to assess what effect this would have in the community and whether it gives rise to increased efficiency in the utilisation of the commercial fishing resources. It has also been assumed that the price realised for the fish is the average price realised by the hatchery. There are indications that better prices would be achieved by the hatchery if the fish could be taken at an earlier stage. This does not occur because the hatchery is limited to the terminal fishery.

7. Property in Fish at Sea

Earlier in this appendix, the legislative requirement that hatchery fish form part of the common property fishery is set out. A memorandum to Senator Dick Eliason from George Utermohle, the Legislative Counsel of the Legislative Affairs Agency of the State of Alaska, provided advice as to the status of the hatchery-released fish. Utermohle indicated: "providing that hatchery fish are available for common use neither implies state ownership of the hatchery fish nor entails a concomitant responsibility to manage hatchery fish for sustained yield" and further "this language does not say that hatchery fish are a common property resource belonging to the state, but only that they are to be treated as though they were a common property resource until they return to the designated location, at
which time the fish become subject to private use by the hatchery" (Utermohle 1991).

Another lawyer in Alaska who was asked to comment on that advice did not share this view. A further lawyer also considered the matter, and whilst not finally deciding, appears to have had similar reservations. As already discussed, the legislature amended the legislation to provide for the management of both the wild and hatchery stocks. It did not clarify the status of the ownership of the hatchery fish. In those jurisdictions where there are constitutional provisions protecting a person from expropriation of property without just compensation, a provision appropriating the property of a hatchery for the benefit of the people of the state may find that the legislation is ineffective or the state incurs an obligation to pay compensation.

Another example of the significance of determining the status of the property in such fish is highlighted by the practice of two of the non regional association corporations of including a percentage of the fish at sea in their accounts. No adequate explanation or justification for doing so is provided. Without this asset, there would appear to be a considerable deficiency in assets of the corporations on their balance sheet (based on historical costs).

The foregoing highlights, in a practical manner, the importance of determining and clarifying the property rights of persons releasing fish in the sea either as part of a state-sponsored enhancement programme or as part of any sea ranching activity.
Appendix Five

Private and Public Fisheries

1. Changing Nature of Public Fisheries

Until very recently the status and nature of fish and the rules applicable to them have generally been considered in a hunting environment, usually in the context of fishing in tidal waters. In the context of the thesis, “tidal waters” follows the scientific view; the expression extends to open waters, waters where the tide ebbs and flows; it is concerned with both the lateral and vertical flow (Ingram v Percival, [1969] Q.B. 548 recognised that in the particular case it was limited to such waters as constituted territorial waters, for the purposes of the statute under consideration). Accordingly, in the following discussion, fishing is discussed in the context of tidal waters, though in this context in Canada, it may extend to non-tidal navigable waters (see the discussion in section 16.3 of the thesis). Occasionally, the discussion will relate to the decisions dealing with fish in ponds and stews or other private waters, but they are few.

Fishing is regarded as merely a particular form of occupancy of *ferae naturae* (i.e. a *res nullius*). Some of the rules relating to fishing have developed differently from the rules relating to hunting, though generally starting from the same base. There has been considerable legislation in England over the centuries directed at conservation, in the form of closed seasons and gear restrictions. Magna Carta introduced possibly the earliest form of gear restriction when it required the removal of fishing weirs.

The regulation of access to fisheries in tidal waters has a very long history clearly predating Magna Carta. The nature and extent of such rights and how they arose is unknown, but they are most likely attributable to ownership or dominion of the soil over which they flowed (Moore & Moore 1903; Fenn 1926). After Magna Carta, further grants were curtailed and it was regarded as a common right in all the subjects of the Crown to fish, subject to any legislative restriction (Harper v Minister for Sea Fisheries, (1989) 168 C.L.R. 314).

In the reign of the Stuarts various proposals were put forward for the licensing of foreign fishers in waters adjacent to the United Kingdom as a means of limiting and controlling their activities (Fulton 1911). Unlike that proposal, many of the more modern early licensing regimes were not directed at limiting entry, but usually raising revenue to assist in defraying the costs of the administration of conservation and data collection systems established in the jurisdictions. It is only much more recently, in many fisheries, that licensing has been used as a tool to limit the right to fish for commercial gain. In doing so, it has created, in an economic sense, a proprietary interest in the fisheries. The individual transferable quota has taken this even further; it is intended to do so (Munro & Neher 1995).
These rights are now regarded as property in themselves. They may be traded in most cases, they may be the subject of trusts (Pennington v McGovern, (1987) 45 S.A.S.R. 27) and they are taxed much like any other form of property (Austell Pty Ltd v Commissioner of State Taxation (W.A.), (1989) 20 A.T.R. 1139).

So the community resource has become the exclusive resource of a few, subject to a few qualifications (permitted limited sports or recreational catches and by-catch). The state enforces the right of exclusive possession or occupation for the benefit of those licensed and for the conservation of the resource. It is a right or interest that depends on the enforcement of the criminal sanctions. It is not a right to occupy or possess a particular tangible asset. It is a right to exploit an intangible and reduce the fish into possession. In this situation the right of the community to fish is limited. At some point in this progression, the fish of a particular fishery become the de facto or economic property of those licensed (though normally not the legal property until taken). Those few are the only persons permitted by the law to take fish for commercial purposes.

The exploitation of a resource of the sea has been handed to a group of persons, in most cases without any form of significant payment to the state on behalf of the community. In this situation it would appear to be far more difficult to resist the claims of sea ranchers to be permitted to have full property rights, possibly subject to the community being entitled to limited rights to take fish released and indistinguishable as part of the sports or recreational fisheries. It ceases to be an issue of the exploitation of a common resource freely utilised by all. It becomes a competition between two different commercial groups as to the appropriate commercial exploitation of a resource, namely the use of the sea and the provision of benefits to the community. Consistent with this approach and subject to the ecological aspects addressed elsewhere in the thesis (see section seventeen of the thesis), there appears to be no reason why sea ranchers should not be afforded equal rights to utilise the common resource, the sea.

2. Public and Private Fisheries

There are many and various expressions used to describe fisheries in the cases and the commentaries and much dispute about their use. They include a fishery by virtue of the ownership of the soil, a several fishery, a free fishery, a common of fishery and a fishery in gross (Chitty 1812; Moore & Moore 1903). A fishery by virtue of the ownership of the soil is clearly one issuing out of the soil. A several fishery is an exclusive right of fishing in the soil of another. A free fishery is the subject of much contradiction. It may be described as the exclusive right of fishing in a public river, and is different from a several fishery, because the owner of the free fishery need not be the owner of the soil. A common of fishery or fishery in gross is a liberty of fishing in common with others in a stream or river when the soil of the river is in the ownership of another (Chitty 1812).
On the basis of the discussion in Moore and Moore (1903) and Chitty (1812) a several and free fishery are the same, whilst a fishery in gross may be more properly referred to as a several fishery or common of fishery. Moore and Moore (1903) divided fisheries into two classes, namely exclusive and non-exclusive fisheries. This discussion has divided them in a slightly different manner, namely public and private fisheries; it follows the division of Chitty (1812). The difference in the classification will result in a common of fishery being classified as a private fishery rather than a non-exclusive fishery, a common of fishery being the right of the owners of the respective halves of the bed of the river adjoining their land (the application of the *ad medium filum* rule) to fish in common the whole river rather than being limited to their respective halves.

The right of fishing was originally vested in the Crown in the same manner as the right of depasturing was originally lodged in the owner of the waste of which the Crown was lord (*Attorney-General for British Columbia v Attorney-General for Canada*, [1914] A.C. 153). The owner of land, including where the tide flows and refloows, has the right to fish in the water over which the tide flows, whether it is the Crown or a private individual. It is a principle of general application (*Attorney-General for British Columbia v Attorney-General for Canada*). But in the case of tidal waters the exclusive character of the title of the Crown is qualified by the prima facie right in the public to fish (*Attorney-General for British Columbia v Attorney-General for Canada*). This view was affirmed by Brennan J. (as he then was) of the High Court of Australia, in *Harper v Minister for Sea Fisheries* (1989) 168 C.L.R. 314, 329-330 in the following terms:

*Accordingly, the right of the owner of the soil over which the waters flow (whether the owner be the Crown or not) to enjoy the exclusive right of fishing in those waters or to grant such a right to another as a profit a prendre is qualified by the paramount right to fish vested in the public: see *Attorney-General for British Columbia v. Attorney-General for Canada*, at pp 167-168. In *Malcomson v. O'Dea* (1863) 10 HL Cas 593, at p 618 (11 ER 1155, at pp 1165-1166), it was held that, after Magna Charta, the Crown, in whom the title to the bed of tidal navigable rivers was vested, was precluded from granting a private right of fishery, the right of fishery being in the public. The law so stated was followed in *Neill v. Duke of Devonshire* (1882) 8 App Cas 135, at pp 138-139, 178, 179. And in *Fitzhardinge (Lord) v. Purcell* (1908) 2 Ch 139, although Parker J. held that the Crown might grant title to the bed of the sea or of a tidal navigable river to a subject, his Lordship held that no such grant can operate to the detriment of the public right of fishing (at pp 166-167). The existence of a public right to fish in tidal waters was accepted by Stephen and Jacobs JJ. in *New South Wales v. The Commonwealth (Seas and Submerged Lands Case)* (1975) 135 CLR 337, at pp 419, 421, 423, 489. But the right of fishing in the sea and in tidal navigable rivers, being a public not a proprietary right, is freely amenable to abrogation or regulation by a competent legislature: see *Attorney-General for British Columbia v. Attorney-General for Canada*, at pp 170, 172; *Attorney-General for Canada v. Attorney-General for Quebec* (1921) 1
AC 413, at pp 421-422, 427. Although there is authority for the view that the public right of fishing is sustained by the Crown’s title to the sub-soil (Mayor, &c. of Carlisle v. Graham (1869) LR 4 Exch 361, at pp 367-368) the competence of a State legislature to make laws regulating a right of fishing in such waters is not dependent upon the State’s possession of a proprietary right in the bed of the seas or rivers over which such waters flow. Lord Herschell pointed out that “there is a broad distinction between proprietary rights and legislative jurisdiction”: Attorney-General for the Dominion of Canada v. Attorneys-General for the Provinces of Ontario, Quebec, and Nova Scotia (1898) AC 700, at p 709.

2.1. Public Fisheries

Similar to many aspects of the law relating to the ownership of animals, the rights of the subject to fish in tidal waters and any prerogatives of the Crown in this respect are clearly lost in antiquity. One suggestion is that prior to the Conquest, except possibly in respect of royal fish, no franchises existed, whether in tidal or non-tidal waters. It was with the Conquest that the idea was brought to England that the right to fish in tidal waters was part of the prerogatives. By the time of the reign of Henry II the prerogative had been extensively exercised (Moore & Moore 1903; also see Fenn 1926; Fulton 1911).

There is considerable controversy as to how and when the rights of the Crown were curtailed and the public right to fish clearly established or re-established. Moore and Moore (1903) suggest that Magna Carta does not prevent the creation of several fisheries by the Crown nor the preservation of a general right in the public to fish in tidal waters. It is difficult to find in any of Chapters 16, 23 or 26 of Magna Carta that such prohibitions or rights are dealt with. Support for this view can be found in the speech of Lord Blackburn in Neill v Duke of Devonshire, (1882) 8 A.C. 179, where his lordship comments on Lord Hale’s De jure maris (Hale n.d.) and notes that Lord Hale speaks in the present tense of the king having the right of fishing in tidal waters and having power to grant fisheries, and doubts whether Chapter 16 of Magna Carta had any effect in preventing the “putting of rivers” in defence. This expression was used to refer to the Crown denying the public the right to fish in an area and placing the fishery under private ownership or control. This is a possible misnomer, for as His Lordship further suggests Chapter 16 of Magna Carta did no more than restrain the writ De defensione ripariae. That is, it forbade persons from approaching the banks of rivers whether tidal or not, when the king was about to visit, so that the king might engage in fowling and fishing.

The modern judicial view, since Malcolmson v O'Dea, (1863) 10 H.L. 593, 11 E.R. 1155 is that the privileges of the Crown were curtailed by Magna Carta and thereafter subject to legislative restriction and some privileged areas. The right to fish is exercisable by every subject as of common right (Malcolmson v O'Dea; Neill v Duke of Devonshire; Attorney-General for British Columbia v Attorney-
This principle extends to the fisheries of a river to the extent that it is navigable and the sea flows and reflows (The Case of the Royal Piscary of Banne, Carter v Murcot, (1768) 4 Burr. 2162, 98 E.R. 127; Attorney-General for British Columbia v Attorney-General for Canada; Harper v Minister for Sea Fisheries). In Canada the common right may extend to fish in non-navigable rivers, the soil of which is in the Crown, though that does not mean that the fish are jura regalia (Attorney-General for British Columbia v Attorney-General for Canada, Idington, J.), as discussed shortly.

A person claiming a right to fish exclusively in the sea or to exclude another must prove the grant of this privilege or the prescriptive right or quo warranto (or now an action in the nature of quo warranto) may be brought to test the title and the validity of the grant (Warren v Mathews, (1703) 6 Mod. 73, 87 E.R. 831). In some cases there may be special restraints or rights (Lord Fitzwalter's Case, (1672) 1 Mod. 106, 86 E.R. 766). In much the same way as there may be a prescriptive right in a subject to a several fishery in an arm of the sea, one may subsist in a tidal river (Lord Fitzwalter's Case; Mayor of Orford v Richardson, (1792) 4 Term 437, 100 E.R. 1106). A Crown grant made prior to Magna Carta can bar the common right to fish or constitute a grant to take royal fish (Warren v Mathews; The Case of the Royal Piscary of Banne; Attorney-General for British Columbia v Attorney-General for Canada, Idington, J.).

The legal character of the right of the public is not easy to define (Attorney-General for British Columbia v Attorney-General for Canada). This right is not an incident of property (Attorney-General for British Columbia v Attorney-General for Canada). Black C.J. and Gummow J. said in Minister for Primary Industry and Energy v Davey, (1993) 47 F.C.R. 151, 160: “The right to fish within territorial waters is an attribute of the Commonwealth’s sovereignty, rather than a proprietary right available under private law; see Harper v Minister for Sea Fisheries (1989) 168 CLR 314 at 325, 330, 335.”

More commonly it has been said that the right is maintainable by reason of the Crown’s right to the soil (Harper v Minister for Sea Fisheries; Moore & Moore 1903), as described above. The basis that is currently accepted and preferred is that, the right being exercised from time immemorial, the Crown as parens patriae no doubt regarded itself as bound to protect the subject in exercising it, a view that appears to have been preferred in Canada for some time (McNeil v Jones, (1894) 26 N.S.R. 299; La Forest 1973). The origin, nature and extent of the right are attributed to that protection, a protection that founded the legal right (Attorney-General for British Columbia v Attorney-General for Canada; Harper v Minister for Sea Fisheries; Commonwealth v Yarmirr).

On that basis, no exclusive right to fish could exist in a dominion founded after Magna Carta (Attorney-General for British Columbia v Attorney-General for
Canada) (but it is possible that the radical title of the Crown may be acquired subject to a pre-existing right recognised by the common law: see Merkel J. in dissent in Commonwealth v Yarmirr and in the High Court). For the same reason and subject to the same limitations no public right to fish with kiddies (i.e. bundles of sticks or other materials used to snare fish), weirs or other engines fixed to the soil could arise in such jurisdictions, to attach those devices infringed the rights of the owner of the soil (Attorney-General for British Columbia v Attorney-General for Canada). Such rights belong to the owner of the soil whether it is the Crown or some private owner (Attorney-General for British Columbia v Attorney-General for Canada). The position in Canada is slightly different, as described in McKie et al. v The K.V.P. Co. Ltd, [1948] 3 D.L.R. 201, 215 in the following terms:

The public right to fish in navigable waters is a matter which has been the subject of discussion antedating Magna Carta, and was dealt with in the sixteenth chapter. Neill & Fenton v. Duke of Devonshire (1882), 8 App. Cas. 135, is of interest in considering its early history. Strong C.J. in Re Provincial Fisheries (1895), 26 S.C.R. 444 at p. 520 held that in the case of navigable rivers, the beds of which have not been granted but remain in the Crown in the right of the Province, the right of fishing is a public right not restricted to waters within the ebb and flow of the tide. The learned Chief Justice stated that although the public right was so confined by the common law of England, the rule was not to be applied to non-tidal rivers which, in Canada, are de facto navigable. On the appeal to the Judicial Committee Lord Herschell expressly excluded this aspect of the matter under consideration from the decision of the Committee: A.-G. Can. v. Attorneys-General for Ont., Que. & N.S., [1898] A.C. 700 at p. 709. There is inconsistency between this statement of the law and the statement of Viscount Haldane L.C. in A.-G. B.C. v. A.-G. Can., supra, which may have to be determined in an action at some time as both cases were references by the Governor in Council and neither case is a binding authority in a suit between His Majesty's subjects.

In some dominions the distinction between tidal and non-tidal navigable rivers for the purpose of the exercise of the right to fish may not be observed (Idington J. in Attorney-General for British Columbia v Attorney-General for Canada). It therefore becomes more important in those jurisdictions where the right of navigation extends beyond tidal waters to observe that there is no necessary connection in the law of England between the public right of navigation and the public right of fishing (Attorney-General for British Columbia v Attorney-General for Canada, Duff J.). There appears to be a suggestion in some authorities that there is a public right to fish in the non-tidal waters of the Crown in Canada (Attorney-General for British Columbia v Attorney-General for Canada, Duff J.) (see La Forest 1973 for a contrary view). Such a right would leave untouched the Crown's proprietorship of the fishery as incidental to the ownership of the soil (Attorney-General for British Columbia v Attorney-General for Canada, Duff J.). The difference in approach may be justifiable in the case of navigable rivers in
Canada, as it appears that in the case of those rivers, the rule that ownership of the adjoining gives ownership to the middle of the river (ad milleum filum rule) does not apply and the title to the bed of those rivers is in the Crown (see La Forest 1973).

2.2. Private Fisheries

The title to a fishery arises from the right to the soil (Attorney-General for British Columbia v Attorney-General for Canada). The general principal is that fisheries are in their nature mere profits of the soil over which water flows. A fishery may be separated from the soil. A private fishery is one, as the name implies, where a person has the sole and exclusive right of fishing. The right may arise either by reason of the ownership of the soil or because the right of fishing is derived from the owner of the soil. These fisheries are sometimes described as several or free fisheries. They may exist in both tidal and non-tidal waters. They may be further distinguished as either corporeal or incorporeal. The former embrace those fisheries that comprise the soil and the profit of the soil. The latter are those that have been granted without the soil and may be either in gross or appurtenant to another piece of land. These latter interests may have been granted by the Crown or by grants with a reservation of the right to the grantor (Moore & Moore 1903).

Those rights are a profit à prendre, an incorporeal hereditament. They may arise by prescription, not by custom, according to some (see Attorney-General for British Columbia v Attorney-General for Canada). Though Lord Hale appeared to be of a contrary view for he said that an exclusive fishery may arise by custom or prescription (Hale n.d; Neill v Duke of Devonshire and Blundell v Catterall, (1821) 5 B. & Ad. 268, 106 E.R. 1190) and some are unsure for they say “possibly custom” (Merkel J in dissent in Yarmirr v Commonwealth, (1999) 168 A.L.R. 426, 542). Apart from grant or prescription such rights pass with the property (Attorney-General for British Columbia v Attorney-General for Canada). They are not restricted to inland or non-tidal waters (Attorney-General for British Columbia v Attorney-General for Canada). They give the owner of land wherever, including where the tide flows and reflows, title to the fish (see discussion of the nature of the interest in fish in section 12.2). The foregoing are broad principles; there are many refinements in this area of the law.

The nature and extent of the various private fisheries and their varying attributes are also the subject of considerable debate, confusion and changing views over many centuries (YB (1468) 17 Edw. 4, 6; YB (1492) 7 Hen. 7, 13; Smith v Kemp, (1693) 2 Salk. 637, 90 E.R. 769; Anon., (1772) Loftt 364, 98 E.R. 696; Blackstone 1765-1770; Chitty 1812; Kinnersley v Orpe, (1779) 1 Doug. 56, 99 E.R. 40; Seymour v Lord Courtney, (1771) 5 Burrows 2814, 98 E.R. 478; Moore & Moore 1903). A fishery lies in grant and in tenure (The Case of the Royal Piscary of Banne), and is a tenement (R v Inhabitants of Old Alresford, (1786) 1 Term. 358, 99 E.R. 1138). A several fishery, in held in fee simple (Goodman v Mayor of Saltash, (1882) 7 A.C. 633). It may arise by prescription (YB (1492) 7 Hen. 7, 13; Paley v Birch, (1867) 16 L.T. N. S. 410). In R v Downing, (1876) 23
L.T. N. S. 398 a prescriptive right to an oyster bed was proved by parol evidence and was said to be sufficient to sustain a prosecution for stealing oysters from an oyster bed in a navigable river, where the public may otherwise be entitled.

In tidal waters, where these fisheries exist, the public has no right of fishing, even if they do not catch any fish. It constitutes a trespass (Patrick v Greenway, (1796) 1 Saund. 346, 85 E.R. 498 in the notes). It may be the subject of a letting (Paley v Birch, (1867) 16 L.T. N. S. 410). The letting of a fishery takes the soil with it (R v Inhabitants of Old Alresford, (1786) 1 Term. 358, 99 E.R. 1138). A fishery may pass as appurtenant to a manor (Rogers v Allen, (1808) 1 Camp. 309, 170 E.R. 967). A several fishery may not be an absolute and unqualified title for the sole use of the holder, but may be qualified by a trust or condition in favour of the free inhabitants of a borough simple (Goodman v Mayor of Saltash). The owner of a fishery cannot prescribe to the public how and where they are to moor in a navigable river; the right to fish even in a private fishery has always been subject to the rights of navigation. It is only if the person acts wantonly and for the purpose of injuring the fishery that the person is liable (Rogers v Allen).

As discussed in the thesis (see sections 8.4 and 9.2.2) the rights to private fisheries in tidal waters may not have been received in some colonies and definitely did not make the journey to Australia (Yanner v Eaton). For a suggestion that rights relating to fisheries may have formed part of the received law of other colonies see Fleet v Hegeman, 14 Wend. (N.Y.) 42 (1835). La Forest (1973) notes that, whilst the Crown cannot grant an exclusive fishery in tidal waters in Canada, there is some older authority, which La Forest suggests must be questioned, that a person may acquire such an interest by prescription. More recently in South Australia, Debelle J. (with whom the other members of the court agreed) in Golding v Tanner, (1991) 56 S.A.S.R. 482, 487 said of the requirements to prove prescription in the case of an easement (there appears to be no obvious reason to suggest the rules are any different for a fishery or a terrestrial easement):

*It is plainly not possible in Australia even to presume user back until 1189, so that there is no room for the operation of prescription at common law in South Australia. The decisions in Hamilton v. Joyce (1984) 3 NSWLR 279 at 287 and Richardson v Browning (1936) 31 Tas LR 78 accord with this view.*

Even more recently Merkel J. in dissent, in Yarmirr v Commonwealth, (1999) 168 A.L.R. 426, 541 said: “While most of the cases on exclusive fisheries concern Crown grants, rather than prescription, it appears that these rights too can only exist if the fishery existed prior to the Magna Carta.” On the other hand it is possible to create such fisheries by legislation, as appears to have occurred in Saint John, New Brunswick where there was initially a Crown Charter validated by the New Brunswick legislature (La Forest 1973; R v The St. John Gas Light Company, (1895) 4 E.C.R. 326).

The same is not the case of rivers not navigable or navigable but unaffected by the sea. In every river not navigable (The Case of the Royal Piscary of Banne; Carter
or navigable but not subject to the flow and reflow of the sea, the fishery belongs to the owners of the soil (with some exceptions in Canada in the case of navigable rivers; see Flewelling v Johnstone, [1921] 2 W.W.R. 374; Kennedy v Husband, [1923] 1 D.L.R. 1069; Iverson v Greater Winnipeg Water District, [1921] 1 W.W.R. 621; and others created by statute e.g. Land Act (R.S.B.C. 1966, c. 245), sections 55 and 56). They have a common right and interest. Proof of ownership of the soil of a river is good evidence to prove the right of fishing and requires proof to the contrary by anyone claiming a free fishery in that river (Lord Fitzwalter’s Case). So fish in a river passing through the land may only be lawfully taken by the owner of the land (or anybody deriving a right from the owner), for the owner is the only person with possession of them (YB (1521) 12 Hen. 8, 9) and when the water and fish pass to the next landholder they are then in the possession of the next landholder. However, if the owner of the adjoining land breaks down the sluice of a neighbour so that the water and fish flow into the land of that adjoining owner, then the fish may be retaken by the owner of the sluice (YB (1521) 12 Hen. 8, 9), the adjoining owner not being permitted to profit from the wrong. As discussed in respect of rivers that divide the ownership of land, the proprietors of the land have the right to the fishery on their respective sides (ad filum mediam aquae) (Carter v Murcot), unless there is an agreement to the contrary (with some exceptions in Canada; see earlier).

A right of fishery and a right of free warren are not alike in many respects: the former is divisible, the other is not. A fishery may be abandoned, and another more valuable part may be preserved (Rogers v Allen). The public may be permitted to take floating fish but may be restricted from dredging for oysters, which remain private property (Rogers v Allen). A fishery that reverts to the Crown does not merge in the prerogative, but may be regranted by the Crown, and this would not be the case if it were a franchise granted out of the prerogative (Duke of Northumberland v Houghton, (1870) L.R. 5 Exch. 127; Halsbury 1991).

As fish were regarded as ferae naturae, the early remedies for taking fish from private fisheries were usually in the form of a writ for a trespass to the land or privilege, where the fishing took place, rather than the trespass to the property, the fish (YB (1322) 15 Edw. 2, 453; YB (1465) 4 Edw. 4, 29; YB (1450) 28 Hen. 6, 29; YB (1373) 46 Edw. 3, 28). Their status changed.

Within those fisheries, if the proprietor undertakes sea ranching, the proprietor will have the exclusive right to take those fish. As has been seen, the proprietor will retain a proprietary interest, without anything more.
Amerciament. A pecuniary punishment for an offence that was heard before the court of one's lord, whether the king or subject-superior, and the offender was at the mercy of the lord. Unless restrained by custom or legislation, an amerciament was entirely in the discretion of the court.

Estray. An old English term for a stray (see stray).

Heriot service. Is an express reservation by the lord in the original grant. It arises from ancient tenure and is in the nature of rent. Heriot was originally a tribute to the lord of a manor of a horse or habiliments of the deceased tenant, in order that the military apparatus might be used for the purpose of national defence by each succeeding tenant. On the decline of the military tenures, the heriot was commuted for a money payment or for the tenant's best beast (the later was usually compounded for) (Wharton 1864).

Jura Regalia. The rights which under the feudal law attach to the sovereign (Walker 1980).

Leet. The Court Leet was a court of record held once a year within a particular hundred, township or manor before the steward of the leet. It was the king's court granted by charter to the lords of certain hundreds and manors (Wharton 1864).

Strays. Are valuable animals found wandering and ownerless in a manor or lordship (Walker 1980; Chitty 1820). Blackstone (1765-1770) said they are any valuable domestic animal found within any manor or lordship where it has no right to be and is not claimed by the true owner.

Swan upping. The catching and taking up cygnets from the water (Ticehurst 1957).
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