AN ANALYSIS OF THE POLICY FRAMEWORK FOR
THE DEVELOPMENT OF BC SALMON FARMING

by

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to the required standard

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ABSTRACT

Between 1985 and 1995, government agencies and interest groups interacted in a recurring cycle of moratoria and reviews in attempts to resolve a wide variety of environmental, economic and social concerns about salmon farming while making policies to manage the development of the new industry in British Columbia. Using policy community theory, this thesis analyzes how the community members developed the salmon farming policy framework. Then, drawing on the recommendations that were already advanced by aquaculture planners from the early 1980s, the thesis evaluates the policy framework that exists today.

Depending upon their power resources and their position within the policy community, the members of the community used different methods to influence the policy process. The members of the sub-government maintained the status quo by using methods such as restricting the access for interest groups to the policy process and limiting the flow of information to the attentive public. The members of the attentive public increased their power by forming coalitions and putting forward a common policy statement to the public and government.

Maintaining the status quo became difficult when the New Democratic Party (NDP) government came to power. In revising provincial environmental policies, the NDP changed the relative influence of the government agencies in the sub-
government. These changes increased conflict among agencies which the government addressed by undertaking an environmental assessment and a public policy review.

The B.C. salmon farming policy community is identified as a *pressure pluralist* community which emerges when jurisdictional responsibility is fragmented among a number of agencies and no mediating mechanism exists to bring together the members of the community. As a result, the community tends to make short term policy and functions without a long term strategy.

The thesis concludes with six recommendations designed to increase the access and input of all those who want to participate in the policy process, to address the diversity of issues raised within the policy community, to insure social accountability when interest groups implement policy, and to fill the gaps in the existing policy framework.
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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

During the past 15 years, federal and provincial government agencies have had the difficult task of developing a set of policies to both foster and manage the new salmon farming industry in British Columbia. While designing the basic policies that would allow farmers to grow salmon, the agencies also needed to change policies as the industry grew.

The task was difficult because many groups of people in the commercial fishing industry, environmental community, and tourism industry had, and still have, concerns about the ecological impacts of salmon farming. To address the concerns, in 1986, the government temporarily stopped issuing salmon farming tenures while undertaking a policy review. In 1995, the policy making process seemed to have come full circle as once again, the government stopped issuing tenures and undertook another policy review.

In light of this experience, the goal of this thesis is to analyze how policies and processes evolved in the salmon farming industry in B.C. More specifically, the thesis addresses the following questions. What is salmon farming? What happened between 1985 and 1995? What policy did the government agencies and salmon farming industry develop?
What policy development process did they use? What recommendations could improve the existing policy framework?

To answer these questions, the thesis draws on the theory of policy communities and planning literature. The thesis also considers recommendations from reports written for the salmon farming industry. This thesis looks at these questions to understand better the existing policy framework and process for natural resource management in British Columbia, and, more specifically, to make recommendations for future development of the salmon farming industry.

1.2 METHODS

The time period under study begins with events in the early 1980s that led to the Gillespie Commission in 1986 and ends with the announcement of the Action Plan for Salmon Aquaculture in 1995. To develop a conceptual and analytical framework for the thesis, I reviewed the general literature on policy communities and the development of aquaculture industries. To gather data, I initially conducted a literature search to find relevant materials from government agencies, industry journals and newspapers. More specific material came from a search done under the Freedom of Information Act and from files in the Fisheries Branch of the Ministry of Environment, Lands, and Parks (MELP). I also received copies of relevant letters, minutes and background papers from individuals within the environment community. I used this material to follow changes in the interests of
public groups, to understand how government agencies made policy decisions, and to define the existing policy framework.

1.3 CHAPTER OVERVIEW

Chapter 2 reviews the development of the salmon farming industry. Chapter 3 discusses how government agencies and interest groups made policy. Chapter 4 examines the existing policy framework. Chapter 5 summarizes Chapters 3 and 4 and makes recommendations for future development.
CHAPTER 2 B.C. SALMON FARMING HISTORY

2.1 INTRODUCTION

The purpose of this chapter is to introduce the reader to the B.C. salmon farming industry. First, the chapter examines the changes the industry underwent between 1983 and 1995. The chapter then discusses public concerns about salmon farming. The chapter concludes with a chronology of policy development.

2.2 WHAT IS SALMON FARMING?

Following is a brief definition of salmon farming. For a more comprehensive discussion, see Laird and Needham (1988) and Sedgwick (1988). For the fresh water phase of salmon farming, see Piper et al (1982).

Salmon farming is the rearing of salmon for human consumption. The stages of salmon farming follow the salmon life cycle which has both fresh and salt water phases. Adults spend their life in the ocean after spending their juvenile life in freshwater. The adults return to spawn in streams by releasing eggs and sperm into water over stream bed gravel. The adults then lightly cover the fertilized eggs with gravel. After a time, young fry emerge and begin to feed. As the fry grow and the daylight lengthens, the
young fish undergo physical changes necessary to live in saltwater. When the change is complete, the young fish, now called smolts, move into the ocean to live their adult life.

Salmon farmers put smolts into ocean net pens and begin feeding them. When the smolts grow to a marketable size, farmers harvest most of the fish, but keep a few aside for broodstock. From these fish, the farmer collects eggs and sperm and fertilizes the eggs. The farmer then places the eggs into trays in a hatchery. Freshwater runs through the trays as the eggs incubate. After the fry emerge, they go into larger freshwater ponds for feeding. Inside these ponds, the fry grow into smolts.

2.3 HISTORY OF INDUSTRY DEVELOPMENT IN B.C.

Salmon farming in British Columbia began in 1972, expanded rapidly during the 1980s, and restructured in the 1990s. The first few farmers established salmon farms in the Port Alberni Inlet but these sites were isolated and difficult to service. Next, farmers put sites in the Sunshine Coast area between Sechelt and Redonda Island. These sites were sheltered from high winds and waves, closer to the Vancouver market and had the infrastructure required to establish and operate a salmon farm. People living in the area complained about the farms, and natural plankton blooms began to kill large numbers of fish (B.C. Salmon Farmers Association et al. 1992). Farmers with sites on the north east coast of Vancouver Island in the Campbell River and
Broughton Archipelago areas and on the west coast of Vancouver Island in Clayoquot Sound suffered fewer fish losses from plankton blooms. Although these sites were isolated, the farmers still had access to townsites and transportation.

As a result, when the restructuring occurred in the 1990s, the industry tended to stay or expand into these areas while moving away from the Sunshine Coast (B.C. Salmon Farmers Association et al. 1992). Table 1 lists the location and numbers of farms in B.C. after the restructuring. Following the table is Figure 1, a map showing farm locations in B.C.

Table 1. Salmon Farm Sites in British Columbia 1995

<table>
<thead>
<tr>
<th>GEOGRAPHICAL LOCATION</th>
<th>NUMBER OF SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broughton Archipelago</td>
<td>33</td>
</tr>
<tr>
<td>Campbell River Area</td>
<td>32</td>
</tr>
<tr>
<td>Sunshine Coast</td>
<td>10</td>
</tr>
<tr>
<td>Clayoquot Sound/Tofino</td>
<td>21</td>
</tr>
<tr>
<td>Northwest Vancouver Island</td>
<td>12</td>
</tr>
<tr>
<td>Other Areas</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>116</td>
</tr>
</tbody>
</table>

Source: Deegan 1997.
Figure 1. Salmon Farm Locations in B.C. 1995

QUEEN CHARLOTTE ISLANDS

PACIFIC OCEAN

Northwest Vancouver Island (12)

Broughton Archipelago (33)

Clayoquot Sound (21)

Campbell River Area (32)

Sunshine Coast (10)

BRITISH COLUMBIA
In 1989, many of the salmon farmers harvested their first major crop. At the same time, the supply of salmon on the global marketplace increased and the price for salmon dropped by 30% to 40%. As a result, about 30% of the farming companies in B.C. went into receivership (B.C. Salmon Farmers Association et al. 1992). By 1991, 125 operating farms existed. Of these, individuals owned twenty sites and 16 corporations owned 120 sites (Northern Aquaculture Sept/Oct 1991). In 1993, only 17 companies remained in the industry with the four largest companies growing over 57% of the total industry production (ARA Consulting Group 1994). Table 2 summarizes the changes that occurred during the restructuring.
Table 2. Changes in the Salmon Farming Industry 1985 - 1994

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Area Leased (ha)</th>
<th>Total Production (tonnes)</th>
<th>Total Wholesale Value ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>n.a.</td>
<td>0.1^2</td>
<td>0.8^2</td>
</tr>
<tr>
<td>1986</td>
<td>283^1</td>
<td>0.4</td>
<td>2.7</td>
</tr>
<tr>
<td>1987</td>
<td>746</td>
<td>1.6</td>
<td>12.8^5</td>
</tr>
<tr>
<td>1988</td>
<td>1138</td>
<td>6.4</td>
<td>39.1</td>
</tr>
<tr>
<td>1989</td>
<td>1357</td>
<td>11.6</td>
<td>59.7</td>
</tr>
<tr>
<td>1990</td>
<td>1413</td>
<td>15.0^3</td>
<td>85.1^3</td>
</tr>
<tr>
<td>1991</td>
<td>1149</td>
<td>23.0</td>
<td>135.8</td>
</tr>
<tr>
<td>1992</td>
<td>1183^6</td>
<td>19.8^4</td>
<td>118.8^4</td>
</tr>
<tr>
<td>1993</td>
<td>1137</td>
<td>25.6</td>
<td>147.8</td>
</tr>
<tr>
<td>1994</td>
<td>1128</td>
<td>20.0</td>
<td>140.0</td>
</tr>
<tr>
<td>1995*</td>
<td>1129</td>
<td>28.1^6</td>
<td>170.6^6</td>
</tr>
</tbody>
</table>

* The 1995 production figures are preliminary.

1 B.C. Salmon Farmers Association et al. 1992
2 B.C. Ministry of Agriculture and Fisheries. 1986
3 B.C. Ministry of Agriculture, Fisheries and Food. 1993
4 B.C. Ministry of Agriculture, Fisheries and Food. 1995a
5 B.C. Ministry of Agriculture and Fisheries. 1989a
6 Deegan 1996.

When salmon farming began in British Columbia, farmers cultured two species of Pacific salmon: coho and chinook. Today, farmers prefer to grow Atlantic salmon due to lower production costs. Between 1990 and 1994, the production of Atlantic salmon increased from 12% to 68% of the total farm production (B.C. Ministry of Agriculture, Fisheries and Food 1995a). During this time, the commercial fishery began to catch an increasing number of Atlantic salmon and the public
became concerned about the impacts of escaped Atlantic salmon upon the wild Pacific stocks (Stanton 1994).

2.4 PUBLIC CONCERNS TODAY

People view the salmon farming industry as both a contribution and a hinderance to social, economic and ecological well-being. In 1994, farmed salmon was the leading agricultural export in B.C. with 85% of the product going to Japan and the U.S. The salmon farming industry benefits rural coastal communities. Almost all of the 1100 full time direct jobs are in areas outside the urban centres of Victoria and Vancouver (ARA Consulting Group 1994).

Today, a number of concerns exist and the public debate about the benefits and risks of salmon farming is intense. Each area of concern is a good example of a complex problem (Keeney 1982, Dorcey 1986). Complex problems occur within biological and socio economic systems. Resolving the problem requires addressing several objectives at once, and involves long time horizons. Scientific research can not resolve the uncertainties and risks associated with different alternatives before making a decision. Some of the alternatives have irreversible effects. People need to make tradeoffs among attaining several objectives. Usually, the decisions involve high stakes such as environmental integrity, social welfare, or large amounts of money. Addressing the problem requires an interdisciplinary approach as no one is an overall expert and understands all the
aspects of a complex problem. Finally, any decision about the problem usually needs to be justified to others such as the public, shareholders, or regulatory authorities. The development and management of the salmon farming industry in B.C. is a complex problem.

Today, to gather more information and understanding about the industry impacts, the provincial government is doing an Environmental Assessment on salmon farming. The Assessment lists the concerns about salmon farming as: escaped farm fish, fish health, waste discharges, marine mammals and other species, and fish farm siting (B.C. Environmental Assessment Office 1995). The following sections briefly discuss each of these concerns to overview the complexity of the issues being assessed.

2.4.1 ESCAPED FARmed FISH

Public groups are very interested in the effects escaped farmed fish could have upon wild stocks. Some escapees will move into marine areas and streams inhabited by wild stocks (ESSA 1993, Stanton 1994). Some people are concerned that once in the streams, farmed salmon might interbreed with wild stocks or establish self-reproducing colonies. The results could be a Pacific/Atlantic hybrid salmon stock, Atlantics preying on Pacific fry, or Atlantics taking over the habitat of Pacific salmon (Canada. Department of Fisheries and Oceans et al. 1993).
2.4.1.1 ATLANTIC SALMON COLONIZATION

Throughout the world, biologists have tried to establish Atlantic salmon colonies outside their native range. Although single landlocked stocks exist in Brazil and in Australia, no one has reported establishing an anadromous stock (Welcomme 1988, B.C. Ministry of Agriculture, Fisheries and Food 1991b). Between 1905 and the 1930s, the Department of Fisheries (DFO) tried to establish Atlantic salmon colonies in 6 watersheds on south-east Vancouver Island. Biologists introduced over 5.5 million fish, but did not succeed in colonizing Atlantic salmon (B.C. Ministry of Agriculture, Fisheries and Food 1991b, Black 1995). In addition, farmers have raised Atlantic salmon in Washington state for over 20 years, but no one has evidence of Atlantic salmon existing in local streams (Black 1995).

Nevertheless, concerns continue that Atlantic salmon could establish colonies in British Columbia (New Catalyst 1994). An argument can be made that the early experience of DFO is not relevant today, as smolts and young adults, rather than eggs and fry, are entering the marine environment (Ludwig 1997).

2.4.1.2 GENETIC CHANGES IN WILD STOCKS

Interbreeding between escaped farmed fish and wild fish could change the genetic characteristics of wild fish and reduce the ability of wild fish to survive. The possibility of genetic change is increased as farmers use genetic
selection to domesticate their stock (Pillay 1992, Levings 1994).

The rate of hybridization between Atlantic and Pacific salmon is lower than the rate of hybridization between Pacific salmon species. Scientists at the West Vancouver Laboratory found the hatching rate of crosses between Atlantic and Pacific salmon was less than 1%. The one exception was a cross between male Atlantic salmon and female steelhead trout which had a hatching rate of 6%. However, most of the survivors died soon after hatching. With crosses between chinook salmon and steelhead, 10% of the eggs hatched. The highest hatching rate, averaging between 40%-93%, occurred with crosses between Pacific salmon species (Black 1995). This evidence indicates a greater risk of genetic change exists if farmed Pacific salmon interbreed with wild Pacific stocks (Hindar et al. 1991, Levings 1994).

2.4.2 FISH HEALTH

Another debate is defining the degree of risk associated with diseases transferring between farmed and wild salmon. One concern is that fish farms create a reservoir for diseases which transfer to wild stocks migrating past or feeding around the pens. A second concern is new diseases will come with imported eggs.

When disease is present, chances are much higher that disease will transfer from wild stocks to farmed fish (Pillay 1992). The difference is due to the high stress levels of
farmed fish which eat an artificial diet, live in crowded conditions, and regularly encounter disturbances from fish farmers. Each of these conditions increases the stress in farmed fish and their susceptibility to disease (Olafsen 1993). Little evidence shows that disease transfers from farmed fish to wild fish. The lack of evidence could result from the difficulty in defining whether the wild stocks received a disease from farmed fish or if the wild stock already carried the disease (NASCO 1993).

Unintended introductions occur when people move a species into a new environment (Welcomme 1988). In the 1970s, to enhance wild stocks, Norway introduced smolts from Sweden (B.C. Ministry of Agriculture, Fisheries and Food 1990c). The smolts carried *Gyrodactylus salaris*, a parasite that killed large numbers of Norwegian wild salmon stocks (Pillay 1992). Concerns exist that a similar event could occur in British Columbia when farmers import Atlantic salmon eggs.

2.4.3 WASTE DISCHARGES

Waste from salmon farms comes in many forms and can cause ecological changes (B.C. Environmental Assessment Office 1995). As fish remove oxygen and add carbon dioxide and ammonia, changes can occur in water quality (Wallace 1993, Levings 1994). When fish faeces and excess feed accumulate in sediments beneath the pens, the composition of the benthic community can change (Levings 1994).
Sediments can harm fish. First, the sediments can harbour disease bacteria for up to 18 months (Levings 1994). Secondly, if the sediments accumulate to the point where aerobic bacteria stop functioning, anaerobic bacteria begin to produce hydrogen sulphide, a highly toxic gas (Wallace 1993). The sediments can also contain antibiotics from medicated feed. Sick fish tend to not eat, yet farmers use medicated feed to treat bacterial diseases. As most of the medication enters the environment and not the fish (Pillay 1992, Wallace 1993), people are concerned about how the treatments affect other organisms (Levings 1994).

2.4.4 MARINE MAMMALS AND OTHER SPECIES

People are also concerned about the effect farm activity has upon marine mammals, birds and aquatic species living around the farms. Seals, otters, and blue herons prey on farmed fish. To control the predators, farmers use a number of methods such as predator nets, dogs, and guns (B.C. Environmental Assessment Office 1995).

2.4.5 FISH FARM SITING

Of all the issues, the siting of farms causes the most conflict in aquaculture development (Pillay 1992). Farm siting is also one of the best methods to minimize the ecological impacts of farms (Levings 1994). Chapters 3 and 4 contain more detail on concerns on farm siting.
2.5 HISTORY OF POLICY DEVELOPMENT 1985 - 1996

The purpose of this section is to give a chronology of salmon farming policy development as background material for chapters 3 and 4. The section ends with a reference table summarizing key policy events.

2.5.1 IN THE BEGINNING

Under the Constitution Act, the federal government is responsible for protecting and conserving wild fish stocks. On the other hand, provincial governments regulate property and civil rights. Salmon farming sits in the middle of these two jurisdictions because once inside a net pen, fish become the personal property of farmers, but if they escape, they become part of the fish stocks managed by the Department of Fisheries and Oceans (Campney and Murphy 1991). This mixed responsibility has various implications.

When salmon farming began in B.C., all existing provincial aquaculture policy was directed toward managing the oyster industry. The federal and provincial governments had sorted out jurisdictional overlaps for oysters with an agreement in 1912 which gave the provincial government responsibility for oyster farming (Wildsmith 1982). Within the provincial government, three ministries shared the responsibility. The Marine Resources Branch of the Ministry of Environment managed the culture of oysters and marine plants. The Lands Branch of the Ministry of Lands, Parks and Housing (B.C. Lands) granted Crown foreshore tenures. The
Ministry of Agriculture and Food legislated the B.C. Oyster Marketing Board (B.C. Mariculture Newsletter 1982).

The Minister of B.C. Lands made the first changes in aquaculture policy to address the needs of the new salmon farming industry. In 1982, the Minister approved policy that allowed farmers to lease aquatic Crown Lands to culture species other than oysters. B.C. Lands also established an inter-agency referral system so agencies could comment on aquaculture tenure applications (B.C. Mariculture Newsletter 1982).

During the time period under study, these agencies changed structures and names several times. To clarify any confusion which may arise from the various names, Table 3 lists the dates the names and structures changed. When referring to the ministries historically, in most cases, I used the historical name. One exception occurs when I use the term "B.C. Lands" to refer to the government entity that issues Crown land tenures.
Table 3. Names and Structure of Ministries 1984-1995

<table>
<thead>
<tr>
<th>YEAR</th>
<th>ENVIRONMENT</th>
<th>PARKS</th>
<th>LANDS</th>
<th>AGRICULTURE</th>
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<td>Ministry of Environment</td>
<td></td>
<td>Ministry of</td>
<td>Ministry of Agriculture and Food</td>
</tr>
<tr>
<td></td>
<td></td>
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<td>Forests and</td>
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<td></td>
<td>Ministry of Agriculture and Food</td>
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Source: Ministry Annual Reports

2.5.2 GILLESPIE INQUIRY

In response to public concerns about the rapid expansion of the salmon farming industry in 1986, the Minister of Lands and Forests stopped issuing further salmon farm tenures and appointed David Gillespie to conduct a public inquiry into salmon farming. In his report, Gillespie made a number of recommendations about the extent of government control in the industry, land and resource user conflicts, marketing and environmental concerns, and agency approval processes (Gillespie 1986).
One of Gillespie's recommendations was to establish an Aquaculture Advisory Council from key agencies and interest groups. The Council was meant to provide a way for the industry to have direct involvement in policy development (Gillespie 1986). In response, the Minister of Agriculture and Fisheries established the Minister's Aquaculture Industry Advisory Committee (MAIAC) in 1987 (B.C. Ministry of Agriculture and Fisheries 1987b).

Another of Gillespie's recommendations was to undertake Coastal Resource Identification Studies (CRIS). The government undertook the CRIS for the salmon farming areas in the Campbell River, Sunshine Coast, Gulf Islands, Broughton Archipelago, Nootka and Clayoquot Sound areas. To identify areas of value to existing coastal resource users, the agencies gathered information from a diversity of groups ranging from commercial fishers to sea kayakers as well as from government agencies. With this input, they produced maps and guidelines showing where salmon farms could be located and where other activities took precedence. Once completed, B.C. Lands used these guidelines when adjudicating finfish aquaculture tenure applications. The moratorium was lifted for an area once the CRIS was completed (B.C. Legislative Assembly 1988).

In 1985, the Ministry of Agriculture and Food, became the lead agency for aquaculture in B.C. As lead agency, the Ministry had the responsibility "for development,
coordination and implementation of strategies dealing with aquaculture (B.C. Legislative Assembly 1988)." In 1986, the Marine Resources Branch moved from the Ministry of Environment to merge with the Ministry of Agriculture and Food and form a new Ministry of Agriculture and Fisheries (B.C. Aquaculture Newsletter 1986).

In 1988, the federal and provincial governments signed a Memorandum of Understanding regarding the aquaculture industry in B.C. The Memorandum designated the Department of Fisheries and Oceans as the federal lead agency for aquaculture. The Memorandum also established a Management Committee, with representatives from the Ministry of Agriculture and Fisheries and the Department of Fisheries and Oceans, to coordinate efforts of government and management of industry, to identify research priorities, and to resolve disputes arising between Canada and B.C. (Campney and Murphy 1991).

2.5.3 OMBUDSMAN REPORT

The public concerns that led to the Gillespie Inquiry also gained the attention of Stephen Owen, the provincial Ombudsman. In 1988, he issued a report entitled, Aquaculture and the Administration of Coastal Resources in British Columbia (B.C. Legislative Assembly 1988). In the report, he reviewed fish farming concerns and the recommendations in the Gillespie Report and made three of his own recommendations. First, he advised the agencies to
consider enacting a separate Aquaculture Act, or other statutory scheme. Second, he suggested the government needed to create a means to integrate management of coastal resources. Third, Owen recommended that official policy should include dispute resolution techniques (B.C. Legislative Assembly 1988).

In response, the government created an Aquaculture Regulation pursuant to the Fisheries Act (B.C.), and established an aquaculture licensing program in 1989 (B.C. Environmental Assessment Office 1995). Although these changes streamlined the administrative procedures managing salmon farming, the agencies thought that Cabinet would need to implement the recommendations in full. The remaining chapters contain further details on the agencies' response to the Ombudsman recommendations.

Between 1988 and 1991, the government agencies implemented a number of programs designed to assist and regulate the industry. As lead agency, the Ministry of Agriculture and Fisheries started extension services and worked with the B.C. Salmon Farmers Association to develop industry policy (Egan 1990). The Ministry of Environment produced a policy manual, Environmental Management of Marine Fish Farms, which was a compilation of policies from all the Branches within the Ministry (B.C. Ministry of Environment 1990). B.C. Lands continued with the CRIS studies and

2.5.5 NEW DEMOCRATIC PARTY

In October 1991, voters elected the New Democratic Party to a majority provincial government. One of their election promises was to declare a moratorium on new aquaculture ventures (B.C. Legislative Assembly 1993a). In March 1992, the Minister restructured the Minister's Aquaculture Industry Advisory Committee (MAIAC) to increase the variety of interest groups participating in coastal use decisions (B.C. Ministry of Agriculture, Fisheries and Food 1992b).

The Minister asked the committee to commission a review of the salmon farming industry and then, based upon the report, to make recommendations. In 1992, a consulting company completed Review of Salmon Farming in British Columbia. Final Report (ESSA 1993) for MAIAC. Based on a review of this report, MAIAC put forward recommendations covering nine issue areas which included wild and farmed fish interactions, native involvement, coastal zone management, and environment.

The Minister responded by expanding research into the interactions between wild and farmed salmon (B.C. Environmental Assessment Office 1995). Staff within the Department of Fisheries and Oceans (DFO), the Ministry of Agriculture, Fisheries and Food (MAFF), and the Ministry of Environment, Lands and Parks (MELP) designed the research
program with scientists from the Pacific Biological Station and the West Vancouver Laboratory. The research program topics included defining the potential for farm salmon to interbreed with wild salmon, surveying how many Atlantic salmon were on Pacific salmon beds, and determining the ability of Atlantic/Pacific salmon hybrids to survive (B.C. Legislative Assembly 1992).

In March 1993, DFO, MAFF, and MELP released a discussion paper called *Wild/Farmed Salmonid Interactions: Review of Potential Impacts and Recommended Action* (Canada. Department of Fisheries and Oceans et al. 1993). One purpose of the paper was to review the potential impacts of escaped farmed fish on wild stocks. A second purpose was to recommend strategies to develop new knowledge. The Director General of DFO, and the Assistant Deputy Ministers of MAFF and MELP signed the paper to show that the agencies unanimously supported and planned to implement the recommendations.

A few months later, in August 1993, DFO asked MAFF to begin a comprehensive review of salmon farming policies. The Department was concerned about the density of farms in the Broughton Archipelago and had advised staff to defer any salmon farming applications for the area (Chamut 1993). This action marked the beginning of the provincial agencies developing the *Action Plan for Salmon Aquaculture*. 

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2.5.6 ACTION PLAN FOR SALMON AQUACULTURE

In the fall of 1993, the Minister of MELP, the Minister of MAFF, and the Minister of Small Business, Tourism and Culture held a meeting to discuss salmon farming policies. During this meeting the Ministers agreed "that there would be a moratorium on further fish farm development in the Broughton Archipelago pending a review of fish farming in this area (Sihota 1994)." The Ministers then directed their staff to develop a comprehensive provincial aquaculture policy. The review was to include interest groups and the industry (Castledine 1993).

MAFF prepared the first Draft Salmon Farming Review and Action Plan (Castledine 1993). The draft had 10 tasks which various ministries were to complete by February 1, 1994. The tasks included preparing a status report on operating salmon farms, estimating the remaining sites available for new farms, working with the industry to make a five year plan, and reviewing the existing tenure application and licensing process. The plan makes little mention of environmental or social concerns.

In the spring of 1994, staff from MAFF and MELP organized three workshops to learn from the scientists doing research on the salmon farming impacts. Attendance was by invitation only and restricted to government personnel, particularly staff members from the two ministries. Industry members and interest groups were not invited (Black 1993).
During this time, tensions increased between MAFF and MELP. An indication of the tension is the regional staff of MELP stopped approving all new Atlantic salmon farm applications unless farmers committed to growing only all-female Atlantic salmon on new sites (Narver 1994a). Next, the Fisheries Branch of MELP sought the support of DFO to require farmers to raise sterile coho and chinook salmon as well as all-female Atlantic salmon (Narver 1994b). DFO refused to support this position as the technology for raising non-reproductive stocks was not ready for the industry to use (Chamut 1994).

In July, 1994, the Assistant Deputy Ministers of MAFF and MELP signed a 10 point agreement on salmon farming policy. This agreement is concerned with higher level policy issues than contained in the draft developed in November 1993. The agreement considers both the economic and environmental impacts of salmon farming and is less focused on site analysis and industry status. The agreement advises staff to complete the policy review started in November 1993 and to prepare a workplan by August 1994 (Culbertson and Walker 1994).

In the summer of 1994, MELP began to review tenure applications again. MAFF prepared an update of the first plan. Then the agencies prepared a Draft Action Plan for Government and Industry on Salmon Farming in British Columbia. This Plan went to the Deputy Ministers in October
1994 who then requested their staff to consult with industry, local government, environmental groups and native groups before presenting the action plan to the Ministers.

Staff from MAFF and MELP convened three meetings to meet with interest groups during October and November. The purpose of the meetings was for the agencies to present the draft plan "in full detail at the upcoming review meeting." For interest groups who wanted to change the plan, there would be "opportunity for additional consultation over the next year" as items of the plan were developed and implemented (Bernat 1994).

Interest group representatives attended the meetings upon the invitation from agency staff. Staff also designed the meetings so that only representatives who shared similar values would be attending each meeting. For example, one meeting was with First Nations and a second meeting was with industry and local government representatives. The third meeting was with environmental and commercial fishing, boating, and tourism representatives.

The interest groups seemed to have had some influence as during the course of these meetings, the draft plan changed to include an environmental assessment of salmon farming. Finally, in April 1995, the Ministers of MAFF and MELP announced the Action Plan for Salmon Aquaculture (B.C. Ministry of Agriculture, Fisheries and Food 1995b).
The purpose of the Action Plan for Salmon Aquaculture is to develop a coherent provincial salmon aquaculture policy. The plan has two parts: an environmental assessment of salmon farming and a revision of salmon farming policy. The environmental assessment will study the effects of escaped farmed fish, siting, fish diseases, farm operations on sea mammals and other fish species, and fish waste discharge on the marine environment. Staff from MELP and MAFF will co-chair a team to develop the policy. An inter-agency group, which includes representatives from a number of ministries, will provide advice to the project team. The interest groups will have input into the policy review through a facilitated consultation process.

In preparing to read Chapters 3 and 4, the following points are important. Although diminished after the Gillespie Inquiry, public concerns about salmon farming in B.C. continued throughout the period under study. The Gillespie Report and the Ombudsman Report provided some initial direction to the provincial government on how to proceed with managing and developing the salmon farming industry. The government agencies implemented many of the Gillespie recommendations, but thought the Cabinet needed to implement the Ombudsman recommendations. The provincial responsibility for managing the salmon farming industry was, and continues to be, divided among several ministries. These
ministries control the transfer of information, and the degree of public input into the policy process.

As shown in the summary of key policy events (Table 4), the recurring cycle of conflicts, leading to the moratoria and studies and thus to revised policies and processes, has now gone through two major iterations and within this various other smaller and more partial iterations. The next chapter analyses these recurring patterns in more detail.

Table 4. Summary of Key Policy Events 1982-1995.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>POLICY</th>
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<tr>
<td>1982</td>
<td>B.C. Lands policy changed to allow species other than oysters to be farmed on Crown foreshore. Inter-agency land tenure application referral system established. Marine Resources Branch becomes responsible for administering farm management plans.</td>
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<tr>
<td>1985</td>
<td>Ministry of Agriculture and Food becomes the provincial lead agency for aquaculture. Marine Resources Branch moves to Ministry of Agriculture and Fisheries to become the Aquaculture and Commercial Fisheries Branch. Minister of Forests and Lands stops issuing salmon farming tenures and appoints David Gillespie to conduct an inquiry.</td>
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<tr>
<td>1986</td>
<td>Gillespie Commission Report released. Provincial Aquaculture Steering Committee established. Minister's Aquaculture Industry Advisory Council (MAIAC) established. Land referral system expanded to include interest groups. CRIS begin. Moratorium is lifted as each CRIS is completed.</td>
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<td>1988</td>
<td>Federal and provincial governments sign a Memorandum of Understanding and establish a Management Committee.</td>
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<td>YEAR</td>
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<td>1991</td>
<td>Waste Management Branch produces an environmental monitoring plan for salmon farms.</td>
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<td>Ombudsman's Report released.</td>
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<td>1991</td>
<td>Research program into wild/farmed salmon interactions expands.</td>
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<td>New Democratic Party (NDP) becomes majority government and begins review of provincial environmental policies.</td>
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<td>B.C. Lands joins with B.C. Environment under Ministry of Environment, Lands and Parks (MELP).</td>
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<td>1992</td>
<td>Minister restructures MAIAC.</td>
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<td>1993</td>
<td>Wild/Farmed Salmon Interactions Paper released.</td>
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<td>MAIAC Report released.</td>
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<td>DFO stops processing salmon farming applications for the Broughton Archipelago and requests a provincial policy review.</td>
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<td>Provincial ministers meet to discuss salmon farming tenures.</td>
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<td>1994</td>
<td>MELP staff stop processing salmon farm tenure applications.</td>
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<td>Assistant Deputy Ministers of MAFF and MELP sign a 10 point agreement.</td>
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<td>Deputy Ministers review a Draft Action Plan and advise staff to consult with interest groups.</td>
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<td>Meetings held with interest groups.</td>
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<td>1995</td>
<td>Ministers meet and agree upon the Action Plan.</td>
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<td></td>
<td>Action Plan for Salmon Aquaculture announced. The Plan includes a policy review, an environmental assessment. During the review and the assessment, no salmon farm tenures will be granted.</td>
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CHAPTER 3 POLICY PROCESSES

3.1 INTRODUCTION

This chapter discusses how the government and interest groups made salmon farming policy between 1985 and 1995. First is a discussion about how recommendations from the Gillespie and Ombudsman reports initially provided guidance on how the government should make policy. The next section introduces the theory of policy communities which provides a basis to analyze how interest groups and government agencies interact in the salmon farming policy process. Finally, the chapter returns to the recommendations made by Gillespie and the Ombudsman.

The recommendations in the Gillespie and the Ombudsman reports that were intended to improve the policy development process have two assumptions in common. The first assumption is that increasing the influence of interest groups in the salmon farming policy process is a good idea. The second assumption is that reducing conflict that arises among government agencies and groups is also a good idea.

In his 1986 report, An Inquiry into Finfish Aquaculture in British Columbia David Gillespie made several recommendations. First, he made a recommendation (4.2.1) to expand the public information program. He stated that the
program in 1985 had developed in reaction to problems and hence reached only specific user groups. He advised the program be expanded to include schools, libraries, municipal halls, and interest groups.

Second, he recommended (4.2.2) the provincial government help the commercial fishing and aquaculture industries to communicate with each other. The purpose was to increase understanding between the two groups with the intent of benefiting the entire B.C. seafood industry.

Third, he made two recommendations to increase interest group participation in the policy process. He advised (4.1.3) the government to establish an industry advisory council to resolve issues, set government program priorities, and design government policies. The members would come from the aquaculture industry, commercial fishing, native and recreational fishing groups. Gillespie also recommended (4.7.2) the land referral system for salmon farming tenure applications be expanded to include interest groups such as the United Fishermen and Allied Workers' Union, the Fishing Vessel Owners' Association, and the B.C. Wildlife Federation.

Fourth, he recommended the government reduce user conflicts through coastal planning (4.6). Specifically, he recommended a program of coastal resource identification studies. These studies would direct salmon farmers away from areas highly valued by other users.
In his report, *Aquaculture and the Administration of Coastal Resources in British Columbia*, (B.C. Legislative Assembly 1988), the Ombudsman made two recommendations regarding the policy process. He advised the government to plan coastal resource activities. The public was to be involved in all stages of the planning and the plan was to emphasize community control of resources. He also recommended that government agencies have a way to resolve conflicts which may occur during the planning or implementation of policy. The government claims to have implemented all the above recommendations (B.C. Environmental Assessment Office 1995), yet in 1995, interest groups continued to lobby for and against salmon farming. In a review of the industry, ESSA (1993) said more information about the industry needed to reach the public. Today, coastal zone planning in B.C. is still in the first stages of development (Salasan Associates Inc. et al. 1993).

In 1995, the provincial government stopped issuing salmon farming tenures and has called for a public policy review under the *Action Plan for Salmon Aquaculture*. At first glance, the events in 1985 seem very similar to events in 1995. What happened between 1985 and 1995? How did the government implement the recommendations? Once implemented, how did the government and interest groups make policy?

The theory of policy communities can be used to describe and analyze how government agencies and interest groups
interact when making policy. To better understand what happened between 1985 and 1995, the next two sections (3.2 and 3.3), introduce and apply the theory to the salmon farming policy community. The final section (3.4) returns to the Gillespie and Ombudsman recommendations, their implementation, and their validity today.

3.2 POLICY COMMUNITIES THEORY

The basic assumption of this theory is that those with the most power have the greatest influence on policy outcomes. As a result, groups and agencies will work to increase their power in the policy process (Coleman and Skogstad 1990a). Historical overviews of how American, British, European and Canadian scholars contributed to the development of this theory are in Jordan (1990), Atkinson and Coleman (1992), Pal (1992) and Howlett and Rayner (1995).

Hoberg (1996) gives examples of how interest groups and government agencies can use power resources to influence policy. Staff within government agencies have authority and information. Environmentalists can change the purchasing and voting patterns of people. Industry members can affect jobs and capital investments. All involve the use of political power to shape policy outcomes.

3.2.1 SOCIETY AND POLICY COMMUNITIES

"Society allows specialized publics to dominate decision-making in sectors of policy where they have
competence, interfering only when larger concerns must take precedence, when systemic or technological change necessitates intervention, or when conflict within the special public spills over into the larger political arena (Pross 1992 pp 118-119)." The term policy community refers to these "specialized publics." A policy community is made of government agencies, individuals, and public groups who share an interest in a policy field (Lindquist 1995). Pross (1992) divides a policy community into the sub-government and the attentive public. The sub-government is the group of agencies and interest groups who make policy on a regular basis. A main objective of the sub-government, according to Pross (1992), is to maintain the status quo by having all policy matters appear as routine. By doing so, the sub-government retains control. Members of the sub-government maintain this control by compromising with each other, in the knowledge they will continue making policy over the long term. As long as control is maintained, what one gives up today may be gained tomorrow (Pross 1992, Lindquist 1995).

The attentive public, as defined in policy communities theory, is made up of individuals, government agencies, and groups who have an interest in the policy area, but are not involved in the daily activities of policy making. Unlike the sub-government, the attentive public has an interest in changing the status quo, and uses a number of methods to bring the attention of the general public to policy community.
activities. The attentive public will influence public opinion through advertising, lobbying the public directly, gaining media attention, and lobbying Ministers (Pross 1992).

As a result, the sub-government needs to pay attention to the attentive public which could create so much conflict that Ministers and the general public become involved in the policy process. If this happens, the sub-government loses control and the policy community often alters or restructures (Pross 1992).

3.2.2 INTEREST GROUPS

An interest group is an organization whose members act together to have public policy better reflect the group's interests (Pross 1992). Interest groups perform a number of services within the policy community. First, groups pass information between their members and agency staff. Groups articulate their members' concerns to government and in turn, give government a place to try out new policies. Second, interest groups, such as professional associations, regulate their members. Third, the groups can mediate between warring agencies and keep the policy process going (Pross 1992). Different interest groups have different capabilities to work within the policy community. Both Coleman (1985) and Pross (1992) describe the characteristics of groups capable of influencing the policy process. These characteristics involve the "power resources" of an interest group.
Information is one such power resource. A group needs to be able to produce and understand technical information, to understand the policy process and be able to follow their proposals through the policy process (Coleman 1985).

Being able to work with other groups is another power resource. Groups that form coalitions or associations with other interest groups collectively increase their influence (Coleman 1985, Pross 1992).

Members are still another resource. A group with a large membership or wealthy, well-placed members can take action to shift political support. A well educated membership is likely to understand and communicate well with bureaucrats and politicians (Pross 1992).

Other attributes that help a group are good leadership, a high public reputation, and access to professional knowledge (Pross 1992). Finally, a group with finances from a number of sources has financial stability and can hire staff (Coleman 1985).

A final resource is government recognition. A group may have all the above resources and yet, remain a member of the attentive public. To become part of the sub-government, the government needs to give the group a role in policy making (Wilson 1990).
3.2.3 GOVERNMENT AND INTEREST GROUP NETWORKS

The term "policy network" refers to the relations that develop between government agencies and interest groups. A network develops around an issue within the policy community and between agencies and interest groups who share similar values (Coleman 1987, Coleman and Skogstad 1990a, Pross 1992). Coleman and Skogstad (1990a) described three types of networks that can develop: state directed, pluralist, and closed networks.

In a state directed network, interest groups are poorly organized and government makes policy (Coleman and Skogstad 1990a). Several government agencies can be involved, but a lead agency or interagency group exists to coordinate the information and expertise from all the agencies (Lindquist 1995). In this type of network, interest groups can develop in two ways. First, groups may organize in response to unfavourable government policies. Secondly, the government can encourage the development of interest groups through financing and other forms of assistance (Finkle et al 1994).

In a pluralist network, the authority to make policy is fragmented among a number of agencies. Interest groups tend to be poorly organized. In this network, interest groups will compete with each other to influence policy (Coleman and Skogstad 1990b).

Several types of pluralist networks are possible. When government agencies continue to make policy independently of
interest groups, a *pressure pluralist network* exists (Coleman and Skogstad 1990a). In this type of network, no mechanism or organization exists to mediate among interest groups or among government agencies competing with each other for influence. As a result, the government tends to make short term policy and functions without a long term policy strategy (Lindquist 1995).

When agencies rely upon interest groups for information and expertise in exchange for interest group participation in policy making, a *clientele pluralist network* results (Coleman and Skogstad 1990a). In this network, interest groups will organize themselves into an association, develop a consensual policy statement, and then lobby government to change policy. At the same time, the government can not organize because the jurisdiction and expertise is spread among several agencies, none of which has the power to manage the policy process. One result is agency staff begins to rely upon interest group associations to supply information and expertise. Collegial relations are likely to develop between agency and association staff rather than between staff of competing agencies (Lindquist 1995). In this situation, interest groups can effectively intervene against a government action (Coleman and Skogstad 1990b, Lindquist 1995).

The implications for policy making are that the groups want to maintain the status quo and are likely to react to issues rather than search for ways to improve or reorient
within the sector. Government agencies are likely to adopt policy statements from the group association. To encourage a particular interest group to develop, government will work through the association, rather than have the group develop independently. In situations where policy needs to be changed, the government will work carefully with the association rather than make policy separate from the association (Lindquist 1995).

A third type of network is a closed network which exists when a government agency has the power and resources to control all the other agencies and only one or two interest groups are in the policy process. Both the government and interest groups in closed networks have the resources to produce technical information and long term strategies. In this type of network, interest groups play a large role in implementing policy (Lindquist 1995).

Depending upon the number of interest groups, this type of network can be corporatist or concertation (Coleman and Skogstad 1990a). In a corporatist network, a strong agency works with two opposing interest groups. The agency works to build a compromise policy between the interests (Coleman and Skogstad 1990a). In a concertation network, a strong agency works with a strong interest group. Together, the agency and interest group can build a strong defense against other groups participating in policy making (Coleman and Skogstad 1990a).
3.2.4 CONCERNS RAISED BY THE THEORY

This theory raises three concerns about policy making within policy communities. First, the process can be unfair because all groups and agencies do not have an equal opportunity to participate. The upper classes tend to dominate the sub-government. Business and professional organizations rather than volunteer organizations are more likely to be in the sub-government (Pross 1992). Secondly, the community does not discuss all the policy issues as the sub-government works to maintain consensus and routine policy making (Pross 1992). The concerns of business are more likely to be discussed than the concerns of the poor or disadvantaged (Pross 1992). Finally, powerful interest groups in the sub-government participate in policy decisions while less powerful groups only influence the decisions. As the primary responsibility of interest groups is to their members, rather than the public at large, theorists question whether these groups should be sharing in policy decisions without the corresponding social responsibility and accountability of government (Coleman 1987).

3.2.5 GILLESPIE AND OMBUDSMAN RECOMMENDATIONS

Before applying the policy community theory to the salmon farming experience, it is important to note that the recommendations in the Gillespie and Ombudsman reports, as indicated by the summary at the beginning of this chapter, address these very concerns. The main thrust of the
recommendations is to equalize the influence of the different interest groups. The public information program would reduce the need for groups to use financial resources and expertise to access and generate information for the policy process. By increasing communication and understanding between interest groups, the groups would be less likely to use their resources to lobby against each other. By providing access to the policy process through the advisory council and the land referral system, interest groups would have some confidence their issues would be heard and considered. Coastal zone planning would also be a means whereby groups could put forward their interests without having to use resources to lobby the public and Ministers. A policy development process that makes decisions based on the input of a wide variety of interests, results in policy that would be more likely to be socially accountable than if the policy is based on the interests of only a few groups. If business groups are responsible for implementing the policy, the public information program and involvement of the interest groups on an on-going basis would help ensure the implementation is responsible.

3.3 CASE STUDY APPLICATION

Pross (1992) conceptualized policy communities and networks by drawing a policy community map. As a means to introduce the reader to the salmon farming policy community, Figure 2 is a map of the salmon farming policy community.
The map shows who is involved in the community and who forms the sub-government and the attentive public. The proximity of groups to each other is an attempt to illustrate policy networks. The sub-government is made up of the agencies and interest groups within the inner square while the attentive public is comprised of the groups outside the square. The groups which lie across the line are those which are included sometimes or participate regularly in some types of policy making.
In applying the policy community theory to the events in the salmon farming policy community, three subsections address the following questions. How did the government implement the Gillespie and Ombudsman recommendations? (3.3.1) What did the government agencies do to develop policy? (3.3.2) What power resources did the interest groups
use to increase their influence? (3.3.3) The first section begins with events in the policy community which led to the moratorium in 1986 and concludes with the government announcing the Action Plan for Salmon Aquaculture in 1995. The final sections of the chapter evaluate whether the concerns raised by the theorists are valid for the salmon farming policy community and then return to the Gillespie and Ombudsman recommendations to determine their validity today.

3.3.1 EVENTS LEADING TO THE 1986 MORATORIUM

At least two conditions led to the first moratorium and public inquiry. First, the public was concerned about the rapid expansion of the salmon farming industry, particularly in the Sunshine Coast. Second, the commercial fishing industry wanted influence in the policy process.

When salmon farming began rapidly expanding in the early 1980s, the United Fishermen and Allied Workers' Union called for a full review of salmon farming policy in B.C. They were concerned with the ecological effects of waste from the farms, the use of antibiotics, the transfer of disease, and the access to wild stocks for broodstock. Other concerns were the lack of planning, the effects on markets, wages, processing plants, and the use of traditional fishing grounds and tie up spots by salmon farms (United Fishermen and Allied Workers' Union 1986).

In response to the request, the Minister of Lands and Forests stopped issuing salmon farm tenures and appointed
David Gillespie to conduct a public inquiry into salmon farming. Gillespie had 30 days to prepare a report with recommendations to resolve issues about salmon farming. Gillespie focused on listening to key interest groups and groups in coastal communities. To do this, he held a series of open public meetings in coastal communities which had both commercial fishing and salmon farming sectors. He also met with government agencies, and when time permitted, with individual citizens and interest groups (Gillespie 1986).

3.3.1.1 INTEREST GROUP PROCESS CONCERNS

During the Gillespie Inquiry, everyone who was interested in salmon farming policy could participate in the policy process. In this type of open forum, interest groups, agencies and individuals could use their resources in articulating their concerns rather than gaining access to the policy process. As a result, Gillespie heard from a variety of groups and was able to respond to their concerns.

Following are some of the concerns expressed in the written submissions to the inquiry (Gillespie 1986). Some saw improved communication as a key to reducing conflict. Aquarius Sea Farms saw "a need for co-operative management and liaison between the industry and government, with a consultative process with other foreshore users." Pacific Aqua Foods Ltd. wrote, "A number of the concerns raised at your public meetings can be addressed by government, the aquaculture industry, and the commercial fishing industry by
simply improving communication and discussion amongst ourselves."

Many groups wanted to form a committee of coastal users and government agencies as a means to reduce conflict. The United Fisherman and Allied Workers Union wanted "The institution of a consultation and assessment program that will take into account the interests of all people and groups who may be affected by salmon farm operations." The B.C. Wildlife Federation also recommended a council be established. "Increased public input is essential to minimize conflicts between other foreshore users in our coastal waters." The Campbell River Aquaculture Association offered to "take part in any ongoing committee that may be established between government and industry to ensure the continued orderly development and expansion of aquaculture in British Columbia."

The native groups wanted to be included in the foreshore tenuring process. The Ehattesaht Indian Band recommended "that the provincial government refer all types of tenures over Crown foreshore to tribal or band councils for comment." The Kwakiutl District Council wanted environmental impact assessments "at the community level so that Native people [could] participate in determining what development should take place within our traditional territory." The Nuu-chah-nulth Tribal Council believed "that it is essential for local residents, who have the greatest long term stake in the
results, to be deeply involved in planning for the coastal zone."

The Campbell River Environmental Council also wanted local involvement and suggested that "each lease be given to the appropriate District municipality to be reviewed, and if shown to be of public concern, to be brought before a public hearing." The Council of Forest Industries of British Columbia recommended "that the Lands Branch, of the Ministry of Forests and Lands, set up and chair regional foreshore advisory boards. These boards should have a broadly based membership - i.e. include representatives of the major local foreshore user groups and appropriate government agencies."

3.3.1.2 GOVERNMENT RESPONSE

In response to the Gillespie Report, the government agencies formed the Aquaculture Steering Committee, with representatives from the Ministry of Forests and Lands and the Ministry of Agriculture and Fisheries, to implement the recommendations. This Committee prepared an action plan that was approved by Cabinet in January 1987 (B.C. Environmental Assessment Office 1995). Once approved, the agencies established the Minister's Aquaculture Industry Advisory Council (MAIAC), expanded the land referral system to include interest groups, and began the CRIS.

The Aquaculture Steering Committee also implemented the recommendations in the Ombudsman Report. By this time, the
Steering Committee had expanded to include a representative from the Ministry of Environment.

In response to the recommendation to undertake coastal planning, the Committee thought an expanded planning program may not be necessary as "most of the problems referred to by the Ombudsman arose during the initial development of Aquaculture and have been substantially remedied (Sakalauskas 1988)." The agencies also thought the implementation of the Gillespie recommendations had resolved the conflicts in the immediate term as MAF noted "that there have been few recent complaints over siting, with a marked decline since the Gillespie Inquiry reforms (Hackett 1988)." In addition, the Committee thought the Ombudsman recommendations were "substantial and affected the basic approach of government to all resource management, coastal, mineral, and natural (Sakalauskas 1988)" and, as such, the Cabinet needed to be involved in implementing the recommendations.

Although the Ombudsman Report does not mention an outside group as necessary to resolve conflicts, the Committee interpreted the conflict resolution recommendation as "shifting resource management decision making to an independent group with significant public participation. The structure and success of such a group [depended] on all interests being represented and their ability to make fully informed decisions.....This would represent a significant change in the approach of the Government. Cabinet would also
have to consider this recommendation as major policy and legislative changes would be needed (Sakalauskas 1988)."

As a result, the agencies limited their response to the Ombudsman Report to changing the licensing procedures for aquaculture (Sakalauskas 1988). This response to the Ombudsman Report is a good example of a sub-government maintaining the status quo by keeping policy decisions within an established routine.

3.3.2 GOVERNMENT AGENCIES

Over the next ten years, the agencies within the sub-government were to undergo a number of changes and find themselves locked in conflict with no means of resolving the conflict other than to eventually call for a second moratorium and public policy review. One of the reasons for the conflict developing was the change in relative power of the provincial agencies during the ten years. Initially, the Ministry of Environment and the Ministry of Lands and Forests shared the provincial responsibility for salmon farming policy. The Ministry of Agriculture and Food did not have a large role until the provincial government named the Ministry as the lead agency and the Marine Resources Branch moved from the Ministry of Environment to the Ministry of Agriculture and Food.

With this change, the responsibility to regulate the industry remained with the Ministry of Environment, while the responsibility to develop the industry moved to the Ministry
of Agriculture and Fisheries. The Aquaculture Steering Committee provided the means for the agencies to develop and coordinate policy but the effectiveness of the Committee declined over the years.

In the Aquaculture Steering Committee response to the Ombudsman Report in 1988, the Ministry of Environment expressed support for the salmon farming industry and confidence in their own legislative capacity and administrative ability to regulate the industry. The Ministry thought the Land Act or the Waste Management Act would be sufficient to enforce the waste management and environmental monitoring programs (Hackett 1988).

The Ministry had "received considerable cooperation from the B.C. Salmon Farmers Association in the development of the program and fully expect[ed] this commitment to the program to continue into the implementation stage." The Ministry also stated that "A well-situated and well-operated farm is expected to have little impact on the marine environment." The Ministry thought the "current approach to reviewing the Marine Fish Farm Development Plan, combined with initiatives such as the Coastal Resource Interests Studies and the mandatory environmental monitoring program [was] sufficient to identify and manage environmental impacts associated with finfish aquaculture (Hackett 1988)." The Ministry's confidence was soon to be tested.
3.3.2.1 ENVIRONMENTAL MONITORING PROGRAM

In December 1988, the Waste Management Branch of the Ministry of Environment released the Environmental Monitoring Program for Marine Fish Farms. The Branch had designed the Program for the farms to gather the data the Branch needed to assess the environmental impacts of salmon farming. Then the B.C. Salmon Farmers Association protested the program as being onerous and expensive. During the development of their environmental monitoring program, the Branch had asked for input from the Association, but when the Branch released the program, the salmon farmers thought their input had had little effect (B.C. Salmon Farmers Association "News" March 1989). After two years of negotiation with the B.C. Salmon Farmers Association and the Ministry of Agriculture and Fisheries, the Ministry of Environment issued a salmon farming policy, Environmental Management of Marine Fish Farms (B.C. Ministry of Environment 1990).

In their recommendations to the Minister in 1992, MAIAC stated the monitoring program was "not effective." The Council asked for "useful and objective information on the environmental impact of salmon farming" and stated that "Government enforcement activities to ensure compliance must be a priority (MAIAC 1993)." The expectations of the Ministry of Environment for the waste monitoring program in 1988 had not been met.
3.3.2.2 FARM SITING

Their expectations to be able to define good sites for farms were also not met. Until the NDP came to power, B.C. Lands made the final decision on issuing salmon farming tenures after collecting input through the land referral system. The change in government in 1991 changed the relative influence of the Ministry of Environment, the Ministry of Agriculture, Fisheries and Food and the Ministry of Lands. The NDP government was more responsive to environmental concerns than the previous Socred government and undertook a number of initiatives to improve the provincial environmental policies. While reworking the provincial policy, the government restructured the sub-government and the policy process of the salmon farming policy community.

First, the NDP increased the power of the Ministry of Environment within the salmon farming policy community by joining B.C. Lands with the Ministry of Environment. As a result, the land referral system moved under the mandate of the Minister of Environment, Lands and Parks who placed a moratorium on fish farm development in the Broughton Archipelago and stated that "there be a stop on the issuance of new [fish farm] licences (B.C. Legislative Assembly 1994)." B.C. Lands wanted the authority to issue fish farm tenures returned to them. The Fisheries Branch of MELP was "concerned that Lands may return to the previous method of
operation where tenures were approved even though Fisheries registered objections." The Fisheries Branch wanted "a statement to indicate that MELP-Fisheries [had] veto power or in a more general sense that if objections [were] received in the referral process, the application will not proceed until the objections [were] dealt with (B.C. Ministry of Environment, Lands and Parks 1994a)."

3.3.2.3 DISPUTE RESOLUTION

To the above note, the Fisheries Branch added, "A dispute resolution mechanism may be needed (B.C. Ministry of Environment, Lands and Parks 1994a)." The existing dispute resolution mechanism between MAFF and MELP is to seek resolution at "the lowest common level. Deputy Ministers will resolve issues that cannot be settled at a lower level (B.C. Ministry of Agriculture and Fisheries 1988c)." This method of resolving disputes contributed to the second moratorium.

When the agencies developed the Action Plan for Salmon Aquaculture, the dispute between MAFF and MELP moved through all the levels of the hierarchy to reach the Ministers. First, DFO initiated the moratorium and provincial policy review by refusing to process applications for the Broughton Archipelago. Due to the conflict between MAFF and MELP, the provincial agencies had lost the ability to control the policy process and could not respond to DFO with a single policy position. Instead, staff within MELP followed the
example of DFO and stopped processing applications. The
tensions between MAFF and MELP increased. The ministries did
not resolve their dispute until the Ministers agreed upon the

3.3.3 INTEREST GROUPS
The actions of the interest groups also led to the second moratorium. Although the government agencies implemented the Gillespie recommendations designed to include public input into the policy process, these methods lost their effectiveness during the ten years.

The sub-government changed gradually during the late 1980s. The B.C. Salmon Farmers Association and the Ministry of Agriculture and Fisheries both increased their policy capacity and, as members of the sub-government, had significant influence in the policy process. In relative terms, the influence of the Ministry of Environment and other interest groups decreased. This trend reversed dramatically with the election of the NDP. The following discussion follows the development and activities of the B.C. Salmon Farmers Association and the other interest groups.

3.3.3.1 B.C. SALMON FARMERS ASSOCIATION
The Association formed in 1984 to allocate chinook and coho eggs among salmon farmers (ARA Consulting Group 1994). These eggs not only helped the industry to start, but between 1986 and 1988, helped to fund the Association (B.C. Salmon
The Association received monies from several government agencies. Examples of funding are $235,000 from External Affairs Canada to do market research and promotion activities in Japan and the U.S. (Fish Farm News July 1990) and $340,932 from MAFF for a Partners in Progress program (Northern Aquaculture Jan/Feb 1993). In 1991, the Association acquired $3.6 million through a joint initiative with the Western Economic Diversification Office to develop a generic marketing program (Northern Aquaculture May/June 1991).

Members also support the Association. The Association changed its funding structure in the spring of 1989, when members agreed to pay a levy based on pounds of harvested salmon to the Association. The larger companies in the industry have experienced, well educated personnel who use their expertise to further industry interests. They write articles on policy directions, speak to groups on behalf of the industry, and present one industry position to the media (Fish Farm News, Northern Aquaculture).

The Association worked with a number of agencies to develop policy. They successfully lobbied to transport smolts on ferries (B.C. Salmon Farmers Association "News" July 1987), and worked with MELP on the Environmental Monitoring
Program (B.C. Salmon Farmers Association "News" July 1987). They negotiated with B.C. Lands for policy changes (Fish Farm News July 1990) and had a member sitting on a senior advisory committee for the Minister of DFO (Fish Farm News December 1990). In 1993, the Association played a key role in negotiating with the government and the Kwakiutl on farm sitting in Kwakiutl territory (Pirquet 1993).

The Association provided information to the policy process (Fish Farm News October 1989). Staff members compiled an interim report for the Market Analysis Group of DFO. The Association participated with other aquaculture associations in an Industry Assessment sponsored by MAFF (Fish Farm News May 1992). With the Co-operative Assessment Salmonid Health (CASH) program, the Association gathers fish health and production data on about 75% of B.C.'s farmed salmon production (Northern Aquaculture Jan/Feb 1993).

3.3.3.2 OTHER INTEREST GROUPS

The other interest groups continued in the attentive public. Following is a discussion on how their input into the policy process gradually decreased. As a result, when the NDP came to power, the interest groups rallied together to increase their power resources and change policy.

After the Gillespie report, the Minister of Agriculture and Fisheries established the Minister's Aquaculture Industry Advisory Council (MAIAC) in 1987. The council had 15 members which came from the aquaculture, commercial fishery, native,
recreational and environmental groups. The purpose of MAIAC was to "provide a broad perspective on the resolution of issues, government program priorities, inter-agency agreements and provincial policies (B.C. Ministry of Agriculture and Fisheries 1987b)."

MAIAC stayed stable and active until 1992. Between 1987 and 1991, MAIAC met on an average of 3-4 times a year. The membership, with influence in a number of areas, did not change. Bruce Buchanan, from B.C. Packers, represented the Fisheries Council of B.C., a coalition of major fish processing companies in B.C. In addition to being involved in the commercial fishery, B.C. Packers is one of the larger fish farming companies in B.C. Charles Lyons represented the B.C. Wildlife Federation, a conservation organization with 30,000 members in 144 clubs throughout B.C. (B.C. Environmental Network 1995). Will Soltau, as vice president of the Pacific Trollers Association represented the commercial fishing industry (Meggs 1988).

By 1991, the focus of MAIAC was industry competitiveness and profitability. Examples of agenda items from 1991 are: "the international competitiveness of the B.C. aquaculture industry given the high input costs", and "fisheries and aquaculture interactions at the production level and in the market-place (MAIAC 1991)."

After the NDP came to power, the Minister restructured MAIAC and modified the Terms of Reference for the Council.
Eleven of the 16 members were new representatives, but they essentially came from the same sectors as the previous Council (B.C. Ministry of Agriculture, Fisheries and Food 1992b). The Minister gave the Council two tasks. One was to "provide direction to a consultant to complete a report on the B.C. salmon farming industry that would provide information/background on key issues", and to "develop specific recommendations on the need for further research, policy clarification, and regulatory or procedural changes (MAIAC 1993)."

ESSA (1993) completed the report, and in December 1992, MAIAC issued a three page report with recommendations. Three recommendations refer to the policy process. One was to "develop effective consultation with Native tribes regarding aquaculture proposals in their local use area." Another was for the salmon farming industry to "develop a comprehensive communications strategy in cooperation with MAFF and other agencies." In terms of working with the commercial fishery, the Council recommended that the government "continue to encourage the salmon farming and commercial fisheries industry to work together to solve common issues" and "act to resolve conflicts between the interests of the commercial fishery and the salmon farming industry (MAIAC 1993)." These recommendations are very similar to the Gillespie recommendations.
The Ombudsman Report had commented that MAIAC was a step in the right direction, but would not meet the need for the public to appeal decisions made by government. Instead, MAIAC became a means for the Minister to obtain support for political decisions. After the election, the NDP was in a bind. When the public elected it to government in 1991, one of the NDP election promises said, "A New Democrat government will provide leadership in working with all sectors of the fishing industry to conserve our fishery and to protect the jobs and communities which depend upon it....We will declare a moratorium on new aquaculture ventures and increase support for salmonid enhancement programs (B.C. Legislative Assembly 1993a)." After the election, the Opposition in the Assembly began to ask why the NDP had not declared the moratorium. The Minister of Agriculture, Fisheries and Foods responded that MAIAC had said "there was no need for a moratorium (B.C. Legislative Assembly 1993b)."

The interest groups, some of whom had representatives on MAIAC, disagreed. Between the Gillespie Inquiry and the early 1990s, the interest groups in the attentive public had increased their policy capacity. Larger environmental groups, like Greenpeace and the Sierra Club, had entered the policy community and started to actively oppose salmon farming. The UFAWU had expanded their role in the environmental community by forming the T. Buck Suzuki Environmental Foundation (B.C. Environmental Network 1995).
During the 1990s, the interest groups began to build coalitions and to put forward their interests in a number of ways. First, groups protested the expansion of salmon farming in the Central Coast area of B.C. Then, they came together to publish a newspaper describing the detrimental effects of salmon farming upon the environment. Finally, the groups formed a second coalition for the meetings held with ministry staff developing the Action Plan for Salmon Aquaculture. Following are details of their actions. These actions are a good example of how members of the attentive public, with power resources, can increase their influence in the policy process.

3.3.3.2.1 CENTRAL COAST APPLICATIONS

In 1993, two fish farming companies applied for 14 sites in Rivers and Smiths Inlet in the central mainland coast region of British Columbia. As the government agencies had not completed a CRIS for the Central Coast, the lands officer expanded the referral system (New Catalyst 1994). Both native and commercial fishing groups put forward a strong statement against salmon farming moving into the area.

The Kwakiutl and Gwa'sala-'nakwaxda'xw First Nations wrote, "The area contains abalone, cod, clam beds, and halibut. To put a fish farm in this area would be harmful for food consumption, and to the environmental surroundings (Bruce 1993)." The Oweekeno Band Council requested an impact study on the effects of Atlantic Salmon on native species.
before granting fish farm tenures (Hanuse 1993). The Heiltsuk Tribal Council asked that before "these kinds of ventures are dealt with in the Central Coast that [B.C. Lands] have input from the Oweekeno Nation, the Kitasoo Nation and the Heiltsuk Tribal Council as [they are] the only stable communities in the Central Coast." They also did not "want carpetbaggers to enter their territories and leave a mess (Newman 1993)."

The United Fishermen and Allied Workers' Union was strongly opposed to any fish farm being allowed in Rivers and Smith Inlets. First, the site applications were in "important gillnet fishing areas" and would interfere with the fishery which took place during July and August. Secondly, they were concerned about the increasing number of escaped fish from farms, "posing a real threat to wild stocks." The threats included the "spread of disease" and Atlantics "establishing themselves in local streams, supplanting wild stocks." The Union wanted "no impact on existing wild fisheries," and stated that the "preservation of irreplaceable wild salmon stocks must take precedence over aquaculture development on the B.C. coast (Lane 1993)." The Union was "unequivocally opposed" to fish farms in Smiths Sound (Brown 1993).

The Fishing Vessel Owners' Association of British Columbia opposed the fish farm applications because the area was important for commercial fishing and wild salmon stocks.
The Association was "not opposed to fish farming and only object[ed] to applications that would directly conflict with important spawning (usually herring), migration, other marine habitat considerations, or with commercial navigation, fishing or anchoring activities." They recommended the farmers meet with themselves, "the Pacific Gillnetters Association and the United Fishermen and Allied Workers Union to define which areas would not conflict with the commercial fishery before the farmers made their tenure applications (Eby 1993)." B.C. Lands approved none of the applications.

3.3.3.2.2 NEW CATALYST NEWSPAPER

In the fall of 1994, a coalition of 12 environmental groups, commercial fisheries organizations, and sportsfishing associations published a 12 page newspaper on fish farming. The coalition included the United Fishermen and Allied Workers' Union, the Sierra Club, the Steelhead Society, Greenpeace, and the Save Georgia Strait Alliance (New Catalyst 1994). The paper contains a policy statement that asks for "a full, comprehensive, environmental review of salmon farming in British Columbia....", for a "moratorium on new salmon farm licences and any expansion of existing salmon farm capacity...", and to "open up all foreshore lease applications to wide public input prior to approval of any licence...."

The groups thought the existing methods of including interest groups in the policy process were inadequate. In
reference to the Central Coast applications, the coalition stated, "It was unusual for the Lands Officer to seek broad-based input on the applications; normally the referral process is to a small, established list of agencies and the public does not get much, if any, say in the matter."

The paper suggests how readers could become involved in changing salmon farming policy. First, they could share the paper with their "friends, family, co-workers, neighbourhood or community organization, and with anyone who boats, fishes or otherwise cares about our coastal ecosystem." Second, they could write with suggested policy directions to Ministers. Third, they could "always ask if the salmon in stores and restaurants is farmed or wild, and insist on proper labelling. Let vendors and restaurant staff know that you won't buy farmed salmon." These are all methods Pross (1992) describes as methods used by members of the attentive public.

3.3.3.2.3 Action Plan for Salmon Aquaculture

A second coalition formed during the development of the Action Plan for Salmon Aquaculture, when government agencies met with representatives from native and interest groups to receive their input on the Plan. A coalition formed by the B.C. Wildlife Federation, Save Georgia Strait Alliance, Sierra Club of B.C., Steelhead Society of B.C. and the T. Buck Suzuki Environmental Foundation put forward a position
paper that was very similar to the policy position in the New Catalyst.

The groups requested a "legitimate citizen/stakeholder advisory process" be put into place. They commented that, "MAFF appears to have abandoned the MAIAC without ever making this official or communicating its demise to MAIAC members. We urge that a broad-base citizens oversight committee be established to monitor the industry and provide ongoing inpute [sic] to agencies (B.C. Wildlife Federation et al. 1995)." These requests are very similar to the requests made by the interest groups writing to the Gillespie Inquiry.

In April, 1995, the provincial government announced the Action Plan for Salmon Aquaculture which includes a hold on new tenure applications, an environmental assessment of the industry, and a review of salmon farming policies. By not processing new salmon farm tenures and undertaking a review of provincial policies, the government has come full circle.

In terms of policy community theory, the policy community is a pressure pluralist community which Lindquist (1995) describes as a "war of all against all." No mechanism exists to mediate among all the interests. The government agencies were in conflict. The salmon farming industry had gone into hiding, while the other interest groups demanded the public reconsider the industry as a viable use of resources. The only way out of the conflict was for the
Ministers to call a stop to activity within the policy community.

3.4 RETURN TO CONCERNS OF THEORISTS

The policy process within the salmon farming policy community does show evidence of the concerns expressed by the theorists. When they could, a few agencies and the B.C. Salmon Farmers Association dominated the sub-government. Gradually, the input of other interest groups decreased. MAIAC became focused on the concerns of industry. In areas where the CRIS studies were complete, Lands Officers chose to not ask for the input of interest groups before granting new salmon farming tenures.

The sub-government also limited the issues discussed within the policy community. The sub-government did not address environmental concerns very well. Some of this reticence could result from the inability of anyone to adequately advise the public on the levels of environmental risk associated with salmon farming. Some of the reticence also reflects the interests of the sub-government, whose main objective was to develop the salmon farming industry.

The sub-government has not considered some social questions. How can the salmon farming industry maintain or increase social stability in coastal communities? What opportunities for economic development does salmon farming provide for native communities? A recent report from the David Suzuki Foundation raises a question on a larger scale.
Should we be using high quality fish protein, which could be used to feed people, to feed farmed salmon (David W. Ellis and Associates 1996).

An example of Coleman's concern about the social responsibility of interest groups implementing policy could be evident in the environmental monitoring program. The farms collect the data for the program. Even where staff on each farm carefully follow the protocols when collecting the data and dutifully report all misdemeanours to the Ministry of Environment, Lands and Parks, some checks are needed in the program to ensure the monitoring program is and is demonstrated to be effective.

3.5 RETURN TO THE RECOMMENDATIONS

There are similarities in the events leading to the first and second moratoria. First, the industry began to expand into areas where no coastal planning existed. When people became concerned about conflicts developing between existing coastal users and the salmon farming industry, they began to rally together against granting further tenures to the industry. Second, the commercial fishing industry became actively involved in opposing salmon farming. Given these similarities, do the Gillespie and the Ombudsman recommendations still offer direction?

Yes, the intent, if not the recommendations themselves, are valid today. Assuming that the salmon farming industry will continue in B.C., a mechanism to resolve conflicts, to
set policy direction, and to improve communication among
government agencies and interest groups is needed on an on-
going basis. A mechanism to keep the public informed about
the industry, and to include interest groups in the policy
process is also needed. These mechanisms can then be
incorporated into the coastal zone planning process underway
in B.C. The recommendations in Chapter 5 develop these
comments further.
CHAPTER 4 POLICY FRAMEWORK AND RECOMMENDATIONS

4.1 INTRODUCTION

This chapter describes the policy that the salmon farming policy community produced through the processes operating between 1985 and 1995. To identify the policies needed in a good framework, the chapter uses the work of aquaculture development planners in the early 1980s as this information was available when the salmon farming policy community began to develop the policy framework. After identifying the components of a good framework, the chapter reviews the salmon farming policy developed between 1985 and 1995 and identifies any gaps which may still exist.

4.2 AQUACULTURE PLANNING POLICIES

The purpose of this section is to present the policies that planners thought were necessary to develop an aquaculture industry in the early 1980s. The first part discusses the stages of development of an aquaculture industry. The second part is a description of a good policy framework for an aquaculture industry.

In this thesis, "policy" refers to any plan or course of action the policy community chose to manage or develop the salmon farming industry. Examples of policies are
legislation, regulations, and guidelines. The thesis uses the term "strategy" to refer to the principles which guide policy development.

4.2.1 STAGES OF INDUSTRY DEVELOPMENT

Pritchard (1976) developed a model to structure the stages of aquaculture development. The model has four stages: wild growth, farming, factory aquaculture production, and integrated aquaculture. Each stage represents an increase in human control of production processes. In the wild growth stage, people are dependent upon natural stocks to support a search and capture fishery. During the farming stage, small companies in rural areas control some of the production processes (Pritchard 1976). The main purpose of farming is to earn a living (Pillay 1977). Families provide most of the labour and sell their products in local markets (Pillay 1977). Most growers purchase seed and feed from suppliers (Aiken 1984). In this stage, farmers are reliant upon government to provide extension services (Pillay 1977). A pilot scale farm is important to do research and develop technology (Pritchard 1976).

In the factory production stage, the industry is dominated by larger companies (Pritchard 1976). These companies are vertically integrated with their own expertise, seed, and feed supplies (Pillay 1977). The industry goals change from making a living to making a profit (Webber and Riordan 1979). The industry becomes more market aware and

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begins to develop products to fit market demand (Webber and Riordan 1979). To do so, the companies will use technology that is already developed for species that receive a high price in the marketplace (Pillay 1977).

In the integrated stage, the farmer controls every part of the production process, including primary productivity (Pritchard 1976). The industry will enter the integrated phase when sites are no longer available, when the levels of production can offset the costs of production, and when products have a high market value (Webber and Riordan 1979).

4.2.2 POLICY PLANNING

By the early 1980s, international, national and provincial scholars had developed a body of literature that described how to plan for aquaculture industry development. Following are their ideas and recommendations.

4.2.2.1 NATIONAL DEVELOPMENT STRATEGY

The purpose of planning aquaculture development is to integrate aquaculture with existing socio-economic development (Pritchard 1976, Pillay 1977, Cook and Drinnan 1984). Following is a list of principles to follow when developing a strategy.

1. Define national objectives and then develop policies that support the type of farming that is compatible with the objectives (Pillay 1977).
2. Integrate the aquaculture development with the general fishery development plan (Pillay 1977, Dorcey 1982).

3. For long term viability, the industry needs to be financially successful (Pritchard 1976, Pillay 1977).


4.2.2.2 ECONOMIC POLICIES

Economic policies support the production, the marketing, and financing of an industry. In terms of production, the industry needs growing sites, and a dependable source of seed and feed (Pritchard 1976, Pillay 1977, Webber and Riordan 1979, Aiken 1984). For marketing, policies need to change as the industry changes. Small rural farms will access local markets, but the larger integrated companies will target international markets (Webber and Riordan 1979). Policies are needed to ease the exporting of products and to address competition from foreign countries (Cook and Drinnan 1984). To attract capital to the industry, potential investors need good financial and production data (Pillay 1977).
4.2.2.3 ECOLOGICAL POLICIES

The industry needs policies to access species for culture, to have dependable seed and feed supplies, and to control diseases and parasites. The selection of species raises several concerns. If the industry cultures indigenous species, the products will compete with the local commercial fishery. Farmed indigenous stock can generate diseases that threaten wild stocks. An aquaculture industry will develop a broodstock that is selected for specific traits. After several generations, if the cultured fish interbreed with the wild stocks, undesirable genetic effects could occur in the wild stocks (Cook and Drinnan 1984). Culturing an exotic species could result in ecological damage. Introduced species can bring unwanted species and disease with them.

Until an industry has enough broodstock, the availability of seed can limit the growth of an industry (Webber and Riordan 1979). With indigenous species, farmers need the right to access wild stocks (MacCrimmon et al. 1974). With exotic species, regulators need to develop procedures that allow the importation of exotic species while reducing ecological risks (MacCrimmon et al. 1974).

As the density of culture increases, the prevalence of diseases and parasites also increases. Policies are needed to provide diagnostic services and therapeutic controls.

The aquaculture industry requires policies that protect the cleanliness of the water the industry uses (Pillay 1977).
The industry also generates wastes and policies are needed to protect other users who may suffer from the effect of these wastes (Cook and Drinnan 1984).

4.2.2.4 SOCIAL POLICIES

Aquaculture needs public acceptance of the right of aquaculturists to use the water, but the public tends to view aquaculture with some suspicion (Cook and Drinnan 1984). Arguments used against aquaculture include: interference with navigation, aesthetics, interference with commercial or sports fisheries, farm pollution (Webber and Riordan 1979). People regard water as common domain that should be accessible to all (Webber and Riordan 1979). The public also regards native species as common property and resists attempts to privatize the use of native stocks (Webber and Riordan 1979, Cook and Drinnan 1984).

Access to farming sites is fundamental to industry development, not only initially but also for expansion. The loss of potential growing areas to other user groups as the industry is developing could limit the industry (Dorcey 1982). Conflicts for sites exist with a number of other users. Both recreational and aquacultural activities prefer isolated sites that are sheltered, have clean water, and are undeveloped. Private land owners are concerned about the aesthetic values of farming, particularly when the culture requires floating structures (Cook and Drinnan 1984).
4.2.2.5 LEGAL AND INSTITUTIONAL POLICIES

The attitude of government agencies toward aquaculture can be a major factor in the success of a new industry (MacCrimmon et al. 1974, Pritchard 1976, Webber and Riordan 1979, Dorsey 1982, Cook and Drinnan 1984). The industry requires institutional policies that provide an integrated approach to industry development. Policy development requires an interdisciplinary approach that brings government and industry together (MacCrimmon et al. 1974). Means such as advisory committees and conflict resolution methods are needed to co-ordinate agencies (MacCrimmon et al. 1974, Cook and Drinnan 1984). Property rights to use water and coastal resources need to be clarified (Webber and Riordan 1979, Wildsmith 1982).

4.3 THE B.C. SALMON FARMING POLICY FRAMEWORK

This section compares the policies that the planners advised governments to prepare with the current salmon farming policies in B.C.

4.3.1 NATIONAL DEVELOPMENT STRATEGY

A national strategy now exists and meets the principles established by planners in the 1980s (Canada. Department of Fisheries and Oceans 1995). The strategy clearly defines a set of principles and the federal government's role in realizing these principles. The strategy emphasizes cooperation and coordination among the federal and provincial
governments, industry, and academia when developing policy. Provincial Aquaculture Implementation Committees, made of representatives from each of these groups, will be responsible for implementing the strategy.

The strategy does not mention a mechanism to revise the strategy or to integrate aquaculture with other industries. The strategy is written from an aquaculture development perspective and provides little direction to fisheries managers on integrating aquaculture with the commercial wild fishery. In terms of integrating environmental interest groups, the strategy recommends using the Canadian Environmental Assessment Act but, other than the industry, does not include a means for the regular input of interest groups.

However, the strategy does state that the federal government will work with provincial governments to develop coastal zone management plans, and to establish pilot projects for new methods of resource management. Over time, if the strategy is reviewed regularly, these actions may integrate the aquaculture industry, commercial fishery, and interest group activities.

4.3.2 ECONOMIC POLICIES

As discussed in previous chapters, government developed programs with industry to develop markets for farmed salmon. Government initially provided the industry with open access to sites, but the access has diminished over time and is now
perceived as a constraint to industry development (ARA Consulting Group 1994).

The government financial policies pose an interesting question. The open access to sites and Norwegian financing (Price Waterhouse 1991) encouraged large numbers of people to enter the industry in the early 1980s. However, when the prices declined, many of the smaller companies went into receivership and their assets moved to larger companies (Price Waterhouse 1991). As a result, four companies now own over half of the industry (ARA Consulting Group 1994).

Governments did not provide financing to individual farmers during the start up phase of the salmon farming industry in B.C. (Price Waterhouse 1991). Instead, the government chose to direct support towards technology transfer, minor tax exemptions, business planning and a small scale loan program (Gillespie 1986). The purpose of this action was "to encourage private sector initiatives as the basis for growth and development (Gillespie 1986)." This policy, combined with Norwegian policies and domestic bank policy resulted in Norwegians playing an important role during the industry start up phase.

Norway has a social goal to maintain employment in rural communities. To meet this goal, in 1978, the Norwegian government passed a law that restricted the cage volume of a farm to 8000 cubic metres and controlled farm ownership to ensure local ownership. In 1984, the government reduced the
volume further to 3000-5000 cubic metres (Gordon 1984, Heen et al. 1993). With these restrictions, Norwegian companies began to look for opportunities in other countries.

Meanwhile, in Canada, the Bank Act did not provide clear direction to domestic banks on whether salmon in pens could be used as collateral for loans. Banks on the east coast of Canada did accept salmon stock as collateral, while banks on the west coast would not (Price Waterhouse 1991). As a result, personal equity and Norwegian investment became the two largest sources of financing for the industry (DPA Group 1986). When companies began to go into receivership, the larger companies that survived had enough financial backing to survive the price decline (Price Waterhouse 1991).

The larger companies benefited from the work done by the many people who found and developed the sites, purchased equipment and supplies and then went into receivership. If the government had taken heed of advice from planners in the 1980s and developed a provincial aquaculture strategy, could some of the economic hardship suffered by the smaller farmers have been avoided?

4.3.3 ECOLOGICAL POLICIES

The governments have a number of policies to reduce the impact of farmed fish upon wild stocks. As a condition of their aquaculture license, farmers need to report fish that escape from the net pens. B.C. Lands policy requires that farms be located at least 1 km away from important salmonid
streams and 3 kms away from the nearest farm. The land referral system works to ensure that farms are not near sensitive ecological areas (B.C. Ministry of Agriculture, Fisheries and Food 1990a). To reduce the risk of interbreeding between wild and farmed salmon, the governments and industry agreed to investigate the costs and benefits of growing all-female Atlantic salmon (B.C. Environmental Assessment Office 1995).

The Fish Health Protection Regulations of the federal Fisheries Act is the primary means to protect fish health in Canada. The regulations provide stringent guidelines for importing Atlantic salmon eggs. Eggs come from a certified disease free hatchery. Only fertilized eggs are imported. These eggs must be surface disinfected. During incubation and early rearing, farmers follow quarantine procedures (B.C. Ministry of Agriculture, Fisheries and Food 1991b).

A number of agencies are involved in waste management. Remote sites with permanent accommodations require a sewage disposal permit from the Ministry of Health. Salmon farmers require a waste management permit to discharge wastes into marine waters (B.C. Ministry of Agriculture, Fisheries, and Foods 1992a). The Bureau of Veterinary Drugs and the Department of Health and Welfare Canada control the use of antibiotics on the farms (B.C. Ministry of Agriculture, Fisheries and Food 1990a).
To gather information about the effects of salmon farming upon the ecology, the governments conducted a number of studies (B.C. Ministry of Agriculture and Fisheries 1988b). These studies covered such subjects as site suitability, impact assessments, water circulation changes, monitoring programs, and sedimentation. Universities, industry members, B.C. Salmon Farmers Association and federal and provincial agencies contributed to the studies.

4.3.4 SOCIAL POLICIES

Many of the statements the planners made in the 1980s predicted the sentiments the public would have towards salmon farming. At one time or another, people expressed all the concerns on the list in Webber and Riordan (1979). In response to these expressions, the government developed policies such as the CRIS, but policies that integrate aquaculture with other coastal uses are minimal.

As mentioned earlier, information about the salmon farming industry still needs to reach a wider audience. Seven years after Gillespie made this recommendation, ESSA (1993) stated that more information about the industry needs to reach the public. In their submission to the government agencies during the Action Plan for Salmon Aquaculture, interest groups also commented that information about the industry was difficult to find (B.C. Wildlife Federation et al. 1995).
4.3.5 LEGAL AND INSTITUTIONAL POLICIES

In his first recommendation, the Ombudsman advised the government to consider enacting a separate Aquaculture Act which would give "clear, coordinated and express authority" in administrating aquaculture (B.C. Legislative Assembly 1988). Instead, the government made changes to existing legislation. Policies that provide clarity for agency staff are missing in the regulatory framework.

The primary pieces of legislation governing the industry are the federal and provincial Fisheries Act, and the Land Act. The governments used this legislation to build the framework for salmon farming. Nothing links the legislation. When government agencies need to develop a policy, no general statement of provincial goals regarding aquaculture exists to guide them. As a result, policies tend to be reactive and at the operational level (Price Waterhouse 1991).

To coordinate decision making, the agencies used the land referral system and various inter-agency committees, but these methods tend to become ineffective when no mechanism exists to mediate or arbitrate among the agencies. Without a guiding provincial strategy, agency staff who attend committee meetings can only present the policy of their Ministry and have little flexibility to negotiate policy changes (B.C. Legislative Assembly 1988). As discussed in Chapter 3, this inflexibility can lead to irreconcilable conflicts.
4.4 SUMMARY OF POLICY FRAMEWORK

Most of the policy the planners recommended in the early 1980s now exists, but two significant pieces are missing. The largest policy gap is the lack of a provincial strategy to guide agencies in making aquaculture policy, and to judge tradeoffs that affect conflicting interests.

A second gap is policy that integrates salmon farming with other coastal users. For years, people have recommended the province undertake coastal zone planning in B.C. (Dorcey 1982 and 1986, Gillespie 1986, B.C. Legislative Assembly 1988). The intent of the CRIS was primarily to reduce conflicts existing at the time of the Inquiry (B.C. Legislative Assembly 1988). As such, the CRIS is only an initial step in planning to integrate aquaculture with other coastal users.
CHAPTER 5 SUMMARY AND RECOMMENDATIONS

5.1 SUMMARY

This thesis began by posing the following questions. What is salmon farming? What happened between 1985 and 1995? What policy did the government agencies and salmon farming industry develop? What policy development process did they use? What recommendations could improve the existing policy framework? Following is a response to these questions.

Between 1985 and 1995, the government agencies and interest groups interacted to make policy with the intent of managing the new salmon farming industry in B.C. Depending upon their power resources and their position within the policy community, the members of the community used different methods to influence the policy process. The members of the sub-government used methods that would maintain the status quo. They did not implement the Ombudsman recommendations that essentially would have restructured the policy community. Gradually, the members restricted the means of access for interest groups to the policy process. The sub-government also limited the flow of information to the attentive public.

When the NDP came to power, maintaining the status quo became difficult. The NDP increased the power of the
Ministry of Environment, whose influence had been declining relative to the power of the Ministry of Lands and the Ministry of Agriculture, Fisheries and Food. The Ministry of Environment used the increase in power to take policy positions that increased the conflict among ministries within the sub-government. As a result, the policy process stopped to undertake an environmental assessment and a public policy review.

The members of the attentive public also increased their power by forming coalitions and putting forward a common policy statement to the public and government. With this increased influence, the members of the attentive public contributed to the conflict by drawing the attention of Ministers, other interest groups and the general public to the activities within the policy community.

The conflict within the policy community indicates a pressure pluralist community. This type of community emerges when jurisdictional responsibility is fragmented among a number of agencies and no mediating mechanism exists to bring together the members of the community. As a result, the community tends to make short term policy and functions without a long term strategy.

Although the Gillespie Inquiry provided direction for the initial development of the industry, no mechanism existed to revise or update the report. Today, the salmon farming policy framework does not have a long term strategy. The
framework is also missing policies that link salmon farming with other coastal resource users.

5.2 RECOMMENDATIONS

The thesis identified several concerns that policy community theorists raised about policy communities. These concerns form a basis for a set of principles to use when making recommendations for a policy framework. First, a policy process needs to be fair and include the input of all those who want to participate. Secondly, the process needs to address all the issues raised within the policy community. Thirdly, the process needs to ensure interest groups are socially accountable and responsible when these groups implement policy.

As outlined by the planners in the early 1980s, aquaculture needs to be integrated with other coastal and land users. To ensure this planning takes place, the various steps of planning and policy analysis need a substantially larger role in policy development for aquaculture.

The following recommendations build upon these principles and upon the recommendations from the planning literature, the Gillespie Inquiry and the Ombudsman Report.

1. The public information program needs to be expanded to reach the general public. The program should have information going both ways between agency staff, interest groups and individuals.
2. The commercial fishing and aquaculture industries need help to communicate with each other. Under the Action Plan for Salmon Aquaculture, the government agencies designed a facilitated process to gather public input for the provincial strategy. This process may improve communication between the commercial fishing industry and the salmon farming industry. Some form of facilitation between the two industries might still be needed once the strategy is prepared.

3. Interest group participation in the policy process should be increased and maintained. The policy process needs a mechanism to include interest groups on an on-going basis. The mechanism should be open so anyone who is interested can inform themselves about the current policy issues and can begin to participate in the process. In this way, the policy community can stay informed and respond to emerging concerns of new or less powerful interest groups and members of the general public.

4. The province needs to develop a coastal zone planning strategy. At present, coastal zone planning lies in between several land use planning processes. For example, the Broughton Archipelago lies in the Central Coast Land and Resource Management Planning (LRMP) and in the Vancouver
Island Land Use planning areas. If a provincial coastal zone strategy existed, people in both processes could work towards the same objectives.

In their response to the Ombudsman, the agencies said the coastal zone planning would affect how the government managed all natural resources. Therefore, the Cabinet would need to be involved in the planning. The Action Plan for Salmon Aquaculture offers a good opportunity to emphasize the need to Cabinet for a coastal zone planning strategy. Just as the need to reconsider forest land use resulted in the LRMP process, the need to reconsider salmon farming could result in an integrated coastal zone planning process.

5. Develop a method to resolve conflicts which may occur during the planning or implementation of policy. A conflict resolution method is needed not only for interactions with interest groups, but also for staff in government agencies. The current method of moving the conflict up the hierarchy is appropriate in situations when staff at a higher level have a broader perspective or deeper understanding of the issues and can provide direction to staff at lower levels. However, when conflicts arise because staff in different agencies have different values, this method is ineffective.
as the difference in values is likely to be at all levels of the hierarchy.

Facilitators and mediators could help staff clarify their differences and work towards solutions that build on more than one set of values. Although the Action Plan for Salmon Aquaculture mentions a facilitator for the interest groups, no mention is made of a facilitator for the MAFF-MELP project team which is responsible for preparing the provincial aquaculture strategy.

6. A provincial aquaculture strategy, with a set of principles, is needed to guide agencies making aquaculture policy. At present, the provincial agencies are working to develop such a strategy under the Action Plan for Salmon Aquaculture. This strategy could be a good conflict resolution tool if the strategy objectives link the mandates of the Ministry of Agriculture, Fisheries and Food and the Ministry of Environment, Lands and Parks.

The strategy needs to define the means to revise and update the policy framework and process periodically. Currently, the moratoria and public policy reviews seem to be performing this function. A method that is more predictable and less conflict oriented would result in a more orderly development of the industry.
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