

THE GEOGRAPHY OF SALMON FISHING CONFLICTS:
THE CASE OF NOYES ISLAND

by

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ABSTRACT

This study examines the complex problems associated with the allocation and management of mobile salmon resources passing through politically partitioned land and sea space in southeastern Alaska and northern British Columbia.

While the salmon fishing industry was found to be relatively important at the local level, it is suggested that the salmon of Canadian origin removed off Noyes Island by Alaskan fishermen are not of critical importance to the economies of either Alaska or British Columbia when considered as a whole. Therefore, it is concluded that the Noyes Island conflict should not be allowed to jeopardize the salmon conservation programs of Canada and the United States by provoking a de facto abrogation of a mutually advantageous treaty designed to prevent the massive oceanic capture of salmon.

From this case study in political geography it was determined that salmon fishing conflicts can best be understood by examining: (1) The peculiar nature of the salmon resource. (2) The state of knowledge concerning its origins and movements and the spatial implications of these movements. (3) The evolution of opposing national fisheries. (4) Interrelated political considerations. It was also found that salmon fishing conflicts could be classified into two categories based upon quantitative and ideological differences.

Finally, a tentative geographic model was constructed that could serve as the basis for organizing future enquiry into salmon fishing disputes by clearly illustrating the spatial problems common to such conflicts. The model particularly emphasizes the lack of congruency between biotic and political units and the effects this has on competing, nationally organized exploitation of the salmon resource.

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CHAPTER I

THE NOYES ISLAND CONFLICT IN SPACE AND TIME

Introduction

The Noyes Island salmon fishing conflict between the United States and Canada concerns fish spawned in northern British Columbia and allegedly caught in large numbers by American fishermen in the vicinity of Noyes Island off the southeastern coast of Alaska (see Figure 1). On the basis of results obtained from tagging experiments conducted in 1957 and 1958, Canada contends that Alaskan fishermen are harvesting an unduly large proportion of salmon stocks spawned in northern British Columbia without contributing to the heavy direct and indirect costs of maintaining these stocks at commercially economic levels. The United States repudiates this contention by claiming that 1957, the year when American interception of Canadian spawned stocks was greatest, was most exceptional due to the simultaneous occurrence of unusual climatological and oceanographic conditions. Therefore, it is unreasonable to expect the United States to restrict its Noyes Island net fishery in any significant way on the basis of conditions that may only infrequently occur, especially since the fishery has been in existence for over sixty years.

In studying the "geography of salmon fishing conflicts" by focusing upon the complex problems created by nationally organized exploitation of mobile resources passing through a fixed territorial framework of politically partitioned land and sea space, this thesis falls squarely into an emerging

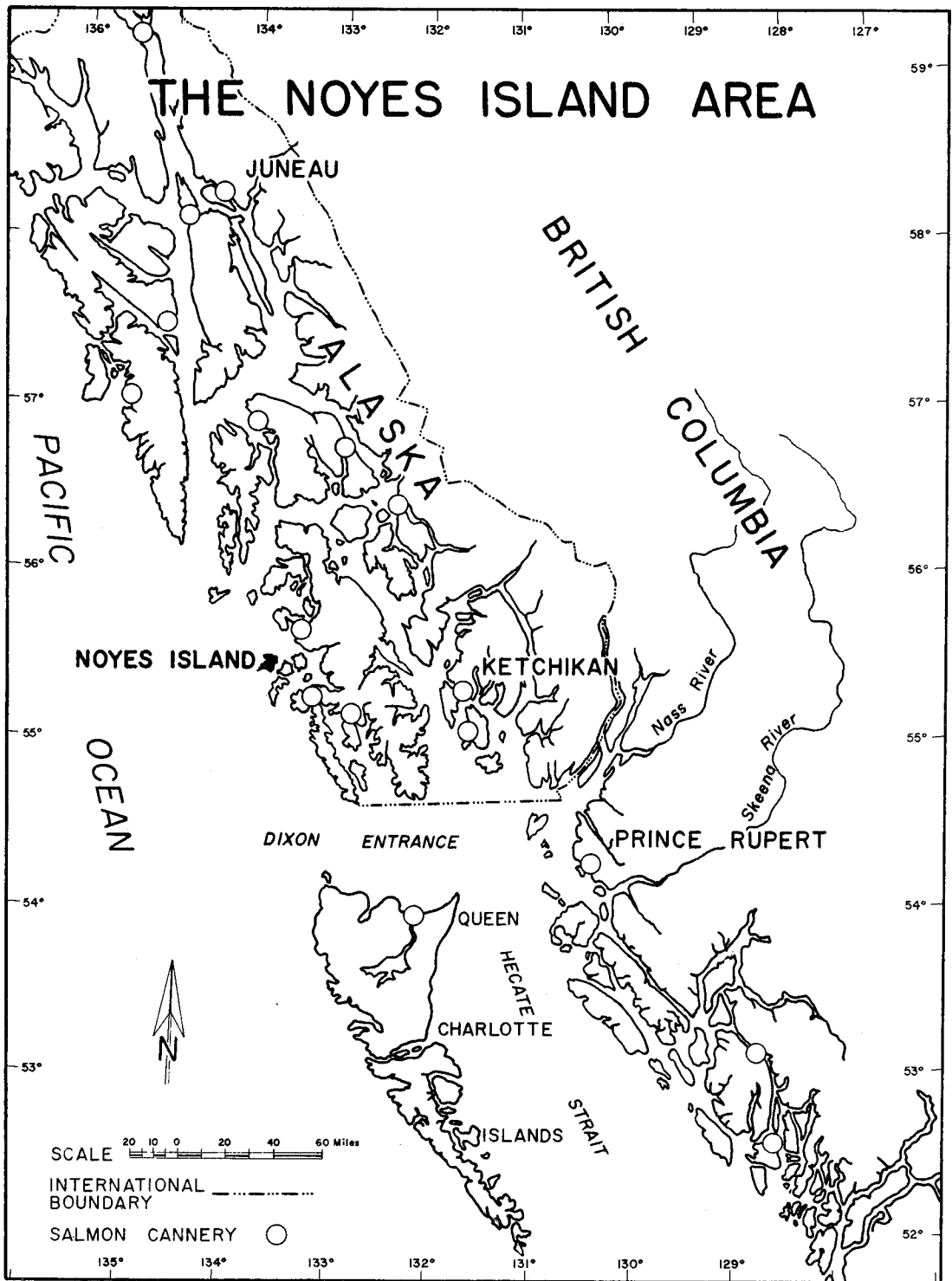


Figure 1.

field of geographic endeavor, offshore political geography.

The Modern Proliferation of Fishing Conflicts

As the resources of the land gradually become depleted, the world's ocean is increasingly being regarded as an alternate source of food and raw materials by a rapidly expanding world population; three-quarters of which dwell in newly independent nations experiencing the revolution of rising expectations. An accelerated development and diffusion of maritime resource extraction technology has created complex problems in the allocation and conservation of easily depleted oceanic fishery resources by fostering heightened international competition. The multitude of newly independent, underdeveloped nations, in particular, possess both the acknowledged need of fishery resources to feed their often large and hungry populations and a fervent nationalistic determination to fill this need.

With the advent of long range, highly mobile freezer trawlers and giant factory-type motherships equipped with effective fish-finding apparatus and efficient gear, today's fishermen possess capabilities undreamed of sixty years ago. Modern vessels are able to work off foreign shores so intensively that local fishing industries may be threatened with extinction for two reasons: (1) the local fishing industry may not be able to compete economically. (2) In many cases local fish stocks, already being harvested to capacity, may be unable to sustain additional fishing effort by nationals of another state.

If current trends continue, most available fish stocks will soon be harvested to capacity and expansion into previously unfished areas will be impossible since there is a finite amount of sea space (which for purposes of this thesis is being viewed essentially as fishing space) available to

mankind. Practically every portion of the global sea has already been visited on an exploratory basis by vessels of one country or another carrying out research or conducting pilot commercial fishing operations.

As a consequence of the greatly expanded exploitation of oceanic resources in this century, a maritime legal crisis appears imminent. Conflicting international interest is not confined solely to the fishery but includes other offshore resources, especially oil and gas. In addition to the political problems associated with exploitation of individual resources there are those associated with multiple resource use. For example, leakages from offshore oil wells may endanger fish or seismic explosions employed in exploring submerged land can kill fish outright.¹ These types of conflict fall outside the purview of the present study which confines itself primarily to salmon fishing conflicts.

The traditional law of the sea pertaining to fisheries is only partially geared to the modern use of sea space. The vast majority of this space, termed the high seas, is of ambiguous sovereignty, since no nation, by the terms of current international law, may permanently claim ownership of it in whole or part. In legal parlance, two principles apply to the high seas. They are res nullius (property of no one) and res communis (property of all men).² When commercially valuable fishery resources are located in the high seas they are regarded as common property resources; that is, once harvested, they become the property of the harvester. The newer and less

¹Roger K. Kearns and Forbes C. Boyd, "The Effects of a Marine Seismic Exploration on Fish Populations in British Columbia Coastal Waters," Canadian Fish Culturalist, #34 (May 1965), pp. 3-26.

²Douglas M. Johnston, The International Law of Fisheries: A Framework for Policy-Oriented Inquiries, New Haven and London, Yale University Press, 1965, p. 303.

powerful nations regard the existing law of the sea as neither of their creation nor in their interests and as a device for maintaining, what is to them, a disadvantageous status quo. The new role of the oceans and the consequent need for a revision of the law of the sea is widely recognized, as shown by the active participation of the world community at the 1958 and 1960 Law of the Sea Conferences, held under the auspices of the United Nations.

With the intensification of international competition for control of oceanic fishery resources, an alarming proliferation of fishing disputes during this century was inevitable because of the huge sums of money invested in fishing enterprises by a host of nations, large and small. Only a constantly declining minority of nations advocate continued wholesale adherence to the old rules, especially the "freedom of the seas" concept. On the other hand, a growing majority of nations favor at least some modification of the economically, sociologically and technologically obsolescent compartmentalization of the global sea into rigidly defined political zones of declining national sovereignty as one moves seaward from shore.

In particular, many nations question the utility of dividing the world ocean into "high seas," where a form of legalized anarchy appears to exist, and into "territorial waters," where national sovereignty is almost absolute. Territorial waters vary in width according to particular nations but comprise those portions of the ocean that are immediately adjacent to shore. Countries exercise exclusive control over the exploitation of fishery resources located within their territorial waters even if these resources regularly migrate elsewhere and support foreign fisheries at their destinations. The Canadian interest in the Noyes Island fishery, which is conducted entirely within American territorial waters, is symptomatic of the worldwide dissatisfaction with the way fishery resources are allocated nationally.

The Changing Organization of Sea Space

The inception of modern oceanic fishing caused many nations rimming the world ocean to alter their traditional concepts governing the control of sea space. This led to the creation of a dichotomy between so-called coastal and distant fishing nations. Coastal fishing nations conduct operations close to shore, usually those of the home state, while distant nations send out wide-ranging fleets that are partially independent of domestic bases and normally work off foreign shores. No rigid classification is possible because many nations simultaneously conduct coastal and distant fishing operations. Japan, for example, possesses both intensive coastal fisheries in the vicinity of the home islands and massive fleets that regularly operate in mid-ocean and off foreign coasts. This duality in the nature of domestic fishery enterprises often creates sharp offshore foreign policy differences within national policy-making organs.

Heightened international competition for a share of oceanic fishery resources has resulted in two types of action: (1) Nations have sought to exert sovereignty over fish stocks regardless of the legal status of the waters in which they are located. (2) Previously unorganized sea space has been politically reorganized by one of three means; territorial seas have been widened, special purpose contiguous zones have been created offshore and both zones have often been measured from unorthodox straight baselines. Foreign fishing vessels are excluded from working in such nationalized waters unless prior permission is obtained from the coastal states exercising sovereignty.

The processes outlined above have usually been implemented unilaterally but in some instances, bi- or multi-lateral actions have been taken. This is particularly true in cases involving regulation of fish

stocks as distinct from extension of political sovereignty over sea space. The International Pacific Salmon Fisheries Commission, consisting of Canada and the United States, is a good example of this type of action. This supranational body exercises control over salmon stocks spawned in the Fraser River system regardless of the legal status of the waters through which the fish migrate. The major drawback to this system arises from the fact that non-signatory nations are legally free to capture the regulated salmon stocks whenever they enter the high seas unless restrained from doing so by other treaties.

It may be concluded that the modification of the traditional political framework of sea space has continued at a rate proportional to the advancement of modern fishing (and mineral) extraction technology. Technological progress and increased production have fostered the growth of a new type of imperialism in the current era; that of oceanic imperialism, whose most common manifestation is the unilateral extension of national sovereignty into previously unorganized sea space.

The Political Evolution of Land and Sea Space

Conceptually, many parallels exist between the political evolution of land and sea space. Primitive man was a hunter and gatherer. He was perfectly free to abandon an area once its resources were depleted. There was no territorially static political framework; sovereignty was mobile, constantly shifting with migrating hunting bands. This situation changed once the density of human population grew to a point where the entire ecumene became occupied. As rival tribal groups began to impinge upon one another in their quest for food, intertribal conflict became inevitable. Some solution had to be found to the problem of an expanding population utilizing a finite resource base.

Early man chose a territorial solution to his problem by organizing the land space into theoretically immobile political units. In this fashion, the entire land surface except for the Antarctic continent³ has been politically partitioned. Considerable territorial rearranging still goes on but the process of politicization of the earth's land surface is virtually complete.

Only the future will demonstrate whether or not all sea space will be partitioned. Scale appears to be an important consideration at the present time. For example, the North Sea has been divided between the various surrounding countries for purposes of offshore oil and gas exploration and development.⁴ The limited size and relatively enclosed nature of this arm of the Atlantic Ocean seems to have greatly facilitated its partitioning. No similar suggestions have been made to carve up truly massive parts of the global sea, such as the Pacific Ocean, partially because of their tremendous scale and open nature. Perhaps a combination of partitioning and joint management will eventually come to coexist over the entire global sea depending upon the configuration, size and value of its constituent parts. In this regard, it is interesting (and ominous?) to note that condominiums have never proven very viable on land. In any event, man's ability to utilize sea space has reached a stage, as it did on land centuries ago, where it is necessary to work out universally agreeable methods of allocating valuable, but limited, maritime resources. The Noyes Island conflict is but a minute fragment of this larger process.

³Robert E. Wilson, "National Interests and Claims in the Antarctic," Arctic, V. 17, #1 (March 1964), p. 30.

⁴Trevor M. Thomas, "The North Sea and Its Environs: Future Reservoir of Fuel?" Geographical Review, V. 56, #1 (January 1966), p. 31.

Methods of separating political units have evolved apace with human progress in other fields. Primitive man made use of broad and diffuse natural features such as mountains and deserts for dividing areas of different sovereignty. Even in feudal Europe, communities of subsistence cultivators utilized relatively indeterminate frontier zones to separate their respective domains.⁵ With the total partitioning of the land, man has evolved the accurately delimited and demarcated boundary line so universally common today, narrowing vaguely defined political frontiers to precise lines.

An advancing technology has raised modern fishing out of the hunting stage; thereby creating the need for sophistication of the way in which sea space is currently organized politically. The first tentative steps have already been taken by numerous nations to alter the status of portions of the high seas which prior to this time have been relatively free of political domination on a formal basis. It is clear that the all-important coastal fringes will be converted from their previously unorganized status into political appendages of the respective adjacent coastal states, so far as resource extraction is concerned. At the present time it is impossible to actually demarcate these newly nationalized waters but sophisticated devices may be developed that will allow some form of electronic demarcation.

Salmon Fishing Conflicts

As the nature of various fishery resources differs so does the conduct of disputes centered around them. Consequently, it is necessary to orient the enquiry to particular types of conflicts. Salmon fishing conflicts

⁵Alexander Melamid, "The Economics of Territorial Discontiguity," unpublished paper read at Yale University, April 20, 1963.

constitute a distinct type due to several important characteristics of the resource itself (particularly its high mobility and anadromous nature) which are examined in detail later in this study.

Salmon fishing conflicts have been a common phenomenon in the twentieth century. The most important disputes have all occurred in the North Pacific Ocean. In the northwestern Pacific, Japan and the Soviet Union have been at loggerheads over salmon stocks spawned in Siberian rivers; caught as immature fish on the high seas by Japanese distant-water fishermen. Another very similar dispute has raged in the northeastern Pacific, involving salmon spawned in North America between Japan, the United States and, to a lesser extent, Canada. In both cases, the countries in which the fish originate claim that Japanese oceanic capture of immature stocks is grossly inefficient, unfair (because Japan does not share in the costs of preserving the runs) and renders effective management and conservation impossible.⁶ Further to the south, Canada and the United States have been arguing over allocation of salmon spawned in the Fraser River system. Under the terms of the International Pacific Salmon Fisheries Convention, the direct costs of managing fish originating in the Fraser River system are shared jointly by Canada and the United States but the former contends that her share of the indirect costs has risen sharply while the division of the catch has remained constant; that is, on a fifty-fifty basis.⁷ Indirect costs include such items as the non-use of the river, its lakes and tributaries for alternate purposes that may be injurious to salmon production.

⁶Johnston, *op. cit.*, pp. 391-96. Julian V. Minghi, "The Conflict of Salmon Fishing Policies in the North Pacific," Pacific Viewpoint, V. 2, #1 (March 1961), *passim*.

⁷Norman Hacking, "Canada, U. S. Clash over Salmon Rights," Vancouver Province, April 20, 1966, p. 15.

While all of these conflicts have been resolved by treaties, latent grievances may threaten at any time to destroy the respective agreements. Japan, for instance, has threatened to withdraw from the International Convention for the High Seas Fisheries of the North Pacific Ocean, also adhered to by Canada and the United States, because she considers that she was coerced into signing it in the first place.⁸ Clearly, the world community has so far been unable to work out universally acceptable guidelines for the solution of salmon fishing conflicts.

Due to their origin within nationally controlled territory, salmon are often subject to claims of possession regardless of the legal status of the waters through which they migrate. Such claims are contrary to contemporary international law but are based upon various direct and indirect costs incurred in managing salmon resources and keeping the rivers they depend on fit for their use. Many alternative uses of salmon-producing rivers are mutually exclusive as far as fish stocks are concerned. Domestic political embarrassment would be unbearable for any government, especially a democratically elected one, that did not strongly protest foreign interception of salmon stocks originating within its territory. With reference to the geography of salmon fishing conflicts the following three questions might be well worth asking: (1) Should sovereignty over commercially valuable stocks be restricted spatially to territorial waters or should it remain attached, somehow, to the fish when they change location? (2) What are the effects of competing national interests upon the utilization of this resource? (3) Should salmon be harvested only by the nation in whose territory they spawn?

⁸Minghi, op. cit., p. 69.

The Political Geographical Literature

This thesis is intended to be a contribution to the all-too-sparse literature devoted to international political problems associated with the utilization of offshore natural resources. In the past decade two important works have been published by political geographers in this field; a book, The Offshore Geography of Northwestern Europe⁹ by Lewis Alexander and an article, "The Conflict of Salmon Fishing Policies in the North Pacific"¹⁰ by Julian Minghi.

Alexander is interested in the way man has organized offshore areas both economically and politically. A most useful approach is adopted whereby offshore areas are considered to be part of a "coastland" complex. In this scheme, various sets of relationships (physical, socioeconomic and political) operating at various levels (regional, national and international) are recognized as existing between the sea and the adjacent coastal lands. In the present study, a similar approach is adopted, whereby such functional interrelationships are systematically examined at the local, state and provincial, and national levels.

Minghi's case study traces the evolution of rival salmon fisheries in the North Pacific Ocean; first concentrating on the real and imagined biotic effects of competing national exploitation of the salmon resource, and secondly examining the socioeconomic consequences of these conflicting relationships. This complex of interrelationships constitutes the foundation of national foreign policies which are then analyzed to explain the diplomatic course of events.

⁹Lewis M. Alexander, The Offshore Geography of Northwestern Europe, Chicago, Rand McNally for the Association of American Geographers, 1963, 162 pp.

¹⁰Minghi, op. cit., pp. 59-84.

In 1956, a finely-reasoned, prophetic paper was published by A. E. Moodie titled "Maritime Boundaries."¹¹ Although offshore boundaries and not offshore resources served as the focus of Moodie's study, the trends so apparent today in the expanded use of the sea and the consequences thereof, were identified and enumerated. Unfortunately, subsequent text book writings lost much of the valuable perspective developed by Moodie and dealt almost entirely with the narrower, technical problems of delimiting offshore boundaries. It seems that the events precipitating offshore crises have been considered of less importance than such matters as deciding the exact distance offshore to establish a new limit.

Other Relevant Literature

International legal experts, resource economists and marine biologists have been much more prolific than political geographers in writing about the problems associated with offshore resource exploitation. While not in the geographic field, the following works do have a direct bearing on the problems discussed in this thesis.

Douglas Johnston's massive tome, The International Law of Fisheries,¹² is the most recent, ambitious and, in many ways, disappointing of the books consulted. As Johnston points out, there is no international law governing fisheries but, rather, a bewildering array of domestic laws, treaties and conventions which lack consistency and of which there is not universal acceptance. Departing from orthodox legal practice, the author

¹¹A. E. Moodie, "Maritime Boundaries," The Changing World, eds. W. Gordon East and A. E. Moodie, London, George Harrap, 1956, pp. 942-59.

¹²Johnston, op. cit., 554 pp.

does not confine himself to commenting on legal precedents but adopts an approach termed "policy-oriented" which is, in essence, the method used by social scientists and not legal scholars. By studying current economic and sociopolitical practice, Johnston tries to formulate more appropriate rules than now exist. Unfortunately, the book becomes bogged down in a welter of poorly organized empirical data. In essence, neither the social nor the legal aspects receive adequate attention because the very wealth of examples given precludes analysis in depth. Such conclusions as are drawn tend to be overgeneralized. In spite of these shortcomings, the book is a commendable attempt to come to grips with the intricate problems created by intensive offshore exploitation of fishery resources and should serve as a solid foundation for further research by legal scholars.

Shigeru Oda's International Control of Sea Resources¹³ confines itself to such traditional legal matters as treaties and World Court decisions. Oda is a strong advocate of the "freedom of the seas" doctrine, referred to earlier, and sharply criticises many current trends in international law. For instance, the International Court's decision upholding Norway's right to adopt long, straight baselines is scathingly attacked. Oda best represents the old guard (and perhaps Japanese national interests) as far as offshore resource exploitation is concerned.

Garcia Amador's concise work, The Exploitation and Conservation of the Resources of the Sea: A Study of Contemporary International Law,¹⁴ best summarizes recent trends concerning the political reorganizing of sea space.

¹³Shigeru Oda, International Control of Sea Resources, Leyden, Sijthoff, 1963, 215 pp.

¹⁴F. V. Garcia Amador, The Exploitation and Conservation of the Resources of the Sea: A Study of Contemporary International Law, Leyden, A. W. Sythoff, 1959, 212 pp.

The expanded use of the global sea as a source for food and raw materials is noted and found to be the cause for seaward extension of national sovereignty. The author demonstrates that national interest is rising at a rate proportional to the rise in value of sea space and the resources present therein.

The Common Wealth in Ocean Fisheries,¹⁵ co-authored by Francis Christy and Anthony Scott, expertly collates the work done by marine resource economists. The book is divided into two parts with the first section consisting of an excellent review of fisheries economic theory and fish population dynamics. The book's main thesis is contained in the second section which deals with the international legal implications of fishing conflicts. It strongly advocates the retention of some modified form of the "freedom of the seas" concept. The authors realize that some type of regulation is necessary in any fishery but at the same time wish to retain the common property aspect of oceanic fisheries in order to allow all national fisheries, present and future, a fair share of the catch.

The booklet, Management of the High Seas Fisheries of the Northeastern Pacific,¹⁶ by Richard Van Cleve (a marine biologist) and Ralph Johnson (a lawyer) closely reflects their national viewpoint, as is typical of writings by natural scientists whose research relies heavily on governmental financing. In this case the authors favor joint management of salmon originating in North America and the continued abstention by Japan from fishing such stocks. As defined in the International Convention for the

¹⁵Francis T. Christy Jr. and Anthony Scott, The Common Wealth in Ocean Fisheries, Baltimore, John Hopkins for the Resources for the Future, 1965, 281 pp.

¹⁶Richard Van Cleve and Ralph W. Johnson, Management of the High Seas Fisheries of the Northeastern Pacific, University of Washington Publications in Fisheries, New Series, V. 2, #2 (November 1963), 63 pp.

High Seas Fisheries of the North Pacific Ocean, referred to previously, abstention means that no nation shall fish stocks that are being fully exploited and regulated by other nations. Van Cleve's conclusions are based upon the identical data that Japanese scientists cite to justify increased Japanese participation in the northeastern Pacific's salmon fishery.

Selection of the Noyes Island Conflict

Although small in areal scale, the Noyes Island conflict possesses in miniature many attributes common to larger salmon fishing conflicts located elsewhere. Its small scale should facilitate analysis and yet its very representativeness should provide opportunity for conclusions that have more than local validity. For instance, in both the Noyes Island and the Fraser River salmon fishing conflicts, disputed stocks migrate through the territorial waters of one country (where they are intercepted) in order to reach spawning grounds located in the other nation.

There is an intrinsic value inherent in studying any conflict, especially one that threatens to disrupt a long history of amicable conflict resolution by two neighboring nations. The Noyes Island conflict has already been partially responsible for the abrogation of one treaty signed by Canada and the United States which attempted to prevent the development of offshore salmon net fisheries along the Pacific coast of Anglo-America.

The conflict has a relatively short history even though the fishery has been in operation for nearly seventy years. Formal expression of Canadian opposition toward the conduct of the fishery had to await the discovery of tangible evidence that American fishermen in the vicinity of Noyes Island were definitely harvesting salmon of British Columbian origin. The ensuing diplomatic consequences of this discovery will be detailed in the

following chapter.

The third chapter deals with the real and imagined biotic effects of competing national exploitation of the salmon resource by examining its peculiarities in relation to various economic, social and political factors. In the fourth chapter the consequences of these biological aspects on the socioeconomic structures located on either side of the international boundary are examined at the regional, national and international levels.

Although these functional interrelationships constitute the foundations of Canadian and American Noyes Island foreign policy they must be considered in conjunction with some seemingly unrelated factors such as current trends in international law and the power imbalance existing between the two protagonists if meaningful conclusions are to be arrived at. In the final chapter, this complex of variables will be collated in an approach to multivariate analysis in order to produce specific conclusions concerning the Noyes Island conflict and some tentative generalizations concerning salmon fishing conflicts located elsewhere.

CHAPTER II

A DIPLOMATIC HISTORY OF THE NOYES ISLAND CONFLICT

The Origin of the Noyes Island Conflict

The Noyes Island conflict originally rose into prominence in 1957 as an offshoot of bilateral negotiations, termed the Conference on Co-ordination of Fisheries Regulations (hereinafter called the Conference), between the United States and Canada concerning the limitation of offshore salmon net fishing, primarily by preventing the development of new offshore fisheries. This measure was considered necessary to increase the effectiveness of both nations' salmon conservation programs. Unrestricted offshore net fishing results in the massive removal of undifferentiated salmon stocks (as to their natal origin). For maximum management efficiency, salmon should be caught as close to their natal streams as possible. In order to achieve this goal, a series of lines, alternatively referred to as surf lines (or net fishing lines), were to be delimited along the coasts of Alaska, British Columbia, Washington, Oregon and California; seaward of which salmon net fishing was to be prohibited. The present location of these surf lines may be seen in Figure 2.

It was in the acknowledged common interest of both nations to prevent the development of new offshore salmon net fisheries; this much is certain. Yet, there appears to have been a fundamental disagreement as to whether or not this goal represented the basic purpose of the Conference in

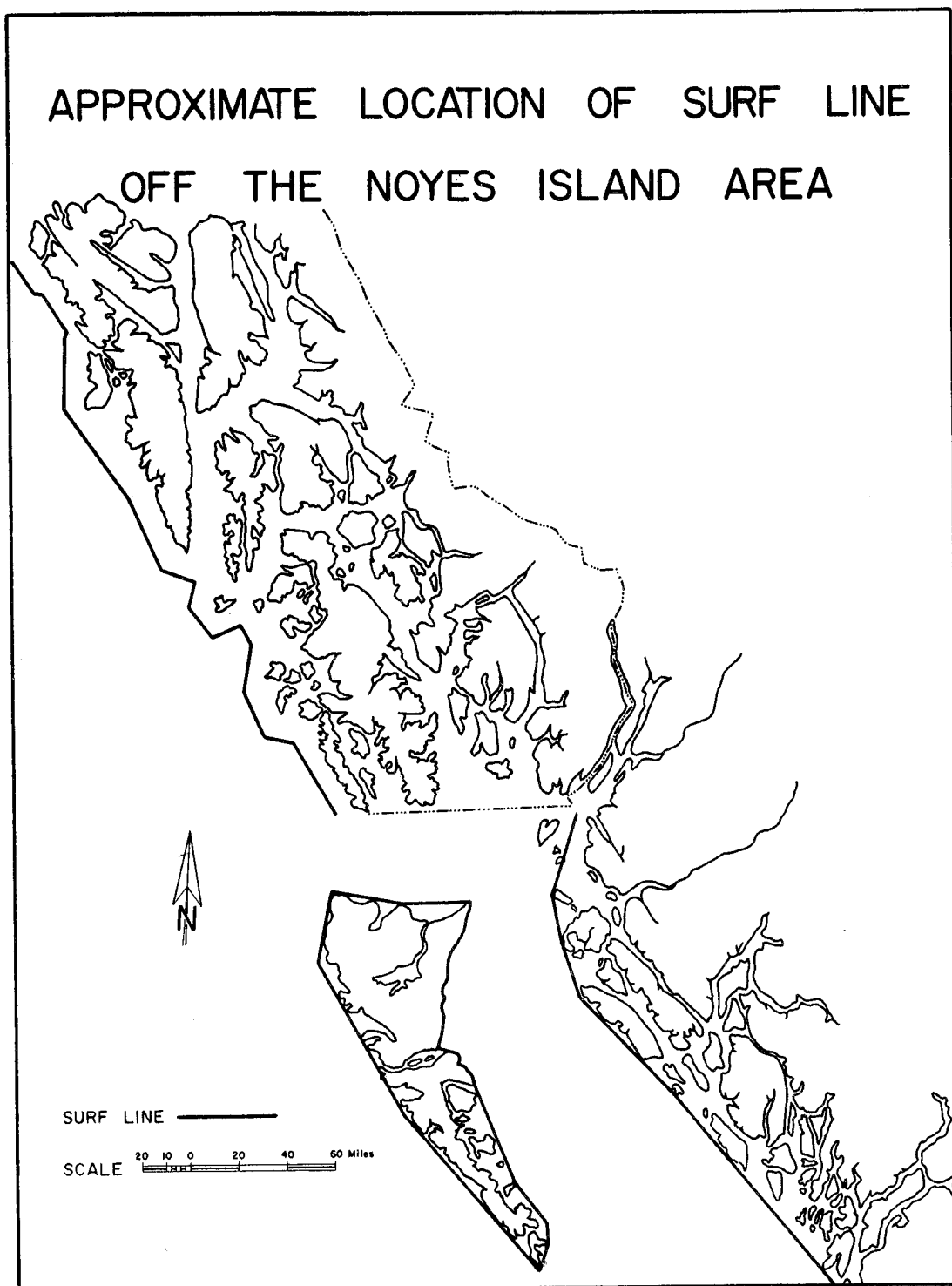


Figure 2. Note: The distance from shore of the Alaskan portion of the surf line has been exaggerated approximately 3 times for illustrative purposes.

the minds of the Canadian and American delegations. Negotiators representing the United States have since stated that it was their understanding that the basic purpose of the Conference was to prevent the development of new offshore salmon net fisheries. They further believe that this objective has been attained.¹ On the other hand, the Canadian contingent at the same Conference seems to have had two major objectives: (1) To prevent the development of new offshore salmon net fisheries off the Pacific coast of North America and (2) To require the United States to delimit surf lines off southeastern Alaska in such a manner as to minimize the interception of mixed stocks; thereby permitting their more effective management closer to their home streams.²

During the Conference, consideration was given to the establishment of lines seaward of which salmon net fishing was to be prohibited by nationals of both countries. The Conference was advised that the State of California was in the process of taking legislative action to prohibit the capture of salmon by use of any type of net gear within the territorial waters of the state and by its citizens in international waters. This legislation made it unnecessary for the Conference to delimit a surf line off California. Charts showing proposed net fishing limits along the coasts of Oregon, Washington and British Columbia were presented by the respective delegations, critically examined, amended as considered necessary and accepted. These surf lines were carefully defined by means of geographical coordinates.³

Surprisingly, the American delegation did not present similar charts for Alaska so neither critical examination nor consideration of

¹"Canada and U. S. Continue Talks on Salmon Net Fishing Limits," Fisheries of Canada, V. 19, #1 (July 1966), p. 11.

²Loc. cit.

³Ibid., p. 13.

amendments was possible. Towards the close of the Conference a map of the Alaskan coast was produced by the United States and an attempt made to indicate the tentative location of a baseline off Alaska from which the surf line was to be measured. Although considerable confusion exists, it now appears that the baseline proposed by the United States already existed and was used in the Alaska fishery regulations for measuring the "waters of Alaska." It was made clear by the American delegation that the line they described at the Conference was not definitive and that none of the American delegates present were authorized to set its position at that time. It was on this basis that the Canadian delegation approved the summary record of the Conference and signed the 1957 agreement. The exact wording of that agreement was "the line described in the Alaska fishery regulation was appropriate."⁴

The Case of the Missing Charts!

The failure of the United States delegation to provide charts of the Alaskan coast to the Conference has become a storm center of controversy because, when charts showing the definitive location of the Alaskan surf line were finally transmitted to Ottawa by the American government, it appeared that the Alaskan portion of the surf line had been delimited on a different basis than elsewhere along the coast. The surf line off Alaska coincides exactly with the American three-mile territorial limit whereas in British Columbia and in the United States south of the forty-ninth parallel it often runs along the shoreline and never consistently follows the three-mile territorial limit of either nation (see Figure 2).

By drawing the Alaskan portion of the surf line so far offshore,

⁴Loc. cit.

the American government was ensuring the continued existence of the Noyes Island salmon fishery. The Canadian government has since stated that it would never have signed the 1957 agreement had it known that the Alaskan surf line was to coincide exactly with the American three-mile territorial limit. The government has further stated that it signed the agreement, despite the lack of Alaskan charts, because it assumed that the line would be delimited in the same way it was south of Alaska. The Canadian government has now admitted that it committed a grave error in approving the summary record of the 1957 Conference without having had an opportunity to consider a definitive Alaska net fishing line (the surf line).⁵ In effect, Canada had signed a blank cheque; based on an erroneous assumption. The American government, on the other hand, has since stated that it would never have signed the 1957 agreement if the Alaskan portion of the surf line had been drawn in such a manner as to eliminate its Noyes Island salmon fishery, which has been in existence for over sixty years.⁶

There does not appear to be any satisfactory explanation for the unavailability of charts for the Alaskan coast at the 1957 Conference. It may simply have been an oversight on the part of the American delegation. Both nations have agreed not to release any of the Conference papers, except for mutually agreed upon press communiques.⁷ In all likelihood, the solution to this problem will have to await the eventual release of such documents. One authority has suggested, off the record, that perhaps Alaska's transition from territorial status to statehood within the American federal union led to confusion among the American negotiators responsible for the Alaskan area at

⁵Ibid., p. 15.

⁶Ibid., p. 12.

⁷A. W. H. Needler, Deputy Minister, Canada Department of Fisheries, Personal communication, Ottawa, October 7, 1966.

the 1957 Conference; thus resulting in the omission. Alaska did not become a state until 1960, three years after the conclusion of the Conference, so this explanation seems unlikely although it is true that governmental responsibility for fisheries did pass from the federal to the state authorities when statehood was achieved.

Rather extensive salmon tagging programs were carried out in 1957 in southeastern Alaska and north coastal British Columbia by the United States and Canada. As will be seen in chapter three, the results of these programs demonstrated that very significant proportions of the salmon catch in southeastern Alaska in 1957 consisted of fish of Canadian origin. The editor of a leading American fisheries trade journal has suggested that it is perhaps significant that the 1957 surf line agreement between the United States and Canada was reached before the results of the 1957 tagging experiments were known.⁸ If this observation is true, it could mean that the Canadian government is shrewdly seizing upon the missing charts at the 1957 Conference as a convenient means to renegotiate the location of the Alaskan portion of the surf line so as to favor the northern British Columbia salmon fishery. In passing, it may be noted that such shrewdness on the part of the Canadian federal government is not usually a feature of its dealings with its more powerful neighbor to the south.

It seems strange, indeed, that the American delegation at the 1957 Conference was authorized to negotiate definitively the location of the surf line off Oregon, Washington and British Columbia but not off Alaska. Whatever the real reason for the omission of Alaskan charts at the 1957

⁸"US and Canada Still Tangled in Net Fishing Lines off SE Alaska and BC," (unsigned), Pacific Fisherman, V. 64, #6 (June 1966). p. 8.

conference, the entire episode was most unfortunate. It further complicated an already overly complex situation by creating subsequent controversy. For instance, important segments of the British Columbia fishing industry charge (off the record) that the government of the United States was guilty of intentionally misleading the Canadian delegation and of tricking them into signing an agreement they would not otherwise have signed had they known the true intended location of the surf line off Alaska. This type of accusation, unfounded or not, renders further dispassionate negotiation most difficult by creating an acrimonious climate of suspicion and mutual distrust.

Evolution of the Conflict Since 1957

Since 1957, conflict has centered upon the location of the surf line off southeastern Alaska. In general, the Canadian government has taken the position "that, to the (greatest) extent possible, surf lines should be used as a tool to minimize the harvest by one country of salmon bound for the rivers of the other country."⁹ On the other hand, the United States has taken the opposing position that the two nations must not only consider the origin of salmon caught by fishermen of the respective countries but, in addition, both nations must respect the historic fisheries of the other in seeking an equitable solution to the dispute.¹⁰ These two positions are irreconcilable unless one or both nations is prepared to make basic concessions.

During the first Conference, the American delegation undertook to submit a chart showing the definitive location of the Alaskan portion of the surf line as soon as possible at the request of the Canadian delegation.

⁹"No Offshore Net Fishing, Says Minister After Seattle Failure," Western Fisheries, V. 72, #2 (May 1966), pp. 60-61.

¹⁰"Canada and U.S. Continue Talks," op. cit., p. 10.

When, after two months following the close of the Conference, no such chart was forthcoming, the Canadian government again requested a copy. Eight months were to pass before the chart was received in Ottawa; well after the end of the 1957 salmon season. It was only then that the Canadian government learned the definitive location of the surf line off Alaska. Being most unhappy with the surf line's location, Canada requested an early meeting to consider its adjustment.¹¹ (This request, incidentally, was in accordance with provisions contained within the agreement signed at the 1957 Conference.¹²) It is unclear whether or not this Canadian concern resulted, wholly or in part, from the knowledge gained from the findings of the salmon tagging experiments conducted in 1957 and 1958 but published after the conclusion of the First Conference. This point is now largely of only academic interest since the United States has subsequently agreed to negotiations focusing on the disputed surf lines rather than just on the prevention of new offshore salmon net fisheries.¹³

In any event, a Second Conference on the Co-ordination of Fisheries Regulations was convened in 1959 but complete accord could not be attained on the location of salmon net fishing limits, particularly off southeastern Alaska. As a consequence, the Canadian government reserved the right to adjust the location of surf lines off British Columbia.¹⁴ This action by Canada served as the first substantive indication that the Noyes Island conflict was of serious enough proportions as to have possibly more than local repercussions; such as endangering the entire 1957 agreement on

¹¹Ibid., p. 13.

¹²Loc. cit.

¹³Ibid., p. 12.

¹⁴"Retreat in Salmon Battle Charged by Fishing Union," Vancouver Sun, June 6, 1966, p. 2.

the limitation of offshore salmon net fishing. Of a more positive nature, was the creation by the Second Conference, of a committee to study problems of mutual concern (considered to occur when fish destined for one country are caught in the fisheries of the other country). This committee held four meetings, from 1960 to 1963, and published a joint report (reviewed in chapter three) which, however, failed to serve as a basis for the complete resolution of the Noyes Island conflict.

Consequently, a third round of negotiations became necessary. Three meetings were held in 1965 and 1966 but again no accord could be reached on the location of the southeastern portion of the surf line off Alaska. By then, the situation had become quite serious. The Canadian government reiterated its right to extend its fisheries seaward where appropriate "in order to seek an equitable solution to the major problem of interception by fishermen of one country of salmon bound for the other which could not be resolved by attempts to reach an agreement on the inward adjustment of salmon net fishing limits."¹⁵ The Canadian government went so far as to issue an unprecedented airing of bargaining positions during negotiations with a foreign country. For its part, the United States delegation at the Third Conference stated "that in view of the Canadian reservation, the United States (also) reserves its right to redefine its seaward salmon net fishing limits as considered appropriate."¹⁶ In effect, the 1957 surf line agreement was declared null and void. It should be noted, however, that in spite of these strong words, neither government has adjusted its surf lines and both have promised to notify the other before taking such action.¹⁷ Although

¹⁵"Canada and U.S. Continue Talks," op. cit., p. 10.

¹⁶Ibid., p. 11.

¹⁷Ibid., pp. 10-11.

there is no longer a de jure agreement, there still appears to be a de facto one.

These official pronouncements were accompanied by a barrage of unofficial comment of a most inflammatory nature. For instance, Senator Magnuson of Washington, who is concurrently chairman of the powerful Senate Commerce Committee, issued a barely veiled threat to the effect that the United States would certainly re-analyze the historic markets that Canadian fish products now enjoy south of the border if the Canadian government continues to press its claims.¹⁸ This is very similar to threats made by Congressman Pelly vis-a-vis Japanese salmon in the 1950's at the height of the northeastern Pacific salmon fishing conflict involving Japan, the United States and Canada.¹⁹

The strong stands adopted by Canada and the United States at the end of the Third Conference have been tempered by the subsequent lack of hasty action by either government and the publicly expressed desire for further talks on the part of both private and official spokesmen.²⁰ Even more heartening, is the determination of Canadian and American government officials to begin research immediately in the study area in order to establish a sound scientific basis for the resolution of the Noyes Island conflict.²¹ This peaceful course of action and frame of mind is consistent with the long

¹⁸"Canada--U.S.A. Salmon Talks to Continue," Facts on Fish, V. 9, #4, (April 19, 1966), pp. 2-3.

¹⁹Julian V. Minghi, The Conflict of Salmon Fishing Policies in the North Pacific, Discussion Paper No. 27, Seattle, Department of Geography, University of Washington, 1959, p. 9.

²⁰"Fisheries Back Down From Stand," Vancouver Province, June 8, 1966, p. 15; "Canadian Action on Salmon Hinted," Vancouver Sun, May 21, 1966, p. 2.

²¹"Canada and U.S. Continue Talks," op. cit., p. 11.

history of amicable conflict resolution between the two nations. This willingness to bargain rather than engage in retaliatory action and reaction is perhaps the most concrete manifestation of the special relationship said to exist between the United States and Canada.

The diplomatic history outlined above is ultimately rooted in the physical environment; necessitating a close examination of the problem-causing aspects of the natural resource in the next chapter. It will then be possible to study the real and imagined effects on salmon of competing national exploitation of the resource and the socioeconomic consequences of these relationships at the regional, national and international levels. An analysis of the biotic and socioeconomic bases of conflict follows in the third and fourth chapters, respectively.

CHAPTER III

THE BIOLOGICAL BASIS OF CONFLICT

Introduction: Salmon's Natural History

Almost by definition, physical factors assume much importance in conflicts involving natural resources. It is the task of the political geographer to ascertain what physical factors create political difficulties by asking the question: What is the relationship between the disputed resource (and its use) and the (divided) political organization of space? An examination of the disputed resource serves as the logical starting point.

The following remarks will deal specifically with the five most commercially valuable species of salmon found in the North Pacific Ocean; sockeye (Oncorhynchus nerka), pink (O. gorbuscha), chum (O. keta), coho (O. kisutch) and chinook (O. tshawytscha). Although these five species vary in weight, value, age of maturity and the length of time spent in salt and fresh water, the overall pattern of their life cycles and habits is quite similar. As the political geographer is primarily interested in the economic and political consequences of these biological facts and not the facts, per se, little attempt will be made to differentiate between the species in the following brief review of their natural histories.

Salmon begin their eventful lives in fresh water. Upon hatching, the young salmon (fry) travel downstream to salt water after an initial

waiting period which varies in length according to the particular species. Sockeye fry, for example, spend from one to two years in fresh water while pink and chinook, in contrast, almost immediately depart for salt water after hatching.¹

All the fry born in a particular year and at a particular location constitute a homogeneous group termed, variously, a year-class, run or stock. These stocks remain together for their entire lives and as a rule practically no mixing of different stocks occurs on the actual spawning grounds.

Behavioral patterns differ widely in detail once the immature fish reach the ocean. Sockeye, for instance, are a wide ranging species. Stocks spawned in the Fraser River regularly roam as far west as the longitude of Anchorage (150° W). The extreme western limit for a sockeye of Canadian origin was recorded when a salmon tagged south of Adak in the Aluetians at 177° W longitude was recaptured the following year in the Nass River fishery.² In contrast to these great distances, it is generally thought that chinook salmon rarely move more than one hundred miles offshore in the oceanic stage of their lives.³

While on the high seas salmon attain maturity. Their growth rate is especially rapid in their last few months at sea when they are acquiring the tremendous amounts of stored energy, in the form of added weight, required to ascend the spawning streams. For example, chum salmon travel two thousand miles up the Yukon River to Teslin Lake in order to spawn.⁴

¹P. A. Larkin and W. E. Ricker, eds., "Canada's Pacific Marine Fisheries," Inventory of the Natural Resources of British Columbia, Victoria, British Columbia Natural Resources Conference, 1964, pp. 209, 215.

²Ibid., p. 197.

³Ibid., p. 215.

⁴Ibid., p. 214.

During their oceanic sojourn, salmon stocks of widely disparate geographical natal origins are intermingled. Without large expenditures of money on research it is practically impossible to distinguish one stock from another in mid-ocean.

As salmon attain maturity an amazing, and as yet largely inexplicable thing happens. An unerring homing instinct seems to turn the fish around and to head them for home; and salmon do have a "home." Salmon of all species return to the stream in which they were spawned (the natal stream), themselves to spawn. As the intermixed stocks approach shore a natural segregation process goes on. By the time the various stocks have arrived off the mouths of the natal streams, each year-class of each natal stream, or portion thereof, forms a distinct run and re-enters fresh water in a relatively united group. These salmon runs occur at fairly predictable times each year. Once the fish enter fresh water their quality rapidly deteriorates since they cease to feed at this juncture. At the completion of often unbelievably arduous journeys upstream the fish spawn and then, in most instances, die; their procreative task completed.

As a consequence of this natural history, salmon possess three basic characteristics that cause them to be the focus of international conflict. They are (1) anadromous, (2) highly mobile and (3) at optimum size and quality, from a commercial fishery's point of view, just prior to re-entering fresh water to spawn.⁵

The Biotic Basis of Conflict

The presence of commercially valuable salmon resources usually

⁵Richard Van Cleve and Ralph W. Johnson, Management of the High Seas Fisheries of the Northeastern Pacific, University of Washington Publications in Fisheries, New Series, V. 2, #2 (November 1963), p. 18.

provides the basis for a substantial salmon catching and processing industry within the territory containing the spawning grounds. Such a territory naturally acquires a vested interest in the fish and becomes vitally concerned when other countries share in the catch.

The annual concentration of large numbers of salmon into restricted coastal areas on their way to the spawning grounds renders them particularly vulnerable to capture. Even the most abundant runs are easily decimated by uncontrolled fishing effort. As a result, nations containing salmon-producing rivers within their borders must promulgate and enforce stringent regulations designed to ensure that an adequate number of spawners reach the spawning grounds in order to perpetuate the stocks at economic levels. In other words, fishing effort must be limited by some means. If such measures are not undertaken, yields will decline to a point where a salmon fishery can no longer exist. Cooley's study of the decline of the Alaska salmon showed conclusively that salmon stocks can not endure high, unrestricted rates of removal indefinitely.⁶

Effective salmon fishing regulations must be based on knowledge that can only be secured by highly trained scientific and technical personnel. When the costs of laboratories, research vessels and sophisticated apparatus are added, it is readily apparent that salmon research is an expensive affair.

In order to ensure compliance with regulations, policing agencies have to be created, equipped and maintained at considerable expense. This is particularly true in free enterprise economies, such as exist in Canada and the United States, where the fishing industries are overcapitalized and

⁶Richard A. Cooley, Politics and Conservation: The Decline of the Alaska Salmon, New York, Harper and Row, 1963, passim.

overmanned. The temptation to disobey rigorous regulations is very great since vulnerable and finite salmon resources must be divided very thinly among too many fishermen. This situation probably does not hold true in rigidly planned and controlled economies, exemplified by the Soviet Union, as it is believed that most salmon fishing there utilizes traps, which do not require significant numbers of men.⁷ Any savings in this instance are very likely negated by the huge sums spent in fisheries research and in other sectors of the fishery economy.

Alternate Resource Uses and Hidden Cost Factors

Salmon represent only one of many possible uses of rivers. Many of the salmon-producing rivers debauching into the North Pacific Ocean possess great potential for hydroelectric production, use in diverse industrial processes and sewage removal to list only a few of the more important alternatives. Any of these potential uses are likely to be mutually exclusive so far as salmon are concerned.

Salmon, unassisted by fish ladders or related devices, can not surmount obstacles of the magnitude of hydroelectric power dams. A point of diminishing returns is soon reached in the construction of very high dams when it becomes uneconomic, in terms of the value of salmon packs, to provide passage for spawners upstream over the concrete monsters. The once-huge salmon runs of the mighty Columbia River were sacrificed when the need for electric power became critical in the Pacific Northwest region of the United States and enormous dams like the Grand Coulee were built.

Successful salmon production requires that fresh water meet certain

⁷Hiroshi Kasahara, Fisheries Resources of the North Pacific Ocean, Part 1, Vancouver, Institute of Fisheries, University of British Columbia, 1961, p. 44.

fairly rigid physiological standards regarding oxygen content, temperature and the amount and nature of dissolved and suspended solids. These conditions are fatally upset (as far as salmon are concerned) if certain industries requiring and discharging huge quantities of water for their daily operations, such as pulp mills, are concentrated on salmon-producing rivers.

Nations possessing both major salmon-producing rivers and fisheries are faced with a difficult choice when alternate and mutually exclusive uses of the river waters becomes either a necessity or an economically attractive proposition. The salmon fishery usually proves to be a less valuable economic asset, on strictly economic (as opposed to socioeconomic) grounds, than alternate economic activities typified by major, multi-purpose hydroelectric installations and pulp mill complexes. Consequently, a nation that consciously withholds salmon streams from alternate, more valuable uses makes a considerable sacrifice financially and, perhaps, politically. The reasons for such actions are bound up with powerful vested interests in the salmon fishery such as large corporations, fishing unions and politicians from constituencies having a heavy reliance on the salmon resource who all exert concerted pressure on governments to prevent any invasion of the salmon rivers by potentially harmful activities. Conservationists also exert considerable pressure to preserve nature from the predatory influences of modern development. It is common for the salmon fisheries to become something of a "sacred cow" politically because of the unpleasant prospect, from a democratically elected government's point of view, of alienating large numbers of fishermen who are, concurrently, voters.

National Possession Versus Mobility

Due to their origin within nationally controlled territory, salmon are often subject to claims of possession regardless of the international

legal status of waters through which they migrate. Such claims are not justified on the basis of geographical accident but on the basis of various expenditures, direct and indirect, described above, needed to manage and perpetuate the salmon stocks. Most of these claims would not be made so strongly were it not for the fact that salmon are anadromous.

No nation is willing to allow uncontrolled foreign fishing of salmon produced within its territory. It would seem unreasonable to expect any nation to support indefinitely, salmon production for the benefit of foreign fishermen without some joint sharing of the costs of maintaining the salmon runs or some say in the limitation of foreign fishing effort. The costs are too high and the continuation of such practices would eventually constitute an unbearable political embarrassment for any national government.

Claims to sovereignty over salmon regardless of the legal status of the water bodies in which they are located at any particular time, are contrary to contemporary international law. This fact was definitely established at the 1958 Geneva Law of the Sea Conference when the abstention principle was rejected by a majority of the delegates attempting the monumental task of codifying the law of the sea.⁸ As defined in the 1953 International Convention for the High Seas Fisheries of the North Pacific Ocean; signed by Canada, Japan and the United States, "abstention" means that no nation shall fish stocks that are being fully exploited and regulated by other nations.⁹ Abstention may apply only between those states that have signed treaties specifically undertaking to abstain from fishing such stocks.¹⁰

⁸Douglas M. Johnston, The International Law of Fisheries: A Framework for Policy-Oriented Inquiries, New Haven and London, Yale University Press, 1965, p. 295.

⁹Van Cleve and Johnson, op. cit., p. 59.

¹⁰Ibid., p. 10.

The main reason for the above convention was American fear of the establishment of a Japanese high seas salmon fishery in the northeastern Pacific Ocean, particularly in the Bristol Bay area, utilizing stocks of North American origin which already supported an important American fishery.¹¹

Although the Soviet Union voted against the inclusion of an abstention clause in the 1958 Geneva Law of the Sea Conference convention pertaining to fisheries, that nation has successfully limited Japanese oceanic capture of salmon spawned in Siberian rivers. Salmon production in the Russian Far Eastern Province declined from 150,000 tons in 1957 to less than 70,000 tons in 1962 largely as a result of increased Japanese fishing effort in the northwest Pacific. The Japanese salmon fishery on the high seas in that area has a long history reaching back into pre-World War Two days.¹² As a result of the historic nature of the Japanese salmon fishing activity, the Soviet Union has successfully sought to restrict rather than prohibit Japanese high sea fishing effort as the United States and Canada have done in the northeast Pacific.¹³

From the above evidence it seems clear that salmon's anadromous nature has much bearing in any conflict involving this species. A coastal state tends to claim that salmon should be solely or, at the very least, predominantly harvested by nationals of the territory where the fish spawn. Canada and the United States both support this view although the latter nation insists that full recognition and compensation must be made for any

¹¹Julian V. Minghi, "The Conflict of Salmon Fishing Policies in the North Pacific," Pacific Viewpoint, V. 2, #1 (March 1961), p. 74.

¹²For a map illustrating the chronological progress of Japanese distant water salmon fisheries, see Ibid., pp. 64-65.

¹³Johnston, op. cit., p. 394.

historic salmon fishery dependent upon stocks of foreign origin.¹⁴ Unfortunately, it is seldom possible to establish the national identity of salmon at the time of capture. This is primarily due to the high cost of research needed to determine such information.

Noyes Island and the Anadromous Factor

Moving from the general to the particular, the Noyes Island affair will now be considered in relation to the anadromous nature of salmon. Very little research has been conducted on the Noyes Island fishery by biologists. Consequently, there is a paucity of data concerning the national origins of salmon caught in the fishery. Reliable statistics exist for only a two year period, 1957 and 1958, as to the national origins of the fish taken in this particular fishery. Both Canadian and American biologists regard the present data as inadequate for making broad generalizations pertaining to the allocation of fish stocks but the former feel strongly that the findings of 1957 and 1958 justify further expenditures for additional research on the matter. Their American counterparts tend to agree with this feeling.¹⁵

Tagging experiments carried out in 1957 and 1958 in northern British Columbia and southeastern Alaska were sufficiently extensive to provide estimates of the numbers and proportions of sockeye and pink salmon catches made in the various tagging areas consisting of fish bound for Canadian and Alaskan rivers in those years.¹⁶ The findings of these

¹⁴Canada and U.S. Continue Talks on Salmon Net Fishing Limits," Fisheries of Canada, V. 19, #1 (July 1966), p. 10.

¹⁵Roy Rickey, Southeastern Regional Supervisor, Division of Commercial Fisheries, Alaska Department of Fish and Game, Personal interview, Juneau, January 26, 1967.

¹⁶Canada, Department of Fisheries, Report to the Committee on Problems of Mutual Concern Related to the Conservation and Management of Salmon Stocks in Southeast Alaska and Northern British Columbia, Ottawa, 1955, p. 8.

experiments were published in a jointly issued report.¹⁷ It is interesting to note that while the Canadian and American results are similar; most of the conclusions differ in detail and always in favor of the country of which the biologists were nationals. The differences are attributed to contrasting basic assumptions made at the outset of the statistical analyses.¹⁸ The discrepancies, while small, nevertheless demonstrate the difficulty of maintaining strictly impartial nationally directed biological research.

Canadian estimates¹⁹ (American figures in brackets) indicate for 1957 that 1,992,000 or 71 per cent (1,704,000 or 61 per cent) of the total of 2,818,000 pink salmon caught in Alaska's area 121 (see Figure 3 for this and other statistical divisions) were destined for rivers located in British Columbia. An equally significant proportion of sockeye salmon of Canadian origin were caught in the same area. Canadian biologists estimated that 160,000 or 68 per cent (138,000 or 59 per cent) of the total catch of 234,000 sockeye were bound for British Columbia. Canadian catches of American-bound pink and sockeye salmon in 1957 were all estimated to be very minor; in the range of one per cent.

A general downward trend is evident in 1958 of estimates of both pink and sockeye salmon bound for Canada and harvested by American fishermen while at the same time there is an increase in the Canadian capture of fish headed for Alaskan rivers. Both Canadian and American scientists estimated that only 9 per cent of the total pink catch in area 121 were of Canadian origin in 1958. Although British Columbia-bound sockeye again formed a substantial proportion of the catch of 55,553 fish in area 121, the number

¹⁷Loc. cit.

¹⁸Ibid., p. 8.

¹⁹The following statistics are all from Ibid., pp. 15-16.

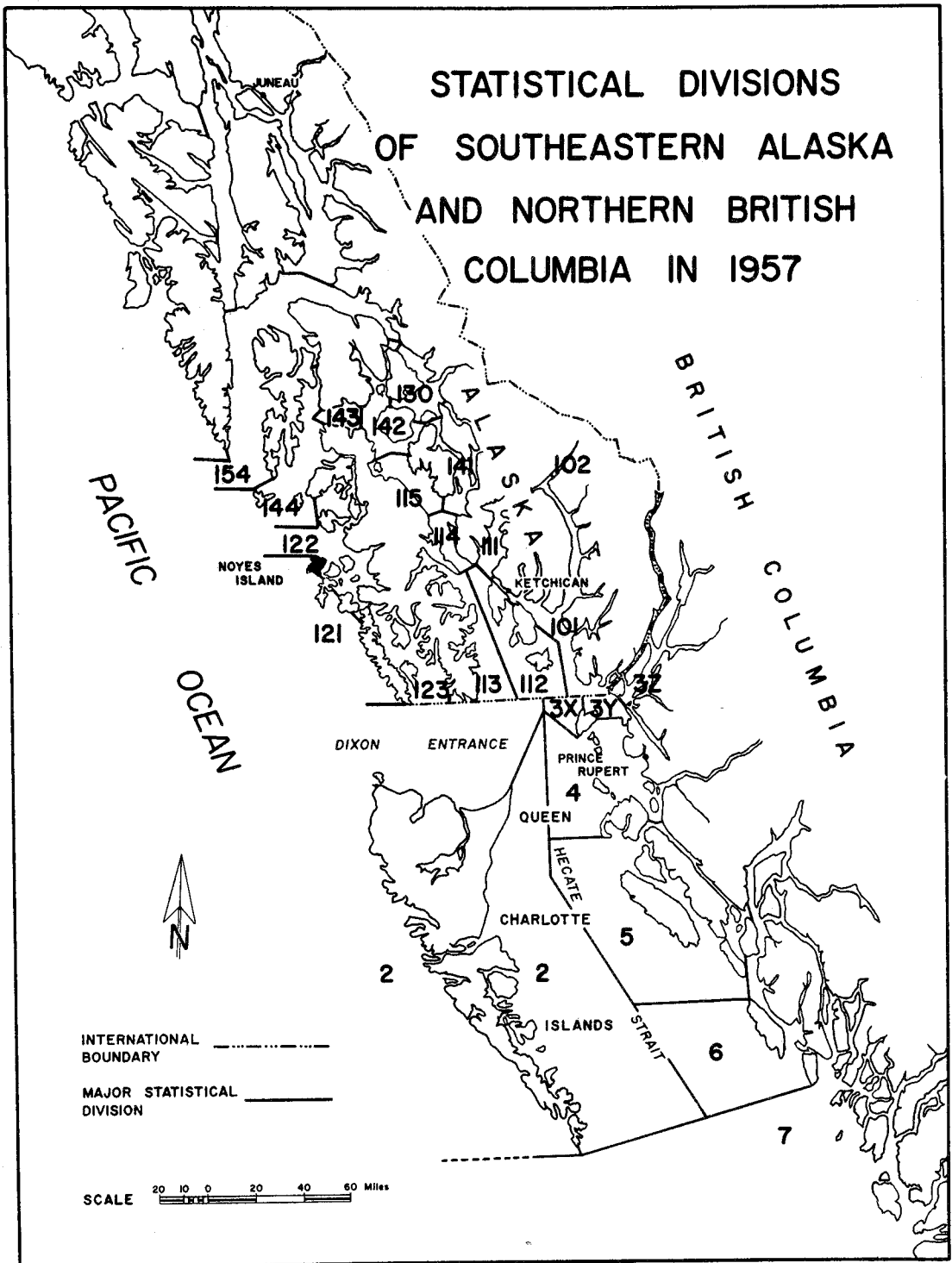


Figure 3. Source: Canada, Department of Fisheries, Report to the Committee on Problems of Mutual Concern Related to the Conservation and Management of Salmon Stocks in Southeast Alaska and Northern British Columbia, Ottawa, 1965, p. 2.

involved was small. The Canadian estimate was 36 per cent (30 per cent). American fishery biologists estimated (Canadian equivalents given in brackets) that 212,000 or 10 per cent (152,000 or 7 per cent) of the total catch of pink salmon in Canadian areas 3, 4 and 5, 2,063,000 fish, were destined for Alaska. Estimates by both national sections of Canadian capture of Alaska-bound sock-eye in 1958 were again very low; in the range of one per cent.

On the basis of the above findings it may be concluded that: (1) The mixing of salmon stocks of Canadian and American origin has been demonstrated in the region under study. (2) Interception of fish destined for the rivers of one country by the fisheries of the other has occurred. (3) The results for the 1957 and 1958 experiments can not necessarily be applied to other years because of possible year-to-year variations in migration routes, weather conditions affecting the efficiency of the fisheries and other factors. The first two findings are a direct consequence of the political partitioning of what is essentially a unified physical and biological region.

Mobility and the Fraser River Example

As we have seen, salmon's high degree of mobility creates international difficulties. Salmon easily range across offshore political boundaries into areas of ambiguous sovereignty. In the Noyes Island affair, however, the sovereignty of the sea space is not in question. Rather, it is the intermingling of salmon en route to their natal streams through the territorial waters of an adjacent sovereign political unit that has led to disagreement.

While it is known that salmon are mobile, the precise location of the migration routes of most stocks in general and of those involved in the

Noyes Island dispute in particular, remains a mystery. Nor is it understood why the routes change annually. Shifts may be due to changes in ocean temperature, salinity or the abundance of food to list three of the most common theories.²⁰ It is clear that the 1958 pink salmon runs, off the Noyes Island area, approached the coast from a more southerly direction than in 1957 (see Figure 4).²¹

The Noyes Island situation is highly analogous to the Fraser River salmon fishing conflict. Salmon spawners bound for the Fraser River system (which is an all-Canadian unit) almost always pass through American territorial waters in the Strait of Juan de Fuca in order to enter the Fraser. The runs are extremely susceptible to American fishing effort at this point and in times past were removed in huge quantities. Canadian fishermen were embittered by this situation. The federal government in Ottawa was reluctant to make the necessary expenditures required to restore the runs to their previous high levels of productivity. Due to the construction of the Fraser Canyon section of the Canadian National Railroad in 1913 and 1914, massive slides occurred which effectively blocked passage of salmon spawners upstream. As a result, the salmon pack dropped drastically; declining from 855,000 cases in the years 1911-14 to 226,000 cases in the years 1915-18.²² The cumulative effects of Canadian and American overfishing were no doubt an important added factor in the decline. What is of significance here is the fact that neither Canada nor the United States was willing unilaterally to restrict the fishing activity of its nationals lest one nation reap the benefits of the other's forbearance. Nor, for the same reason, would either

²⁰Rickey, op. cit.

²¹Canada, Report, p. 12.

²²Larkin and Ricker, op. cit., p. 202.

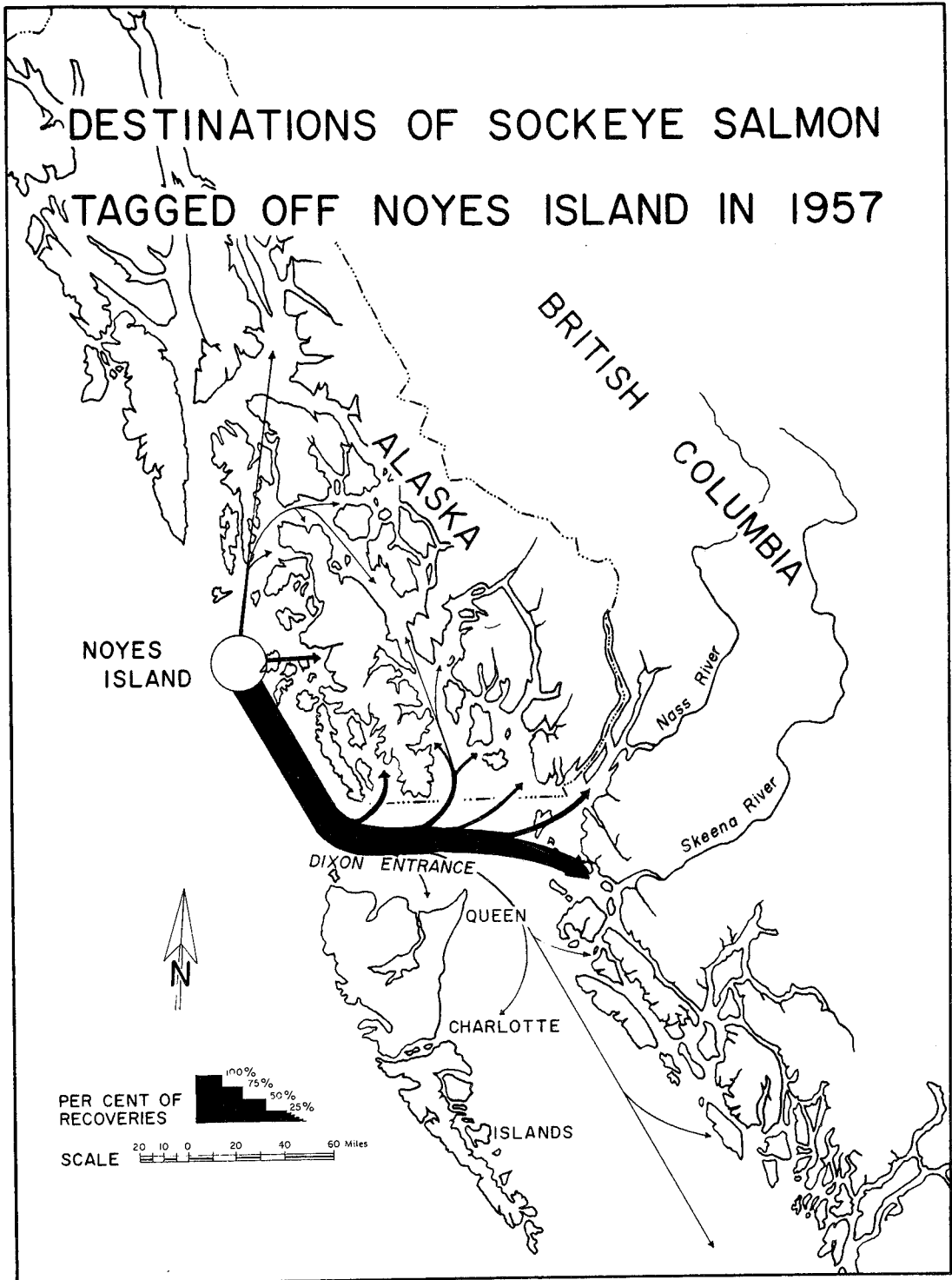


Figure 4. Source: Canada, Department of Fisheries, Report to the Committee on Problems of Mutual Concern Related to the Conservation and Management of Salmon Stocks in Southeast Alaska and Northern British Columbia, Ottawa, 1965, p. 37.

nation invest money for the requisite improvements of river channels and spawning beds.

The solution to this conflict was joint sharing of the benefits and costs of the Fraser's sockeye salmon. A commission, the International Pacific Salmon Fisheries Commission, invested with some measure of supranational authority to control fishing effort, was created in 1937 to study the sockeye and, on the basis of its findings, to promulgate fishing regulations. In addition, the Commission was to undertake projects designed to increase the runs. The costs were to be shared equally, including such works as the fish ladders built at Hell's Gate on the Fraser. At the same time, the sockeye catch was to be divided evenly between fishermen in the United States and Canada.²³

While in fact the direct costs of this endeavor have been shared equally, the Canadian government has since claimed that its share of the indirect costs of maintaining the salmon stocks has risen while her proportional share of the catch has remained constant; that is, at 50 per cent.²⁴ Indirect costs appear in the negative form of non-use of the river, its lakes and tributaries for purposes other than the production of salmon. These include the non-building of the frequently proposed Moran Dam on the Fraser for hydroelectric power, theoretically the cheapest possible source of power for southwestern British Columbia.²⁵ Contrarily, the United States government feels that it should continue to reap the rewards of its initial investments back in the late 1930's when it entered into the International

²³Johnston, op. cit., p. 388.

²⁴"Canada and U.S. Continue Talks," op. cit., p. 15.

²⁵Harry V. Warren, "Hydro-electric Potentialities of the Upper Fraser," B. C. Professional Engineer, V. 7, #7 (July 1956), p. 16.

Pacific Salmon Fisheries Convention and agreed to spend the American taxpayers' funds to aid, in part, foreign fishermen.²⁶ Despite these international differences of opinion the original agreement continues to work smoothly.

Given the many similarities between the Noyes Island and Fraser River affairs, it seems surprising that there is a complete lack of enthusiasm for the establishment of a commission comparable to the I.P.S.F.C. as a solution to the former conflict. The reasons probably relate to the relatively small scale of the Noyes Island pack compared to the Fraser, and the high cost of operating an I.P.S.F.C.-style commission. In other words, the estimated benefits do not appear to justify the necessary costs.

Summary

The political partitioning of a unified physical region and the subsequent development of rival socioeconomic systems have created international conflict in northwestern British Columbia and southeastern Alaska. The biotic basis of the conflict lies in the anadromous and mobile nature of the region's salmon resources which are, of course, totally oblivious to the political partitioning of their habitat. Moreover, it is virtually impossible for commercial fishermen to determine the national origin of salmon at the time of capture.

Experiments have shown conclusively that mixing of Canadian and American spawned stocks occurs and, as a result, fishermen do catch fish of foreign origin. Since it is impossible to adjust the resource, except in the negative sense of depleting it at differential rates on either side of the

²⁶"Breach Widens as Canada, U.S. Bargain on Salmon Problems," Western Fisheries, V. 72, #1 (April 1966), p. 16.

international boundary, some form of adjustment will have to be effected in the allocation of the benefits derived from the exploitation of the salmon fishery. Having gained some understanding of the physical basis of conflict, it is now necessary to investigate the socioeconomic and political situations extant in the study area. It is at either or both of these levels that the conflict will have to be resolved by some type of adjustment in the use of the salmon resource.

CHAPTER IV

THE SOCIOECONOMIC BASIS OF CONFLICT

Introduction

A close relationship necessarily exists between an extractive economic activity and the physical environment. This is obviously true of the salmon fishery located in the study area; i.e. were it not for the presence of salmon, no salmon fishery would exist. When the patterns of man's socioeconomic activities are superimposed upon the natural environment, certain biotic factors, described in the foregoing chapter, increase the possibility of international conflict. Since it is not currently feasible to alter these troublesome biotic factors, adjustments will have to be effected either in the socioeconomic systems organized, in part, around the salmon resource base, or in the political organization of the area's sea space. Given the region's relatively high degree of dependence on the salmon fishery it seems unlikely that any major revision of either of the competing national socioeconomic systems is politically realistic.

The Nature of the Region's Salmon Fishery

Salmon fishing is an important economic activity along much of the northwestern coast of Anglo-America, tending to increase in relative importance locally as one proceeds northward due to a declining amount of alternate employment opportunities; which in turn is primarily the result of the small

population base and the area's marginal location relative to major markets.

Three methods are employed commercially to catch salmon; purse seining (40 per cent), gillnetting (45 per cent) and trolling (15 per cent). The bracketed figures refer to the average annual proportion of the salmon catch taken by each method.¹

The purse seiners are the largest vessels found in the salmon fleet, typically being eighty feet long and having a crew of seven or eight. The method depends upon locating dense schools of fish. Once located, a large net (or seine) is drawn out from the seiner and around the school by a motorized skiff. After the fish are completely encircled, the seine is so arranged that its bottom can be drawn together, thus effectively preventing any fish from escaping underneath the net. Many salmon seiners are equipped to fish herring and halibut during the offseason.

Gillnetting is carried out by small one or two man boats. Gillnets are usually set in the estuaries of large salmon-producing rivers or else in those inlets having many smaller streams flowing into them. The salmon simply swim into the net and become trapped when their gills are caught in the net mesh. Gillnetters and purse seiners do not operate well in the same areas due to gear incompatibilities. Areas are often reserved either for one or the other type of vessel at many places along the coast.

Trolling is the simplest method used to catch salmon. Basically, lines with baited hooks are pulled through the water by vessels ranging up

¹Emerson Gennis, "The Commercial Fisheries of British Columbia," Inventory of the Natural Resources of British Columbia, Victoria, British Columbia Natural Resources Conference, 1964, p. 296. Percentages given are for British Columbia but it is believed that a similar situation exists in Alaska's southeastern region.

to forty feet in length. Troll caught salmon are of prime quality and normally enter the fresh and frozen fish markets while seine and gillnet caught fish are marketed mainly in canned form.²

With the increasing size, speed and efficiency of modern fishing vessels and packers, canneries are being concentrated at a few key locations, where they usually assume an important, if not dominant, place in the local economy. Packers are large vessels, often exceeding one hundred feet, and are equipped with fish-freezing apparatus. They transport freshly caught salmon from the fishing fleet to canneries enabling fishing vessels to maximize catching effort.

Both Canada and the United States recognize that salmon resources are easily depleted and, consequently, both nations practice conservation or management of the resource at a sophisticated level.

The Noyes Island salmon fishery is conducted exclusively by Alaskan fishermen, weather permitting, using purse seiners well within the American three-mile territorial limit. The seiners set their huge nets in small bays (or bights) where large schools of fish tend to congregate. Due to the mobility of modern vessels, the catch may be processed at any of the sixteen canneries scattered throughout southeastern Alaska (see Figure 1). In seasons when the weather is too rough to permit seining, the fishing fleet is forced to move "inside" and to work more locations as the spawners disperse; heading for a multitude of natal streams. Southeastern Alaska, unlike north coastal British Columbia, lacks a dominant salmon-producing river of the magnitude of the Skeena or the Nass where fishing effort can be perennially concentrated; regardless of the vagaries of the elements.

²Ibid., p. 297.

The Role of the Salmon Fishery at the Local Level

In both southeastern Alaska and north coastal British Columbia, commercial salmon fishing plays a most important role in the local economy and it is at this level that the Noyes Island conflict is most acutely argued. For analytical purposes, the local area may be defined as a narrow band of territory stretching along the coasts of southeastern Alaska, northwestern British Columbia and the adjacent offshore islands.

Highly significant regional differences appear in Alaska's economy; with the northern and northwestern areas benefitting the most from the large influx of federal and military funds in the last twenty-five years. The southeastern region, for example, obtained approximately 26 per cent of its total employment from the commodity-producing sector of the economy while the comparable figure for the southwest was only 10 per cent.³ Fisheries (of which salmon form the bulk) normally account for some 40 per cent of the wealth produced from natural resource extraction activity in southeastern Alaska.⁴ Cooley and Rogers estimate that the salmon pack is usually worth 24 million dollars (\$ U.S.) annually to the salmon fishermen of southeastern Alaska.⁵ Although exact figures are not available by region, it is safe to assume that in-region processing will more than double the value of the catch. This assumption is based on the fact that for all of Alaska's salmon pack in 1963, the percentage of the value added by processing was 143 per cent.⁶

³Alaska, Department of Economic Development and Planning, Alaska's Population and Economy; Regional Growth, Development, and Future Outlook, by George W. Rogers and Richard A. Cooley, Juneau, 1962, V. 1, p. 127.

⁴Ibid., p. 221

⁵Loc. cit.

⁶"Alaska's Fisheries Industry," Alaska Monthly Review of Business and Economic Conditions, V. 2, #1 (January 1965), p. 3.

At many of the small coastal settlements shown in Figure 1, the salmon fishery provides the sole means of obtaining the economic necessities of life.⁷ The salmon fishery is a seasonal industry and attracts migrant workers from as far away as Washington State. During the offseason, employment must be sought in alternate activities such as forestry or other types of fishing to round out annual incomes. To the professional salmon fishermen or cannery worker, these other activities are only supplementary in nature and it is the salmon fishery that provides the bulk of their annual income.

Southeastern Alaska's large native populations would be particularly vulnerable to any drastic changes in the conduct of the salmon fishery, on which it is highly dependent. The Indians are often given preferential treatment by the state government. For instance, the only three salmon traps still allowed to operate in Alaska are located around Annette Island, a large Indian Reserve immediately west of Ketchikan at the southern tip of the panhandle.⁸

The economy of north coastal British Columbia closely resembles that existing across the international boundary in southeastern Alaska. While fish product plants account for between 4 and 5 per cent of the total value of factory shipments in the province, in the north coast these shipments account for anywhere from 10 to 18 per cent, depending on how large the salmon pack is in any particular year.⁹ In spite of Prince Rupert styling itself the "Halibut Capital of the World" the salmon fishery constitutes the

⁷Ibid., p. 1.

⁸Roy Rickey, Southeastern Regional Supervisor, Division of Commercial Fisheries, Alaska Department of Fish and Game, Personal interview, Juneau, January 26, 1967.

⁹British Columbia, Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce, The Commercial Fisheries of British Columbia, Victoria, 1963, p. 1.

most valuable sector of the fishing industry.¹⁰ As seen on the accompanying map (see Figure 5), the Prince Rupert region is by far the most important part of the local area as defined in this thesis.

The total population of the Prince Rupert vicinity was only 14,000 persons in 1961 (15,000 in 1965).¹¹ The census listed 450 of these permanent residents as commercial fishermen in 1961.¹² This figure is most misleading however since large numbers of fishermen and cannery workers migrate northward during the salmon season just as in Alaska. If other residents fish, they do so only on a part time basis. Consequently, it is most difficult to quote precise figures on the percentage of the labor force dependent upon the salmon fishery. To demonstrate the significance of non-residents to the industry it is well to point out that 920 commercial fishing vessels were based in the area in 1964 and that a labor force of about 1,600 was required to man these boats.¹³ In addition, 1,200 people were employed in the area's canneries in 1962.¹⁴ Keeping in mind that the entire population of Prince Rupert and vicinity is only 15,000, it is patently obvious that the commercial salmon fishery is of prime importance to the local economy. While census division 9 contained only 2.5 per cent of British Columbia's population it had 18 per cent of the total number of fishermen and 38 per cent of the cannery workers.¹⁵ It is not surprising that the residents of the north coast are

¹⁰"Quantities and Values of Most Important Species -- 1964-1965," Western Fisheries, V. 72, #2 (May 1966), p. 21.

¹¹British Columbia, Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce, Regional Index of British Columbia, Victoria, 1966, p. 487.

¹²Ibid., p. 488.

¹³Loc. cit.

¹⁴Loc. cit.

¹⁵British Columbia, The Commercial Fisheries of British Columbia, p. 51.

FISH PROCESSING IN NORTH COASTAL BRITISH COLUMBIA BY TYPE OF LICENCE ISSUED IN 1963

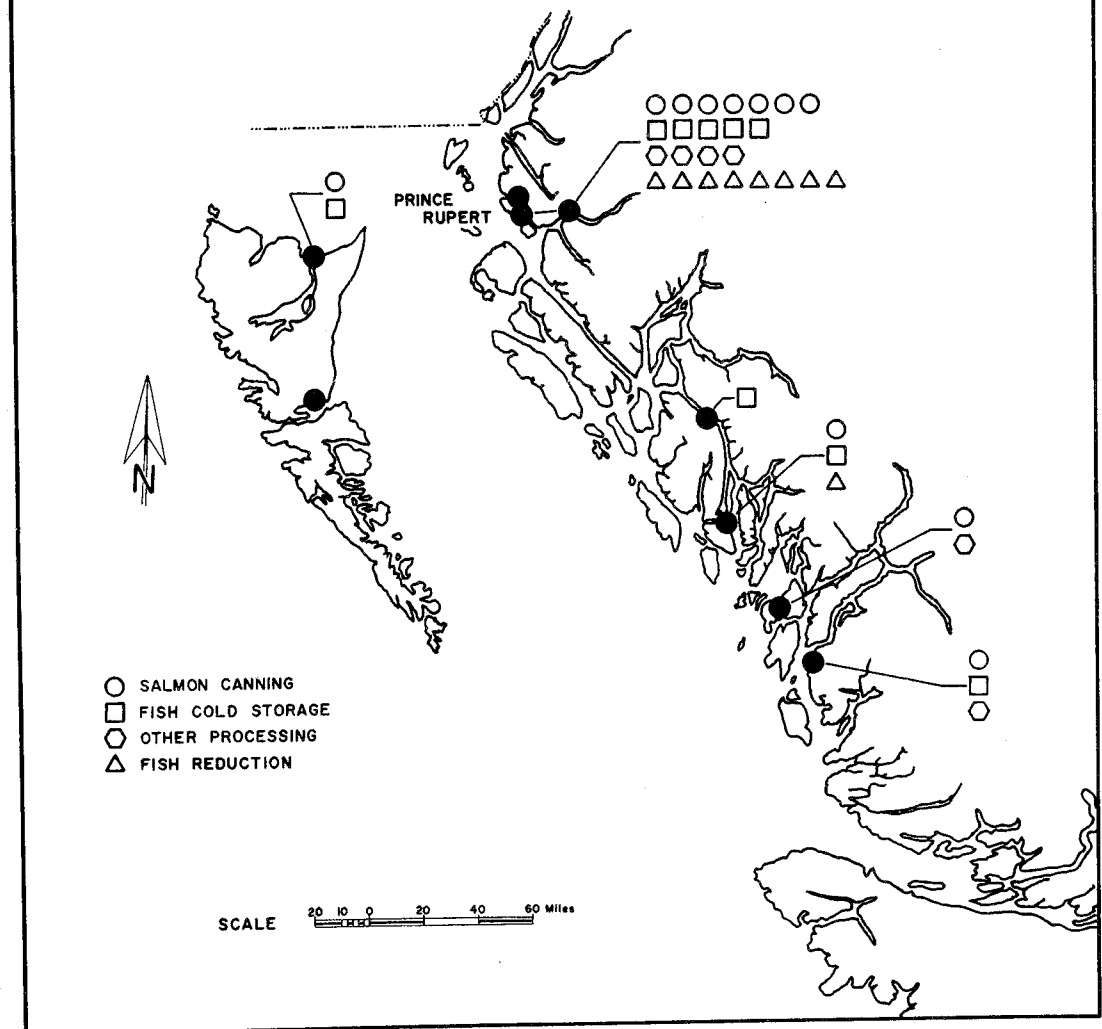


Figure 5. Source: British Columbia, Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce, The Commercial Fisheries of British Columbia, Victoria, 1963, p. ix.

vitaly concerned about the Noyes Island conflict since so much of their livelihood depends upon the salmon fishery.

The State and Provincial Level

Both Alaska and British Columbia rely rather heavily on the primary sectors of their economies since both units lack close proximity and easy access to major markets needed to support large concentrations of secondary industry. The commercial salmon fishing industry loses its dominant position when considered within this larger areal context but, nevertheless, still maintains some measure of significance in the economies of Alaska and British Columbia.

Within British Columbia's fishing industry, the salmon fishery has a place of dominance; salmon accounted for 64 per cent of the total landed value of all fish and shellfish taken during the years 1953-1962.¹⁶ Commercial fishing ranked fifth in terms of value added among the six primary industries found in the province.¹⁷ The fishing industry, including primary and secondary sectors, contributed an average of 4 per cent to the total commodity production of British Columbia between 1950 and 1960.¹⁸ The average annual wholesale marketed value of salmon has been 59 million dollars in the period 1961-1965.¹⁹ There is also a large capital investment in the industry, with 58 million dollars invested in floating equipment alone.²⁰ Estimates indicate

¹⁶John B. Buchanan, "International Aspects of the Fisheries of B.C." Inventory of the Natural Resources of British Columbia, Victoria, British Columbia Natural Resources Conference, 1964, p. 288.

¹⁷British Columbia, The Commercial Fisheries of British Columbia, p. 25.

¹⁸Ibid., p. 27.

¹⁹"Wholesale Value Dropped to \$52 Million," Western Fisheries, V. 72, #2 (May 1966), p. 23.

²⁰Gennis, op. cit., p. 290.

that over 15,000 people are employed in the fishing industry at the peak of the salmon season.²¹ This figure represents 4 per cent of the province's manufacturing labor force.²² It is clear from the foregoing that the salmon fishery has a significant, though relatively small, place in the provincial economy of British Columbia. Despite good prospects for a real increase in the volume of fish caught, it appears that the relative importance of the industry will decline due to the greater growth forecast for the forest and other industries.²³

The Alaskan economy has been undergoing great changes since 1939 when 29 per cent of the labor force was engaged in fishing, forestry and mining.²⁴ By 1962 this had declined to 2 per cent.²⁵ Cooley and Rogers have attributed this decline to what they term as the "rise of the federal-military economy."²⁶ Nevertheless, fisheries are still of vital importance to the Alaskan economy according to these two acknowledged authorities who state, in part, that ". . . the fisheries still remain the mainstay of Alaska's total natural resource activities. Furthermore, among the natural resources produced in Alaska, only fisheries (primarily salmon) are produced in such a volume as to be of major significance beyond the boundaries of the state."²⁷ In the eleven year period, 1950-1960, salmon accounted for 80 per cent, by value, of all commercial fisheries production.²⁸

The commercial salmon fishery is definitely of greater relative

²¹British Columbia, The Commercial Fisheries of British Columbia, p. 2.

²²Loc. cit.

²³Ibid., p. 5.

²⁴Rogers and Cooley, op. cit., p. 123.

²⁵Loc. cit.

²⁶Ibid., p. 110.

²⁷Ibid., p. 154.

²⁸Ibid., p. 168.

importance to the state of Alaska's economy than is the case in British Columbia. British Columbia's closer proximity to both foreign and domestic markets and a more highly developed external transportation network have enabled that province to diversify its economy which tends to lower its reliance on primary industries, including the salmon fishery.

Fisheries at the National Level

When considered in a national context, the fishing industries of both countries register a marked relative decline in importance no matter what indicators are used to measure "importance." For example, in 1964 exports of fish and shellfish accounted for only 2.3 per cent of Canada's total export earnings.²⁹ The commercial fishing catch in Alaska comprised 38.3 per cent of that state's total wealth produced by natural resource extraction activities in 1964 as compared with only 0.7 per cent for the United States as a whole.³⁰ The average annual value of Anglo-American fisheries production during the period from 1954 to 1958 represented a minute 0.2 per cent of the total value of all manufacturing, agricultural, mineral, forestry and fisheries production.³¹ The implication is clear that the fishing industries of the United States and Canada can only exert limited pressures on their respective governments.

The commercial salmon fisheries of Canada and the United States lose their primacy within their respective national fishing industries when viewed at the national level. For instance, the east coast fisheries produced

²⁹Canada, Dominion Bureau of Statistics, Department of Trade and Commerce, Canada Year Book, Ottawa, 1966, p. 928.

³⁰Rogers and Cooley, op. cit., p. 154.

³¹W. H. Parker, Anglo-America: Canada and the United States, London, University of London Press, 1962, p. 60.

60 per cent by value of Canada's commercial fish catch in 1960 and this percentage is increasing every year.³² Salmon fishing is of negligible importance in the Maritimes which means that British Columbia's salmon fishery is gradually declining in relative national importance with each passing year.

In both Canada and the United States the commercial salmon fisheries are but one of several important segments of the respective national fishing industries. These components often have opposing interests which leads to conflicting demands being made upon the foreign policy organs of government in Ottawa and Washington, D. C. Consequently, the salmon fishing interests frequently suffer as governments seek to avoid antagonizing other, perhaps politically more powerful, segments of the fishing industry. An excellent example of this type of situation occurred in the United States where salmon and tuna fishing interests clashed over the issue of extending American sovereignty seaward by declaring a twelve-mile territorial limit. The tuna fisherman of southern California operate off foreign shores and did not want any American action to set a precedent for these foreign nations to justify extension of their territorial waters which would hinder the inshore operation of tuna boats. American salmon fishermen work off domestic shores for the most part and want an extension of the territorial limit to provide maximum protection from foreign fishermen. For years, the tuna fishing lobby was able to block passage of any bill in Congress to extend the American territorial limit and the salmon fishery was powerless to do anything about it. It took the recent massive arrival of Soviet fishermen off the east and west coasts of the United States to overcome domestic opposition to the creation of a twelve-mile territorial limit.

The salmon fishing industry is not even united within itself.

³²Canada, op. cit., p. 608.

Gear incompatibilities have already been mentioned but this is of minor importance so far as the Noyes Island conflict is concerned. When the Canadian government revoked the 1957 net fishing line agreement the troll fishermen of British Columbia became alarmed for three reasons: (1) Offshore net fishing would wreck conservation efforts. (2) Trollers could not compete economically with seiners and gillnetters offshore. (3) Third party nations would feel free to follow the Canadian example and develop new offshore net fisheries utilizing stocks of North American origin.³³ The inability of the salmon fishing industries in Canada and the United States to make coordinated demands upon their respective governments has no doubt created a considerable amount of official confusion and indecision which is not conducive to the resolution of the conflict.

Coastal Versus Distant Fishing Nations

Traditionally, nations involved in fishing conflicts have been grouped for purposes of analysis into two categories; coastal and distant. This division is based upon technological differences in the manner of fishing and the consequent derivation of dissimilar socioeconomic systems. These functional disparities tend to foster, at the international level, the growth of conflicting philosophies concerning the utilization of fishery resources. When nations holding such divergent views come into contact, as occurs when a new nation expands operations into the traditional fishing grounds of another state, conflict is an almost inevitable result.

To illustrate the validity of the above paradigm, reference is made

³³"Pacific Trollers Association Feel Offshore Net Fishery for Salmon Would Destroy the Salmon Industry," Pacific Troller, V. 2, #2 (June 1966), p. 1.

to the recent arrival of massive Soviet fishing fleets off the west coast of Canada. The first such visit, apparently in the successful quest for ocean perch (a species of groundfish), occurred in October of 1965,³⁴ triggering an immediate and violent reaction by all segments of the local British Columbia fishing industry.³⁵

Historically, fishing for groundfish, apart from halibut, off the coast of British Columbia has been a small scale operation utilizing a small number of seine-type vessels designed for medium range multi-purpose work. A typical Canadian based groundfish trawler, or dragger as they are known locally, will be eighty feet in length, twenty gross tons, able to stay at sea for twelve days and possess a cruising range of one thousand miles.³⁶ In the last few years there has been a sharp rise in demand for groundfish causing the local groundfishing industry to boom in British Columbia.³⁷ There are now more than fifty trawlers based in the province and more and larger boats are planned for the future. B. C. Packers, the industry giant on the coast, for example, is planning to build a one hundred and thirty foot dragger.³⁸

This type of fishing, in spite of the current expansion, contrasts

³⁴"Time for Establishing Straight Baselines is Now!" Facts on Fish, V. 8, #15 (November 26, 1965), p. 1.

³⁵For a particularly violent protest see Ibid., p. 2.

³⁶"80-Ft. Dragger 'Sharlene K' First With Raised Foc'sle Deck," Western Fisheries, V. 72, #5 (August 1966), p. 20.

³⁷"The Industry in 1965," Western Fisheries, V. 72, #2 (May 1966), p. 19; "The Trawl Fishery for Pacific Cod," Western Fisheries, V. 73, #6 (March 1967), p. 19.

³⁸"B. C. Packers Study 130-Ft. Trawler," Western Fisheries, V. 73, #4 (January 1967), p. 20.

sharply with the Russian method of operation along the west coast of Canada which is necessarily a very large scale affair. The Russian home base, Vladivostok, is over four thousand miles away so it is clear that the vessels they employ have a great cruising range. The Russians use huge factory-motherships as the core of their fishing effort. Each such vessel is, in essence, a highly mobile floating factory and is supplied with fish by a number of catcher boats. The fishing fleets are attended by a host of auxiliary vessels which carry supplies to and processed finished products from the motherships which in turn service the trawlers. In this way the fleets are enabled to remain at sea for months at a time.³⁹

The entire situation is archtypical of a "coastal-versus-distant" type of fishing conflict. The Soviets are able to blitz a fishing ground until yields decline and then are free (and able) to move on to greener pastures. Under normal circumstances this opportunity is denied to the Canadian groundfishermen due to a lack of capital needed to finance the construction of fantastically expensive distant-water fishing fleets. The British Columbia fishermen must remain and suffer whatever the consequences of intensive Soviet fishing effort may be. This necessity is the essence of the conflict and is ideally suited to analysis along coastal-versus-distant lines.

It is now apparent why the Noyes Island conflict is not amenable to a similar type of analysis. The Alaskan and Canadian fishermen involved in the dispute conduct essentially the same type of fishery which in turn supports a similar socioeconomic structure on either side of the international

³⁹Milan A. Kravanja, "Soviet Far East Fisheries Expansion," Commercial Fisheries Review, V. 26, #11a (November 1964), pp. 1-14.

boundary. The outlook (or philosophy) of both sides concerning the utilization of the salmon resource, as a result, is basically parallel. Some means other than a rigid coastal-versus-distant model will have to be developed to deal with a situation where two nations are geographically contiguous, partially dependent upon identical fish stocks, and utilize similar means to extract and to process these fishery resources. Both Canada and the United States are, in fact, coastal-type states in the Noyes Island conflict. It would therefore have been impractical to utilize a stereotyped approach based upon a coastal-versus-distant form of dichotomy in this thesis. For this reason a more flexible and empirical method is adopted.

Summary

The salmon fisheries of southeastern Alaska and north coastal British Columbia are generally similar in nature and partially dependent upon identical fish stocks. The Noyes Island fishery is exclusively an Alaskan affair and utilizes relatively non-selective purse seiners. The salmon fisheries decline in importance as one moves from the local to the national levels of society. Conflicting interests within both the salmon fishing industry and the fishing industry as a whole in Canada and the United States greatly lessens the influence of those fishermen most vitally concerned with the conflict in Ottawa and Washington, D. C. These internal divisions have greatly complicated efforts to find a solution to the dispute.

The basic similarities of the methods used to harvest the salmon resource, the socioeconomic structures and political outlooks on either side of the international boundary make it impractical to utilize the traditional coastal-versus-distant method of studying the Noyes Island conflict. The situation calls for cooperation rather than conflict. Both parties basically agree on so many facets of salmon fishing policy that it should not be

necessary to effect fundamental changes in the conduct of the study area's salmon fisheries. Rather, both sides should strive to formulate scientifically-based adjustments on the basis of equity.

The political partitioning of a biotically united fishing unit by two geographically contiguous sovereign states that are at the same time closely integrated and interdependent in so many ways makes it absolutely necessary that the conflict be resolved on mutually advantageous terms. Soundly based compromise must be substituted for unreasonable demands by both sides.

CHAPTER V

NOYES ISLAND AND THE GEOGRAPHY OF SALMON FISHING CONFLICTS

An Evaluation of the Current National Positions

Using the findings of the 1957 and 1958 tagging experiments as evidence that American fishermen conducting the Noyes Island fishery harvest significant proportions of salmon stocks destined for British Columbia, the Canadian government steadfastly demands the inward adjustment of the surf line off southeastern Alaska. This demand is justified on four major grounds: (1) Offshore net fishing of intermingled salmon stocks effectively nullifies the conservation efforts of both nations. (2) The continuation of such a fishery materially weakens Anglo-American claims elsewhere in the Pacific that they are properly managing salmon of North American origin. This inconsistency on salmon fishing policy could be cited by other nations to justify the development of high-seas salmon net fisheries utilizing stocks of North American origin. (3) The increasing demand and value of rivers for alternate purposes makes it absolutely necessary that countries possessing salmon-producing rivers receive the maximum benefit from the salmon resources if they are to continue bearing the high direct and indirect costs of regulating the fishery and keeping rivers fit for salmon. (4) The surf line is delimited on a different basis off Alaska than elsewhere along the Pacific coast of North America.¹

¹"Canada and U.S. Continue Talks on Salmon Net Fishing Limits," Fisheries of Canada, V. 19, #1 (July 1966), pp. 11-15.

The government of the United States has consistently rejected Canadian demands that the surf line off southeastern Alaska be revised inward in such a way as to effectively curtail the Noyes Island salmon net fishery for four major reasons: (1) Due to the simultaneous occurrence of a tongue of warm water extending northward to southeastern Alaska and abnormally good weather conditions, the United States contends that 1957 was an exceptional year not likely to be duplicated more than once a century. Since salmon are repelled by warm water, British Columbia-bound stocks were forced to approach the coast from a more northerly direction than usual and good weather allowed a high rate of removal. Therefore, there is no need to stop the Noyes Island fishery on the basis of one freak season.² (2) The abandonment of the fishery would force American fishermen to work at scattered, less economic locations thus severely damaging the economies of canneries and communities dependent upon the fishery. (3) The Noyes Island salmon fishery is "historic" by virtue of its sixty-year duration and, consequently, under current international law, should remain in existence. (4) Some sections of the surf line off British Columbia are at least as liberal as off Alaska; allowing Canadian fishermen to use nets many miles from shore.³

In the absence of more complete biological knowledge, it is possible only to speculate on the degree to which the Noyes Island fishery has benefitted from Canadian expenditures totalling some ten million dollars⁴ on policing the salmon fishery in north coastal British Columbia and on stream channel and spawning bed improvements. It is not possible to estimate

²"US and Canada Still Tangled In Net Fishing Lines off SE Alaska and BC," Pacific Fisherman, V. 64, #6 (June 1966), p. 8.

³"Canada and U.S. Continue Talks," op. cit., pp. 11-12.

⁴"Quite a Kettle of Fish," Time, May 27, 1966, p. 11.

the degree to which the fishery has adversely affected the region's conservation programs, and whether or not 1957 was a "freak" year. Nevertheless, it has long been taken as axiomatic among fishery biologists that salmon should be removed as close to their natal streams as possible for optimum management efficiency.⁵ Only a small percentage of the salmon stocks captured off Noyes Island appear to originate in the immediate vicinity.⁶

To date, no nation has attempted to cite the fishery as justification for developing new offshore net fisheries utilizing salmon of North American origin, although the possibility of such a situation arising is not inconceivable. Given the widespread publicity in the world's fisheries trade journals generated by the Noyes Island conflict, it will be interesting to see whether or not South Korea attempts to cite the continuance of the fishery as partial justification for her strongly rumored entry into a Pacific high-seas salmon fishery in 1968.⁷

Maritime international law contains no rigid definition of what constitutes an "historic" fishery. The last twenty years have witnessed the closure of numerous such fisheries as nations have sought, usually unilaterally, to protect fish stocks located in adjacent coastal waters from foreign

⁵Richard Van Cleve and Ralph W. Johnson, Management of the High Seas Fisheries of the Northeastern Pacific, University of Washington Publications in Fisheries, New Series, V. 2, #2 (November 1963), p. 18.

⁶See the route maps of salmon tagged off Noyes Island in Canada, Department of Fisheries, Report of the Committee on Problems of Mutual Concern Related to the Conservation and Management of Salmon Stocks in Southeast Alaska and Northern British Columbia, Ottawa, 1965, pp. 14, 37, 52, and 73.

⁷"Canada - Japan - U.S.A. - Scrutinize Korean Salmon Intent," Ocean Fisheries, V. 3, #1 (January 1967), p. 20. The key factor, so far as the South Koreans would be concerned, is the continued capture of intermingled stocks in the vicinity of Noyes Island irrespective of the legal status of the waters being fished.

fishing vessels. The classic example was the cessation of an important British trawl fishery off the Icelandic coast. Iceland successfully demonstrated an overriding dependence on its coastal fisher resources. In terms of the length of permanent white settlement in southeastern Alaska and northern British Columbia, the Noyes Island fishery is undeniably of long term standing. Yet, although the disputed fishery resources removed off Noyes Island play a significant role in the economy of southeastern Alaska and conceivably could do so in north coastal British Columbia neither side can reasonably claim that these particular fish do or could have a place of dominance in the respective local economies.

Factors functionally unrelated to the fishery are likely to have great bearing on the eventual outcome of the conflict, especially those arising from the concept of national power imbalance. The possibility of the United States halting its Noyes Island fishery is remote as official American spokesmen have in fact stated flatly that the fishery will not be stopped.⁸ Such empirical, as opposed to legal, considerations may ultimately greatly influence the terms of settlement.

Consistently having to fish more dispersed locations would no doubt prove to be a financial burden for the Noyes Island fishermen. At the same time, the extent to which poor weather currently affects the local fishing community when the fleet is forced to utilize scattered areas is unclear. In the long run, increased salmon production might even result from the theoretically better conservational practice inherent in confining net fishing to the mouths of natal streams. No such change in operation is contemplated or even thought necessary by American industrial and governmental

⁸"Canada and U.S. Continue Talks," op. cit., p. 12.

officials.⁹

The surf line off Alaska coincides exactly with the American three-mile territorial limit whereas off British Columbia and the United States south of the forty-ninth parallel it often runs along the shoreline and never consistently follows the three-mile territorial limit of either nation. Yet, there is no denying that some portions of British Columbia's surf line permit salmon net fishing as far from shore as in Alaska. Of course, the distance from shore is not the critical factor but, rather, whether or not nationally intermingled stocks are being intercepted.

Both nations present sound cases. The resolution of this conflict, as with so many in the past between Canada and the United States, will ultimately demand that both sides make concessions. As previously noted, there is little likelihood that the United States will abandon its fishery in toto but, rather, may limit the fishery at times when Canada-bound stocks are known to be in the vicinity. Forthcoming research programs that are to be jointly sponsored by both federal governments will no doubt provide the information that will be required to implement such action.¹⁰

The Noyes Island conflict provides an interesting case study in international relations between a great power (the United States) and a middle power (Canada). The present study has given strong indication that an unwritten "special relationship" exists in the conduct of Canadian-American international relations. This special relationship manifests itself in the ease and frequency of communication across the border and a willingness to discuss and solve the conflict amicably.

⁹None of the American governmental and industrial officials interviewed during the preparation of this thesis thought such action necessary.

¹⁰"Canada and U.S. Continue Talks," op. cit., p. 14.

The biological basis of the Noyes Island conflict rests with the anadromous and highly mobile nature of a commercially valuable salmon resource. The political partitioning of land and sea space, which constitutes a unified physical and biotic region, by two geographically contiguous and sovereign states, has led to complex problems in the allocation and conservation of a locally important means of making a livelihood. It would be surprising if such a dispute did not generate acrimonious moments but, given the long history of amicable resolution of conflict between the United States and Canada, it would be equally surprising if cooler heads did not ultimately prevail and if some mutually agreeable solution to the Noyes Island conflict did not eventually come to pass. The recent publicly-announced intentions of both countries to initiate joint research programs to find a sound scientific as opposed to an emotional-political basis for settlement indicates that the resolution of the Noyes Island conflict will not for long be delayed.

The Wider Implications of the Present Study

Several conclusions concerning salmon fishing conflicts in general may be drawn from the present study. Appreciation of the following four factors should be gained when organizing enquiry into any specific conflict: (1) The special nature of the resource. (2) The general state of knowledge concerning the origins and migration routes of disputed stocks. (3) The historical evolution of rival national fisheries. (4) The importance of functionally unrelated political factors in international negotiations. To consider them in turn:

(1) The anadromous and migratory nature of salmon figure prominently in all salmon fishing conflicts. By originating in, and invariably returning to, nationally controlled territory, salmon are dangerously vulnerable to overfishing. This vulnerability causes high conservation

costs to be incurred by natal states in order to perpetuate the resource at economic levels. The nation incurring these costs acquires a vested interest in the resource even when its mobility allows it to enter water bodies where the natal state has no jurisdiction and foreign countries may legitimately exploit it.

(2) Even if all salmon fishing nations agreed that the resource should be harvested exclusively by nationals of the country in which the fish originate, international conflict would not necessarily disappear since it is practically impossible to determine the geographic origin of salmon at the time of their capture by commercial fishermen.¹¹ The research necessary to determine this information is expensive and must be conducted over a long period of time since migration routes vary extensively from year to year. In the face of this ignorance, unless all salmon are caught directly off the mouths of natal rivers it is very difficult to limit the capture of foreign spawned stocks.

(3) It is often necessary to study the historical evolution of rival salmon fisheries in order to gain an understanding of conflicting national interests. For example, if it is discovered belatedly that a fishery of long-term standing is utilizing stocks of foreign origin, is it

¹¹One obvious solution to this problem would be to confine all salmon fishing to the mouths of natal rivers. This action would also greatly facilitate the effective conservation and management of the resource. The salmon fishing industries of Canada and the United States are currently overcapitalized and overmanned. By forcing the industry to remove salmon as close to non-tidal waters as possible, the governments involved would cause a much-needed economic rationalization of the industry. Such a program would have to be accompanied by some system of license limitation. Great problems would remain to be solved concerning just who would be allowed to stay in the industry. The political consequences of such a fundamental reorganization of the salmon fishery have caused governments to move extremely cautiously on this matter.

reasonable to expect this fishery to be totally abandoned? How important are fisheries economically, politically and socially to rival nations? These and other questions can best be approached by examining the evolution of opposing fisheries up to the present.

(4) Functionally unrelated factors may play a prominent role in salmon fishing conflicts. For instance, Japan is currently very worried that the United States may acquiesce to the rumored entry of South Korea into a high seas salmon fishery in the Pacific Ocean in recognition of South Korea's active participation in the Viet Nam war.¹² This type of political consideration must be taken into account when analyzing salmon fishing conflicts given the relatively minor influence of the salmon fishing industry in most countries.

A Classification of Conflict

All salmon fishing conflicts involve quantitative disagreements over the international allocation of salmon resources but, as a comparison of this study with that done by Minghi indicates, coastal-versus-distant disputes display an additional qualitative divisiveness.¹³ Qualitatively, technological differences in fishing methods and the consequent derivation of dissimilar socioeconomic systems foster the growth of opposing national philosophies concerning the exploitation of salmon stocks and the political organization of sea space.

Nations designated as "distant" operate ultramodern integrated salmon fishing fleets in mid-ocean or off foreign shores utilizing stocks

¹²"Canada - Japan - U.S.A.," op. cit., p. 21.

¹³Julian V. Minghi, "The Conflict of Salmon Fishing Policies in the North Pacific," Pacific Viewpoint, V. 2, #1 (March 1961), pp. 59-84.

primarily of non-domestic origin. These fleets consist of giant factory-type motherships which process fish caught by attendant catcher boats and a variety of auxiliary vessels which service the fishing armada and transport their finished products to market. Oceanic processing and superb logistic support enable the fleets to be virtually independent of domestic bases and allow fishing vessels to shift operations to more productive areas when yields decline. Distant nations normally do not contribute to the high costs of maintaining salmon runs at perennially economic levels. This complex of recent technological innovations causes distant nations to advocate continued international adherence to the "freedom of the seas" doctrine whereby salmon located on the high seas become the property of the harvester.

"Coastal" nations confine their salmon fishing operations close to shore using small, short range vessels or traps and depend primarily upon domestically spawned stocks. Processing is done on shore, often in communities highly dependent upon salmon fisheries for their livelihood. Heavy expenses are normally incurred in managing easily depleted salmon resources. On shore processing and the limited mobility of catching equipment prevents operations from shifting to more productive areas should yields decline. Consequently, coastal states tend to favor the modification of the "freedom of the seas" concept by extending national sovereignty onto the high seas whenever domestically spawned salmon stocks venture seaward of territorial waters. In addition, coastal states violently oppose oceanic capture of salmon because it is claimed to be grossly inefficient¹⁴ and precludes

¹⁴The arguments are highly complex but basically North American biologists state that oceanic capture is wasteful because the fish are only half size until the last few months at sea when the growth rate is greatly accelerated. Japanese scientists point out that oceanic capture of salmon involves the harvesting of huge numbers of fish which would otherwise die of natural causes (e.g. predation) and be lost to the coastal fishermen. See Francis T. Christy and Anthony Scott, The Common Wealth in Ocean Fisheries, Baltimore, John Hopkins for the Resources for the Future, 1965, pp. 74-86.

effective management of discrete stocks.

It follows, therefore, that for analytical purposes salmon fishing conflicts may be subdivided into two categories: (1) Those between coastal nations and distant nations. (2) Those between coastal nations and other coastal nations. From this, it is possible to attempt the construction of a geographical model for analyzing salmon fishing conflicts.

The Spatial Aspects of Conflict

The accompanying cartogram (see Figure 6) attempts to illustrate the basic spatial problems inherent in coastal-versus-distant salmon fishing conflicts. Fishermen travelling great distances from Country 3 harvest foreign spawned immature salmon on the high seas at intercept W while fishermen from Country 1 exploit the same stocks, as mature fish, in domestic territorial waters at intercept X. Clearly, it is in Country 3's national interest to preserve the "freedom of high-sea space" while, equally clearly, it is in Country 1's national interest to modify the political organization of that high-sea space in which domestically spawned salmon are located. There are many variations possible on this theme, as when stocks originating in more than one country are intermingled on the high seas, but, in essence, Figure 6 illustrates the areal aspects of salmon fishing conflict involving coastal and distant nations.

In coastal-versus-coastal salmon fishing conflicts, both disputants possess fundamentally similar national philosophies concerning the exploitation of domestically spawned salmon resources and the control of sea space. Specifically, coastal states tend to claim the right to exercise exclusive sovereignty over the exploitation of stocks spawned within their borders. Coastal states usually do not engage in massive oceanic capture of salmon,

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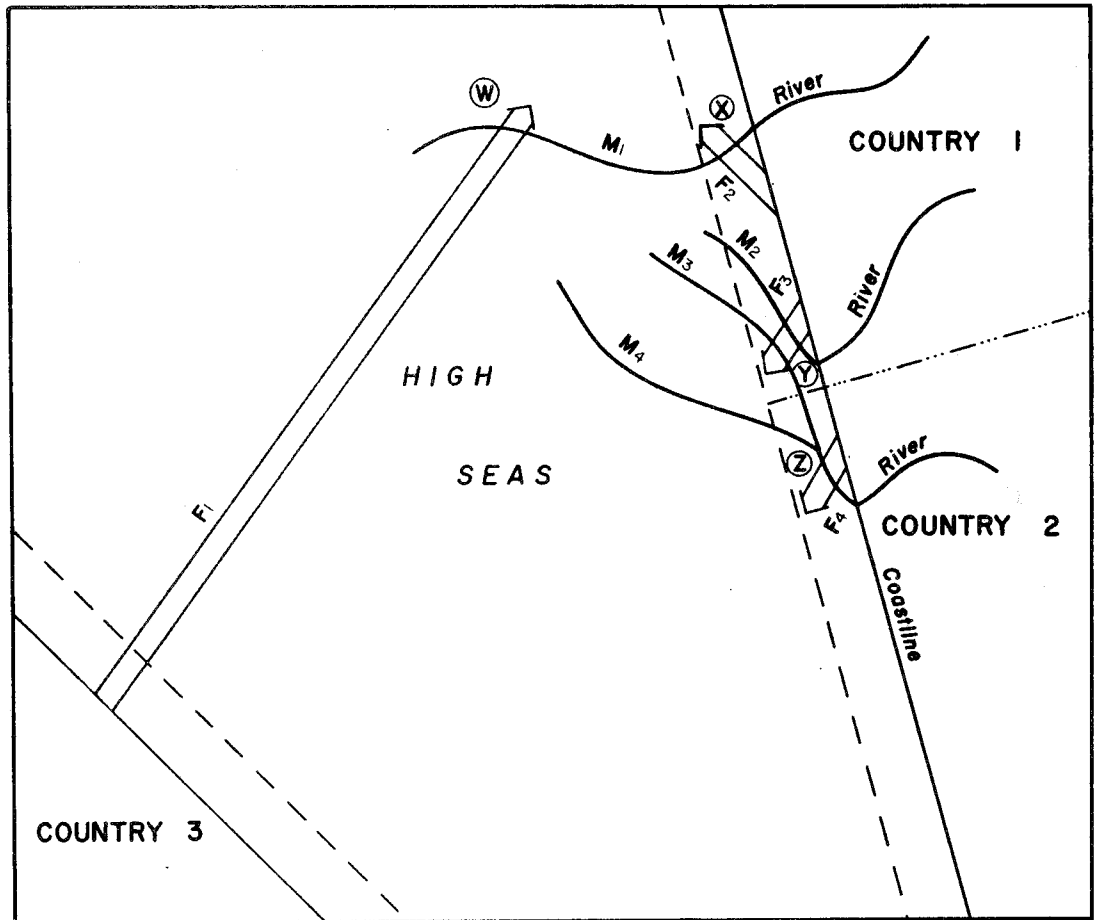


Figure 6.

confining their fishing operations close to shore within territorial waters. Trouble arises when foreign spawned stocks become intermixed with salmon of domestic origin within the territorial waters of a coastal nation as Figure 6 attempts to illustrate. Fishermen from Country 1, operating in territorial waters harvest both foreign and domestically spawned mature salmon which are intermingled at intercept Y. When this situation arises, fishermen from Country 2 experience a reduction in yeilds from salmon stocks normally caught at intercept Z and which they consider to be rightfully theirs. There are again many variations possible, for example when interception of foreign stocks is reciprocal or when migration routes fluctuate annually (indicated by lines M_3 and M_4) and the fisheries of Country 1 are of long-term standing (historic). In the classic case of a coastal-versus-coastal salmon fishing conflict, it is the intermingling of salmon en route to their natal streams through the territorial waters of both coastal countries that creates international conflict.

Conclusion

This study of the Noyes Island conflict has shown that the lack of congruence between biotic and political units creates fundamental problems in the allocation and conservation of a locally important natural resource. These problems can best be understood by examining: (1) the peculiar nature of the salmon resource, (2) the state of knowledge concerning its origins and its movements and the spatial patterns of those movements, (3) the evolution of opposing national fisheries and (4) too-often-ignored inter-related political considerations. In addition, it was found that salmon fishing conflicts can be classified into two categories of quite different character. Finally, it was possible to construct the basis of a geographic

model that should prove useful in organizing enquiry into salmon fishing conflicts by clearly illustrating the basic spatial, and, hence, political-geographical problems inherent in all such conflicts.

BIBLIOGRAPHY

Books

- Alexander, Lewis M. The Offshore Geography of Northwestern Europe. Chicago: Rand McNally for the Association of American Geographers, 1963.
- Amador, F. V. Garcia. The Exploitation and Conservation of the Resources of the Sea: A Study of Contemporary International Law. Leyden: A. W. Sythoff, 1959.
- Christy, Francis T., and Scott, Anthony. The Common Wealth in Ocean Fisheries. Baltimore: John Hopkins for the Resources for the Future, 1965.
- Cooley, Richard A. Politics and Conservation: The Decline of the Alaska Salmon. New York: Harper and Row, 1963.
- Horwood, J. V. British Columbia: An Introduction to Geographic Studies. (Curriculum Resource Book Series, No. 5.) Vancouver: McClelland and Stewart, 1966.
- Johnston, Douglas M. The International Law of Fisheries: A Framework for Policy-Oriented Inquiries. New Haven and London: Yale University Press, 1965.
- Kasahara, Hiroshi. Fisheries Resources of the North Pacific Ocean. 2 vols. Vancouver: Institute of Fisheries, University of British Columbia, 1961.
- Oda, Shigeru. International Control of Sea Resources. Leyden: Sijthoff, 1963.
- Parker, William H. Anglo-America: Canada and the United States. (A Systematic Regional Geography, No. 6.) London: University of London Press, 1962.
- Pounds, Norman J. G. Political Geography. Toronto: McGraw-Hill, 1962.
- Riesenfeld, Stefan S. Protection of Coastal Fisheries Under International Law. (Monograph No. 5.) Washington, D. C.: Division of International Law, Carnegie Endowment for International Peace, 1942.
- Stewart, Harris B. The Global Sea. Toronto: Van Nostrand, 1963.
- Tomasevitch, Jozo. International Agreements on Conservation of Marine Resources with Special Reference to the North Pacific. Stanford: Stanford University Press for the Food Research Institute, 1943.

Van Cleve, Richard, and Johnson, Ralph W. Management of the High Seas Fisheries of the Northeastern Pacific. ("University of Washington Publications in Fisheries," Vol. 11, No. 2,) Seattle: College of Fisheries, University of Washington, 1963.

Articles and Periodicals

- "Alaskan Fishing Endangers B.C. Sockeye," Facts on Fish. Vol. 7, October 30, 1964, 1-2.
- "Alaskan Situation Deteriorates," Western Fisheries. Vol. 58, April, 1959, 20-21.
- "Alaskan Surf Line Treaty is Revoked by Canada," Fishing News International. Vol. 5, August, 1966, 9.
- "Alaska's Fisheries Industry," Alaska Monthly Review of Business and Economic Conditions. Vol. 2, January, 1965, 1-6.
- Allen, Edward W. "Fishery Geography of the North Pacific Ocean," Geographical Review. Vol. 43, October, 1953, 558-63.
- Black, Edwin R. "Oil Offshore Troubles the Waters," Queen's Quarterly. Vol. 72, Winter, 1966, 589-603.
- "Breach Widens as Canada, U.S. Bargain on Salmon Problems," Western Fisheries. Vol. 72, April, 1966, 16-18, 44-46.
- "B.C. Packers Study 130-Ft. Trawler," Western Fisheries. Vol. 73, January, 1967, 20.
- Buchanan, John B. "International Aspects of the Fisheries of B.C.," Inventory of the Natural Resources of British Columbia. Victoria: British Columbia Natural Resources Conference, 1964, 268-89.
- "Canada - Japan - U.S.A. - Scrutinize Korean Salmon Intent," Ocean Fisheries. Vol. 3, January, 1967, 20-21.
- "Canada Reassessing Seaward Net Fishing Limits for Salmon," Facts on Fish. Vol. 9, July 10, 1966, 4.
- "Canada - U.S.A. Salmon Talks to Continue," Facts on Fish. Vol. 9, April 19, 1966, 1-3.
- "Canada and U.S. Continue Talks on Salmon Net Fishing Limits," Fisheries of Canada. Vol. 19, July, 1966, 10-15.
- "Conference on Offshore Lines Inconclusive: Studies to Continue," Western Fisheries. Vol. 58, May, 1959, 61, 97-98.
- "Dixon Entrance Tagging Shows Alaskan Pinks Vulnerable," Western Fisheries. Vol. 74, April, 1967, 16-26, 38.
- "80-Ft. Dragger 'Sharlene K' First with Raised Fore'sle Deck," Western Fisheries. Vol. 72, August, 1966, 12-20.

- Freeman, Otis W. "Salmon Industry of the Pacific Coast," Economic Geography. Vol. 11, April, 1935, 109-29.
- Gennis, Emerson. "The Commercial Fisheries of British Columbia," Inventory of the Natural Resources of British Columbia. Victoria: British Columbia Natural Resources Conference, 1964, 289-306.
- Gottlieb, A. E. "The Canadian Contribution to the Concept of a Fishing Zone in International Law," The Canadian Yearbook of International Law. Vol. 2, 1964, 55-76.
- Gregory, Homer E. "Salmon Industry of the Pacific Coast," Economic Geography. Vol. 16, October, 1940, 407-15.
- "The Industry in 1965," Western Fisheries. Vol. 72, May, 1966, 18-22.
- Kearns, Roger K., and Boyd, Forbes C. "The Effect of a Marine Seismic Exploration on Fish Populations in British Columbia Coastal Waters," Canadian Fish Culturalist. No. 34, May, 1965, 3-26.
- Ketchen, Keith. "The Trawl Fishery for Pacific Cod," Western Fisheries. Vol. 73, March, 1967, 36-45.
- Kravanja, Milan A. "Soviet Far East Fisheries Expansion," Commercial Fisheries Review. Vol. 26, November, 1964, 1-14.
- Larkin, P. A., and Ricker, W. E. (eds.) "Canada's Pacific Marine Fisheries," Inventory of the Natural Resources of British Columbia. Victoria: British Columbia Natural Resources Conference, 1964, 194-268.
- Minghi, Julian V. "The Conflict of Salmon Fishing Policies in the North Pacific," Pacific Viewpoint. Vol. 2, March, 1961, 59-84.
- Moodie, A. E. "Maritime Boundaries," The Changing World. (eds.) W. Gordon East and A. E. Moodie. London: George Harrap, 1956, 942-59.
- "New Canadian - Alaska Committee Studies Common Salmon Problems," Western Fisheries. Vol. 59, February, 1960, 18.
- "No Offshore Net Fishing, Says Minister After Seattle Failure," Western Fisheries. Vol. 72, May, 1966, 60-61.
- "Ottawa Meeting Doesn't Solve US, Canadian Salmon Problems," Pacific Fisherman. Vol. 64, May, 1966, 26.
- "Pacific Trollers Association Feel Offshore Net Fishery for Salmon Would Destroy the Salmon Industry," Pacific Troller. Vol. 2, June, 1966, 1.
- Padgett, Herbert R. "Sea Industries: A Neglected Field of Geography," Professional Geographer. Vol. 13, November, 1961, 1-2.
- Rimes, Les. "Canadian Salmon Industry Enraged Over Americans' Bullying Selfinterestedness," Canadian Fisherman. Vol. 53, July, 1966, 7-9.
- "Salmon Net Fishing Banned Outside 3,000-mile Coastal Line," Western Fisheries. Vol. 53, March, 1957, 11-14.

- Thomas, Trevor M. "The North Sea and Its Environs: Future Reservoir of Fuel?," Geographical Review. Vol. 56, January, 1966, 12-39.
- Thompson, W. F. "Fishing Treaties and Salmon of the North Pacific Ocean," Science. Vol. 150, December 31, 1966, 1786-89.
- "Time for Establishing Straight Baseline is Now!," Facts on Fish. Vol. 8, November 26, 1965, 1-2.
- "US and Canada Still Tangled in Net Fishing Lines Off SE Alaska and BC," Pacific Fisherman. Vol. 64, June, 1966, 6-8.
- Warren, Harry V. "Hydro-electric Potentialities of the Upper Fraser," B. C. Professional Engineer. Vol. 7, July, 1956, 16-24.
- "Wholesale Value Dropped to \$52 Million," Western Fisheries. Vol. 72, May, 1966, 23.
- Wilson, Robert E. "National Interests and Claims in the Antarctic," Arctic. Vol. 17, March, 1964, 15-31.

Newspapers and Newsmagazines

- "Alaska Fishermen Face Retaliation," Vancouver Sun. May 11, 1966, 2.
- "B.C., U.S. Fishermen Snapping Over Salmon," Financial Post. May 14, 1966, 25.
- "Canada - U.S. Net Fishing Talks End in Stalemate," Vancouver Sun. May 20, 1966, 10.
- "Canadian Action on Salmon Hinted," Vancouver Sun. May 21, 1966, 1, 2.
- Carney, Pat. "Reds Move in on Harvest From Nearby Sea," Vancouver Sun. December 16, 1965, 26.
- _____. "Russians Threaten Fishing Industry," Vancouver Sun. December 7, 1965, 28.
- Hacking, Norman. "Canada, U.S. Clash over Salmon Rights," Vancouver Province. April 20, 1966, 15.
- _____. "Fisheries Back Down From Stand," Vancouver Province. June 8, 1966, 15.
- "Quite a Kettle of Fish," Time. May 27, 1966, 11.
- "Retreat in Salmon Battle Charged by Fishing Union," Vancouver Sun. June 6, 1966, 2.

Government Publications

- Alaska, Department of Economic Development and Planning. Alaska's Population and Economy: Regional Growth, Development and Future Outlook. by George W. Rogers and Richard A. Cooley. Juneau: 1962.
- British Columbia, Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce. The Commercial Fisheries of British Columbia. Victoria: 1963.
- British Columbia, Bureau of Economics and Statistics, Department of Industrial Development, Trade, and Commerce. Regional Index of British Columbia. Victoria: 1966.
- British Columbia, Commercial Fisheries Branch, Department of Recreation and Conservation. Report to the Special Committee on Fisheries Concerning the Jurisdictional and Administrative Management of the Commercial Fisheries of British Columbia and the Major Problems Associated with the Management of the Resource. by R. G. McMyrn. Victoria: 1965.
- Canada, Department of Fisheries. License Limitation -- British Columbia: A Method of Economic Fisheries Management. by Sol. Sinclair. Ottawa: 1960.
- Canada, Department of Fisheries. Report to the Committee on Problems of Mutual Concern Related to the Conservation and Management of Salmon Stocks in Southeast Alaska and Northern British Columbia. Ottawa: 1965.
- Canada, Department of Northern Affairs and National Resources. Resources for Tomorrow Conference Background Papers. Vol. 2. Ottawa: 1961.
- Canada, Dominion Bureau of Statistics, Department of Trade and Commerce. Canada Year Book: 1965. Ottawa: 1966.
- United States, Coast and Geodetic Survey, Department of Commerce. Shore and Sea Boundaries. 2 Vols. by Aaron L. Shalowitz. Washington, D.C.: 1962.
- United States, Office of Research in Economics and Science, Bureau of Intelligence and Research, Department of State. Sovereignty of the Sea. by the Geographer. (Geographic Bulletin No. 3.) Washington, D.C.: 1965.

Other Sources

- Gage, J. Vice-President, New England Fish Co. Personal interview. Seattle: October 27, 1966.
- Gilbert, John. Vice-President, Bumblebee Seafoods. Personal interview. Seattle: October 27, 1966.
- Glude, John. Assistant Director, U.S. Bureau of Commercial Fisheries, Fish and Wildlife Service, Department of the Interior. Telephone interview. Seattle: October 28, 1966.

Melamid, Alexander. "The Economics of Territorial Discontiguity."
Unpublished paper read at Yale University, April 20, 1963.

Minghi, Julian V. The Conflict of Salmon Fishing Policies in the North Pacific. (Discussion Paper No. 27.) Seattle: Department of Geography, University of Washington, October 30, 1959.

Needler, A. W. H. Deputy Minister, Canadian Department of Fisheries.
Personal communication. Ottawa: October 7, 1966.

Philips, R. H. Editor, Pacific Fisherman. Personal interview. Seattle:
October 26, 1966.

Rickey, Roy. Southeastern Regional Supervisor, Division of Commercial Fisheries, Alaska Department of Fish and Game. Personal interview.
Juneau: January 26, 1967.

Stevens, Homer. Secretary-Treasurer, United Fishermen & Allied Workers' Union. Personal interview. Vancouver: September 14, 1966.

United Fishermen & Allied Workers' Union. Problems of the Pacific Coast Fishing Industry. Vancouver: February 20, 1966.