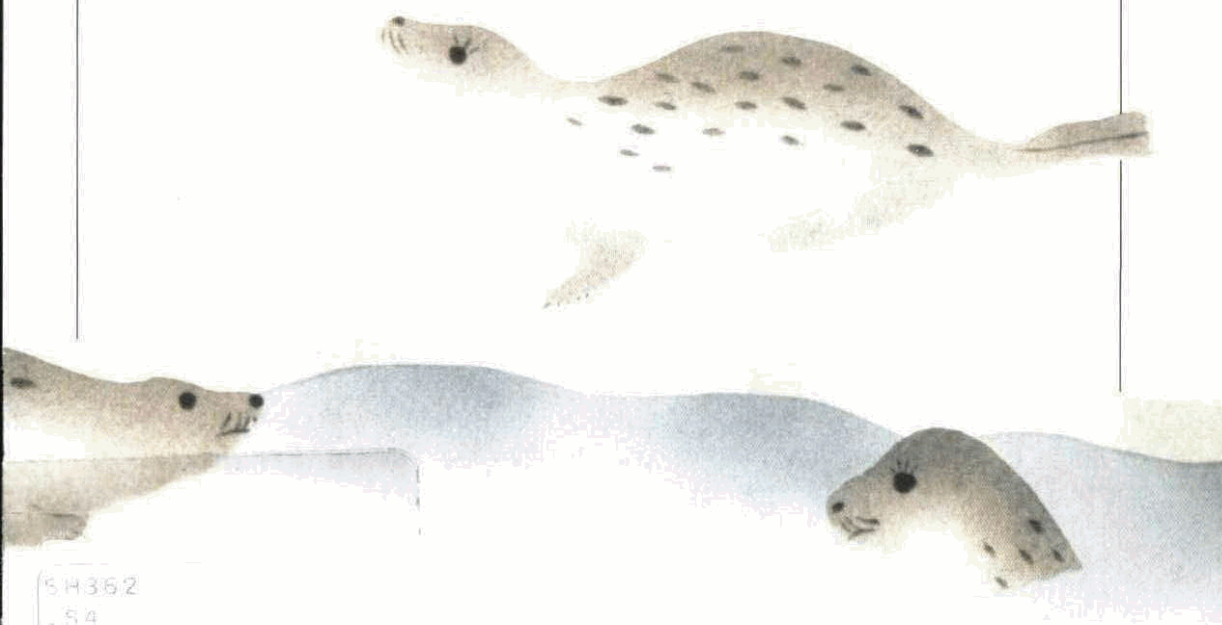


Seals and Sealing in Canada

Report
of the Royal Commission
Volume 1



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Canada

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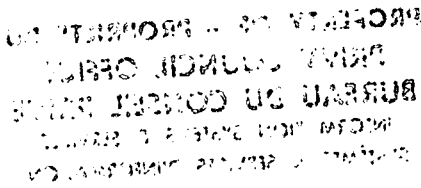
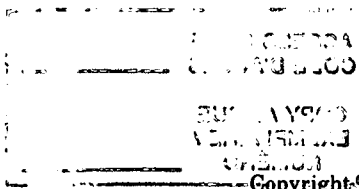
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REPORT OF THE
ROYAL COMMISSION

Volume 1

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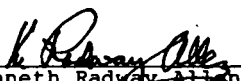
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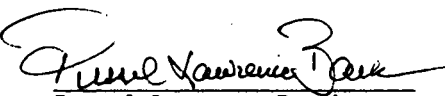
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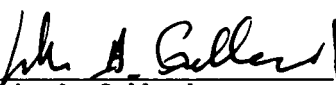
We are pleased to enclose herewith the Final Report of the Royal Commission on Seals and the Sealing Industry in Canada in accordance with the provisions contained in the Order-in-Council P.C. 1984-2242 of June 22, 1984, as revised and amended on September 26, 1985 by P.C. 1985-2905 and on December 20, 1985 by P.C. 1985-3769.


Respectfully,

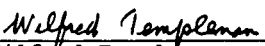

Albert H. Malouf
Chairman


Kenneth Radway Allen
Commissioner


Russel Lawrence Barsh
Commissioner


John A. Gulland
Commissioner


Robert Ian McAllister
Commissioner


Wilfred Templeman
Commissioner

September 1986

It is time to take our bearings and to chart the broad lines of public policy for the coming years. Canadian domestic issues are unavoidably bound up with international developments. Accordingly, the policies we develop – foreign and domestic – must address both Canadian and international realities. The two are inseparable elements of a truly national policy.

Rt. Hon. Joe Clark, Secretary of State for External Affairs

(Competitiveness and Security: Directions for Canada's International Relations. 1985. Dept. of Supply and Services, Ottawa.)

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FOREWORD

During the past 20 years the management of seals in Canada has changed from being viewed as essentially a technical matter that concerned a few fishermen on the east coast and a handful of scientists and fishery administrators, to a responsibility which has aroused considerable interest, and sometimes strong feelings, among a great many Canadians. Canada's approach to seals and sealing has also evoked public interest in a number of other countries and given rise to actions which have had important impacts on Canadian international trade and, on occasion, threatened Canada's image in other countries. The controversial nature and the complexity of many of the issues involved have created substantial difficulties for successive governments in their efforts to develop policies for the management and utilization of the seal populations which would be well balanced and acceptable to a wide spectrum of Canadian opinion.

The Royal Commission on Seals and the Sealing Industry in Canada was set up by the Government of Canada in August 1984. Its Mandate was to review all matters pertaining to seals and the sealing industry in Canada, to assemble relevant information, and to make recommendations on the implications of this information for the development of policy. The Royal Commission's considerations included social, economic and biological matters. The Government considered that such an Inquiry would do much to clarify the situation for the general public both in Canada and in other concerned countries. It would provide an opportunity for all interested parties, Canadian and foreign, to put forward their views and to present any evidence they desired, and thus assist the Commission in drawing its conclusions and making its recommendations.

The Royal Commission has now completed its work, and the findings are presented in this Report. The first volume (Part I) describes the setting up of the Commission, the tasks with which it was faced, the way in which it attacked those tasks, the principal conclusions it has reached, and the recommendations which it is presenting to government on the basis of those conclusions. The subsequent parts of the Report contain detailed discussion of the issues that the Commission examined.

PART I

Summary

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Chapter 1

Introduction

Establishment of the Royal Commission

Order in Council P.C. 1984-2242 of 22 June 1984 created a commission to inquire into and make recommendations on all aspects of seals and sealing in Canada, including the social, cultural, ethical, scientific, economic, resource management, and international implications.

The Mandate

In particular, as set out in the Mandate, the Royal Commission was called upon to inquire into and report on the following matters:

- (a) *the social and cultural impact and economic benefits and costs, including regulatory costs, of sealing in Canada;*
- (b) *the ethical considerations relevant to the harvesting of seals;*
- (c) *the status of Canadian seal stocks and measures currently in force in Canada to conserve, manage, protect and regulate the harvesting of seals, including the adequacy of such measures;*
- (d) *the interactions between seals and commercially exploited fish populations that may affect food supplies or contribute to parasite transmission;*
- (e) *the interactions between seal populations and commercial fisheries, including, inter alia, competition between seals and fishermen for fish stocks; interference in fishing activity by seals, including damage to fishing gear and catches; and the effects and related economic costs on the*

quality of fish catches by transmission of parasites by seals;

- (f) the principles necessary to manage seal stocks for conservation purposes, including appropriate cull levels, so as to ensure the continuing abundance and health of seal stocks and to minimize adverse interactions between seals and Canadian fishing resources and operations;*
- (g) the methods for harvesting seals commercially and their suitability;*
- (h) the domestic and international opportunities for and constraints on the processing and marketing of Canadian seal products;*
- (i) the availability of alternative sources of income and opportunities for adjustment for individuals and communities currently dependent on the seal harvest;*
- (j) the concerns of individuals and groups with a direct, indirect or declared interest in sealing in Canada, including an assessment of such interests;*
- (k) the public awareness and attitudes in Canada and abroad on sealing policies and activities in Canada and the extent to which such attitudes could constrain future revitalization of commercial sealing, or adversely affect other commercial interests and activities, and recommended approaches for removing those constraints;*
- (l) the international comparisons, as appropriate, for the preceding elements; and*
- (m) the possible new international initiatives for managing Canada's seal resources, for harvesting seals and for related activities.*

The Royal Commission was asked to present to the Governor in Council a preliminary report not later than 31 December 1984 and a final report not later than 30 September 1985. In response to requests by the Commission, its Mandate was extended to 30 September 1986.

Early in its deliberations the Royal Commission decided to interpret its Mandate as covering all aspects of seals and the sealing industry in Canada. It determined that this would include the position of seals in Canadian subsistence economies, as well as any international aspects which have arisen in connection with Canadian seals and sealing.

Royal Commissioners

The following Commissioners were appointed by Letters Patent under Orders in Council:

Chairman

The Honourable Albert H. Malouf

Justice, Court of Appeal of the Province of Quebec, Montreal, Canada. From November 1972 to June 1973 he presided over and granted the request for the issue of injunction presented by the Indians and Inuit against the James Bay Energy Corporation et al. in revendication of their territorial and other rights in the Province of Quebec. From July 1977 to May 1980 he presided over the inquiry into the cost of the Olympic installations and games held in Montreal in 1976.

Other Commissioners

Dr. K. Radway Allen

of Sydney, Australia. Formerly Chief of the Division of Fisheries and Oceanography, CSIRO, Cronulla. He has been involved for many years in research of the population dynamics and management of marine mammals, particularly in association with the International Whaling Commission, the Food and Agriculture Organization (FAO) and the United Nations Environment Programme (UNEP).

Mr. Russel L. Barsh

of Seattle, United States. He taught law and public policy at the University of Washington until 1984, when he returned to the practice of public international law and environmental management with indigenous communities in the United States and Canada. He has published works on Indian history, government, law and economic development.

Dr. John A. Gulland

of Cambridge, England. Presently Senior Research Fellow, Centre for Environmental Technology, Imperial College, London. Until 1984 he was with the Department of Fisheries, FAO, Rome. His particular concern has been with the population dynamics and management of marine living resources, including fish and marine mammals.

Professor Ian McAllister

of Halifax, Canada. Professor of Economics, Dalhousie University, since 1971, and Chairman, Lester Pearson Institute for International Development. He has advised a number of governments and published books and articles on regional development, foreign aid, energy and industrial policy issues, especially relating to Canada, Africa and the European Community.

Dr. Wilfred Templeman

of St. John's, Canada. Formerly Director of the Biological Station, Department of Fisheries and Oceans, St. John's. His scientific papers include a review of the living marine resources of Newfoundland, including seals and whales, a study of the infection of cod and other fish of the Canadian area by the seal nematode, and a study of the life history of the capelin, probably the principal food of the harp seal.

Dr. Patrick A. Geistdoerfer

Responsible for research in marine biology at the Centre National de Recherche, Paris, France. Following his appointment as a Commissioner, Dr. Geistdoerfer attended the opening meeting of the Royal Commission held in Montreal on 24 September 1984, but did not participate further in the activities of the Commission, and subsequently submitted his resignation.

Office of the Royal Commission

The Commission set up its office in the Palais de Justice in Montreal. A list of all staff employed in the Commission's office is contained in the Administrative Appendix.

Preliminary Report

In accordance with its Mandate, the Royal Commission submitted a Preliminary Report to the Governor in Council on 19 December 1984. This report dealt primarily with the work of the Commission in getting organized, as well as its estimate of the cost and the duration of the Inquiry. It outlined the methods to be employed to gather the information required to fulfil the Mandate of the Commission.

Informing the Public

The Royal Commission wrote to groups and associations which had previously shown an interest in the subject of the inquiry, advising them of its Mandate and the manner in which it intended to do its work. In addition, public notices appeared in newspapers across Canada and abroad, publicizing the Mandate of the Royal Commission and the public hearings which would commence early in 1985. To assist interested persons in approaching the Commission, a formal Statement of Policy and Procedure was prepared, detailing the Commission's Mandate, its Commissioners, its terms of reference, the rules to be followed during the public hearings, and the manner of submitting briefs and obtaining access to documents in the possession of the Commission. This statement is reproduced in the Administrative Appendix.

Press kits were prepared and distributed to Canadian and foreign newspapers in Canada and abroad, and a memorandum dispatched to Canadian diplomatic posts and missions.

Sources of Information

In order to carry out its task, it was necessary for the Royal Commission to draw on all possible sources of relevant information and opinion. These sources included:



Harp seals in the Gulf of St. Lawrence

- public submissions either as written briefs or in personal presentations to the Commission;
- studies undertaken by expert consultants engaged by the Commission to examine particular topics;
- information and opinion provided by experts in particular fields at the request of the Commission;
- published scientific and technical literature;
- personal knowledge, experience and research of Commissioners and staff.

Public Hearings and Visits

The Royal Commission sought to provide all members of the public interested in its Mandate with the opportunity to present briefs and appear before it at their common convenience. At the same time, faced with constraints of time and budget, the Commission had to strike a reasonable degree of balance.

With this in mind, it was necessary for the Royal Commission to hold its public hearings over a fairly short period of time and in Canada's large urban centres accessible to the public, the major newspapers, and radio and television stations. The Commission was also obliged to keep in mind the importance of hunting, trapping and fishing to the indigenous population, and the importance of seals and sealing to the inhabitants of the Arctic, the Atlantic region and, to a lesser extent, the Pacific communities. Montreal, Toronto, Vancouver and St. John's were accordingly selected as the cities for the public hearings held in Canada.

Many Inuit associations and Inuit individuals expressed a desire that the Royal Commission visit their particular communities. In view of the large number of such requests, the Commission asked some of the associations to co-ordinate their activities and help it to choose the most appropriate areas for it to visit and receive presentations from persons residing in and around the communities chosen.

As a result, the Commissioners visited Holman on Victoria Island in the western Arctic (N.W.T.), Pangnirtung in the eastern Arctic (N.W.T.), and Kangiqsujuaq in northern Quebec.

Because of the international interest in the sealing question, the Royal Commission also held public hearings in Europe and the United States; these hearings took place in London and Washington. The localities and dates of hearings and other public sessions of the Commission were:

Locality	Date
Montreal	22-25 January 1985
Toronto	28-31 January 1985
Vancouver	4-5 February 1985
London	9-10 April 1985
Washington	17 April 1985
Montreal	22-23 April 1985
St. John's	21-23 May 1985
Kangiqsujuaq	27 May 1985
Pangnirtung	28-29 May 1985
Holman	18 June 1985

A total of 156 witnesses gave oral testimony on these occasions.

Written Submissions

In addition to oral representations, the Royal Commission received a total of 137 written briefs. The sources of written briefs and oral testimony included sealers; the sealing industry; the fishing and fish-processing industries; the fur industry; representation of the aboriginal peoples; conservation, animal-welfare and animal-rights groups; veterinarians; academics in such fields as biology, economics, sociology, nutrition, philosophy and law; local development groups; elected representatives; government departments; representatives of foreign governments; and concerned individuals. The names of the persons, groups and associations who submitted briefs, as well as the names of witnesses who appeared before the Commission, are set out in the Administrative Appendix.

Consultants

The Royal Commission frequently required information which was not available from witnesses, and which could not be obtained with its own staff resources. For this reason it retained a number of consultants to carry out special studies in its behalf. These consultants are listed in the Administrative Appendix.

Expert Inquiries

The Royal Commission has also drawn heavily on the help and advice of people who had particular knowledge and skills in matters with which it was concerned. This help, which has been readily given, has ranged from the provision of basic facts to discussion of complex scientific issues, and even to review of preliminary drafts of technical sections of its Report. In the Administrative Appendix the names of the persons who have helped the Royal Commission in this way are listed.

Organization of the Report

The Report of the Royal Commission is published in a series of volumes.

This introductory volume conveys in a compact form the essential features of the Royal Commission's work. These features include the

establishment of the Commission, its method of operation, a general account of the issues which the Commission had to examine and, most important, the principal conclusions reached and the recommendations based on them.

The subsequent volumes provide detailed discussion of the issues that the Royal Commission has examined; they present the data available to the Commission on each issue, and the reasoning by which the Commission has reached its conclusions and recommendations. The final volume also includes an Administrative Appendix, which contains additional information about the operational details of the Commission, supplementary to that given in this volume.

Finally, there is material accumulated by the Royal Commission in the course of its studies which should be preserved to make it available to interested parties. This material, in the form of technical reports, is listed in the Administrative Appendix. It has been deposited at the headquarters library of the Department of Fisheries and Oceans in Ottawa and at the Pinniped Bibliography, Department of Zoology, University of Guelph, Ontario, Canada, and access to it may be obtained on application.

Chapter 2

Seals and Sealing in Canada

Ten species of seal inhabit Canadian waters, and most of them have been hunted on some occasion or another, for a variety of purposes: for food and clothing, for commercial sale, or to protect segments of the fisheries. In the public eye, sealing has been especially associated with the hunting of young harp and hooded seals in the early spring in the northwest Atlantic.

The Atlantic Seal Hunt

Sealing plays an important part in the seasonal cycle of activities of many small communities along the Atlantic coast. It comes at a time of year when there are few available income-earning activities, and when cash is needed to overhaul the boats and gear for the summer fishing. Its significance is therefore greater than the relatively small dollar returns to most participants that the sums earned might suggest.

The harp seal is the species mainly involved. About two million of these seals now inhabit the northwest Atlantic. They migrate south in winter, to breed in late February and March on the ice in the Gulf of St. Lawrence and at the Front – the area east of Newfoundland and southern Labrador. They then return north to their main summer feeding grounds, along the west coast of Greenland and in waters of the eastern Canadian Arctic as far north as Ellesmere Island. During the 1970s, some 130,000 “whitecoats” – pups a few days old – were taken annually. Even larger numbers were killed in the 19th century and the earlier part of the 20th century. In addition to pups, some adults were killed on the breeding grounds. Older animals are also taken in migration through Canadian waters and on the summer feeding grounds in the Canadian Arctic and off Greenland.

Since a quota was imposed in the early 1970s, the population has probably increased slightly, and now that hunting has been substantially reduced, the population can be expected to increase more rapidly. This possibility causes some concern to the fishing industry because of the effects it might have on the abundance of commercial fish and on the incidence of nematode parasites, which have a life-cycle involving the reproductive stage

in seals and an earlier stage in fish, where they cause economic losses to the fishing industry.



Sealers on the ice at the Front (Circa 1920s)

The hooded seal also breeds on the ice off the east coast of Canada, almost entirely at the Front and in Davis Strait; its distribution is rather more northerly and offshore than that of the harp seal. It is less numerous than the harp seal; the population in the northwest Atlantic numbers about 300,000. Pups (called "bluebacks") and some adults have been hunted at the Front by the same large vessels that take harp seals.

Between 1978 and 1982, an annual average of about 10,000 pups and 2,600 adults were taken by Canadian and Norwegian sealers, and about 3,800 seals of all ages were taken at Greenland. Doubts have been raised as to whether hunting was depleting the population; it now seems possible that the numbers were increasing even before the drop in catches in 1983.

Pups of both harp and hooded seals have been caught primarily by sealers in large vessels, but they have also been taken by men going out from shore on foot or in small boats (landsmen) and, to a lesser extent, by small groups of sealers in medium-sized vessels (longliners). Between 1946 and 1982, Norwegian vessels also took part in the hunt at the Front. In the early years of the hunt, the main product was oil from the blubber, but in recent years the greatest part of the gross return in the commercial hunt has come from the skins. These underwent preliminary processing in Canada before being exported, mainly to Norway, for further processing and sale to the international fur trade. Until recently the main final market was Western Europe, but this market has now collapsed. Some income is still obtained from oil. Although there is little meat, apart from the flippers, on young pups, there is much on the older animals. Most seal meat is either used by the sealers themselves or is sold fresh, frozen or canned.

Seals in the Arctic

Sealing is important for many communities of aboriginal peoples of the Canadian North. The main species hunted is the ringed seal, but some bearded seals are also taken. In addition small numbers of harbour seals are caught, as well as some harp seals during their summer migration. The chief use of the seals is for food, and to a lesser extent for clothing, by the sealers themselves and their families, but some skins are sold for cash. The importance of these sales has increased with changes in hunting practice. Hunters now rely more than formerly on rifles and snowmobiles, and hence need cash for ammunition and fuel.

The ringed seal is the most abundant of the arctic species. Little is known of its population biology, but in the Canadian Arctic its numbers probably run to seven figures. The catch in recent years has amounted to a few tens of thousands annually. The population as a whole seems to be in a healthy state, but there is concern that some local stocks may be over-exploited.

The larger bearded seal is much less numerous and even less known than the ringed seal; the population in the Canadian Arctic may possibly be of the order of 200,000 animals.

*Ringed seal*

Other Atlantic Seals

The grey and harbour seals also inhabit Atlantic waters; neither species has been hunted commercially to any extent in recent years. Both species, but particularly the grey seal, cause concern to the fishing industry because they damage nets, compete for fish and play a role in the transmission of nematode parasites (codworm/sealworm). Both have therefore been subject to bounty schemes, and grey seals have also been subject to culling operations.

The grey seal is found on the Atlantic coast roughly, between Nantucket Island in the United States and, in summer, northern Labrador. The present population, which is centred on Sable Island and the south-eastern Gulf of St. Lawrence, probably numbers about 70,000. In common with most other grey seal stocks in the north Atlantic, the Canadian stock had been greatly reduced by the beginning of the 20th century, but is now

recovering. The group breeding on Sable Island is currently increasing at about 13% per year. About 1,700 animals, on average, have been culled annually in recent years as a population control measure.

The harbour seal is widely distributed on both the Atlantic and Pacific coasts; the Atlantic population numbers about 13,000.

Seals on the Pacific Coast

The northern fur seal is the most abundant seal in the north Pacific Ocean. It does not breed in Canadian waters, but mainly on islands in the Bering Sea, although some thousands of females and young males visit the B.C. coast each summer. It was harvested until 1984 under the management of the international North Pacific Fur Seal Commission, of which Canada was a member, although Canadians have not been directly involved in the hunt for many years. The part of the herd from the Pribilof Islands, from which the Canadian visitors come, now numbers about 800,000, but it is declining by about 8% per annum. The annual kill on the Pribilof Islands averaged about 25,000 during the 1970s and up to 1984, although the United States government has now limited the take to the subsistence needs of the Pribilof Islanders. Much of the evidence suggests that the recent decline in the population has not derived from the hunt, but is more likely to be the result of juvenile seals becoming entangled in discarded and lost fishing nets and other plastic debris.

Two kinds of sea lions are found on the B.C. coast. The Steller sea lion ranges in the eastern Pacific from Alaska to California, but only about 5,000 out of a total of 200,000 now inhabit Canadian waters. There has been no commercial hunt since 1966, but between 1913 and 1968, culling operations killed up to about 2,000 sea lions annually. The present population is well under half the original level and does not appear to be increasing, possibly as a result of competition from a large population, breeding just across the Alaskan border.

The California sea lion breeds mainly off the southern part of the U.S. west coast, but recently about 4,500 males have visited the southern B.C. coast each year in late winter and early spring. This species has not been hunted anywhere for many years.

The harbour seal is also widely distributed on the Pacific coast, with a population of about 50,000. It has not been hunted commercially, but

bounty and other hunting during 1914–1969 probably accounted for an average of 3,000–6,000 kills annually. Since hunting ceased in 1969 the harbour seal has been increasing at a rate of about 10% per annum.

The northern elephant seal is the only other seal found in Canadian Pacific waters. It breeds off southern California, and appears in Canadian waters only in very small numbers.

Chapter 3

Issues Arising from the Mandate

The Mandate given to the Royal Commission was complex. In broad terms the issues can be summarized as follows:

Under what conditions, if at all, is it acceptable for mankind to utilize or manipulate the seal populations for human benefits; how far have recent and present Canadian seal hunts satisfied these conditions; and what steps should be taken to ensure the acceptability of any future Canadian operations involving the killing of seals? In addition, how significant has sealing been to Atlantic and Arctic communities; what effect has there been on these communities from the decline in the markets for seal products; and what need, if any, is there to provide compensatory assistance?

To execute its Mandate the Royal Commission addressed these questions by grouping the items in the Mandate into four main categories:

- public concerns about sealing;
- economic, social and cultural issues;
- biological issues;
- management issues.

Public Concerns about Sealing

Views on humanity's relations with animals are very diverse, ranging from a totally utilitarian view that humanity may do what it wishes to animals regardless of the effect on them, to the view that the rights of animals should be recognized as entitled to at least as much respect as those of human beings. The Royal Commission has surveyed a cross-section of public

views through opinion polls, both in Canada and in several other countries that have figured prominently in the sealing controversy. In so doing, it examined the factors that were considered by one group or another as important in determining whether or not a particular type of seal hunting was acceptable.

The political climate surrounding the seal debate has been largely determined by the active campaigns directed since the mid-1960s towards closure of the hunt. The Royal Commission has examined the origins and sources of support for these campaigns and the methods which have been employed; the Commission has also examined the nature and extent of the opposing campaigns which have supported continuation of the hunt.

Another important political event, which resulted in large part from the campaigns against sealing, and which had a major effect on the sealing industry and therefore on the hunting of seals, was the ban on the importation of some seal products by the European Community. The Commission has examined the manner in which this ban came into being, its effect on Canadian sealing, the response by the Canadian government, and likely future developments.

Factors which are clearly important to the public in forming a view of the acceptability or unacceptability of any part of the seal hunt are:

- the degree of cruelty, if any, involved in the killing of seals;
- the effect on the seal population, especially whether its survival is endangered;
- the significance of the hunt to the economic well-being and culture of the people engaged in it;
- the importance of the use to which the seal products are put.

The Royal Commission has examined all these aspects.

Economic, Social and Cultural Issues

Two groups of Canadian communities depend strongly on seal hunting for subsistence and for an important part of their cash income. Many of the aboriginal communities of the North and many small non-aboriginal communities on the Atlantic coast constitute these groups. These communi-

ties seem to have been seriously affected by the collapse of the European market for seal products that occurred in 1982–1983. The Royal Commission has carried out direct studies in both groups of communities to determine the extent to which they depend on seals, and the effects produced by the loss of a commercial market for seal products. It has also assessed the possibilities of alternative employment or other compensation for lack of employment in sealing, and the consequences of various forms of compensation for the cultural and economic life of the communities.



Stretching sealskins (Northwest Territories)

The overall contribution of the sealing industry in its various forms to the Canadian economy has been examined. In this connection it is necessary to consider not only the direct economic costs and benefits of the industry itself, but also the effects on international status and trade resulting from the adverse image of Canada that has been generated by the anti-sealing campaign.

Future prospects for any sealing industry would depend on the possibility and acceptability of developing other markets, both in Canada and

elsewhere, for seal products, including not only skins, but also meat and oil. The Commission has examined these possibilities.

Biological Issues

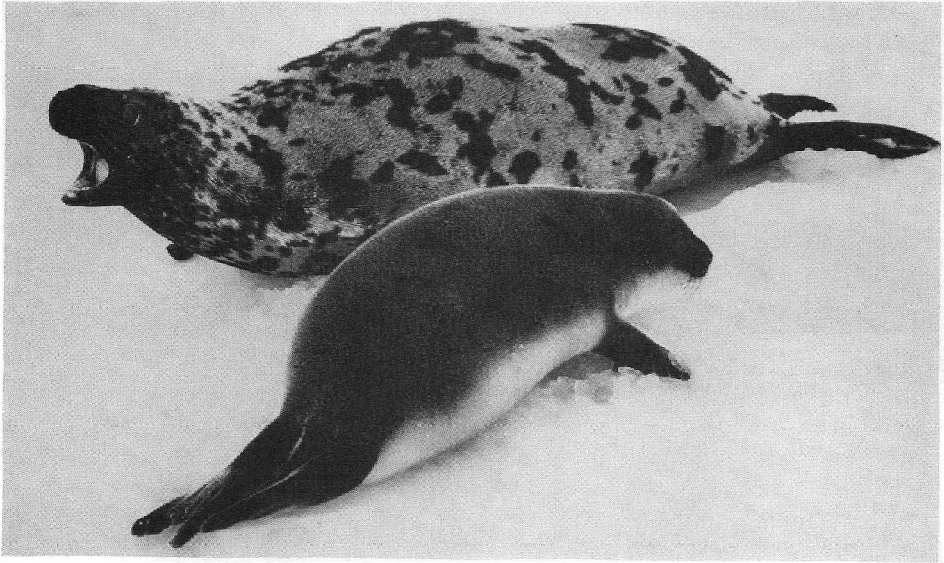
In view of the importance attached to the question of humaneness or cruelty in the killing of seals, the Royal Commission has examined the methods used in the various hunts and sought expert advice on the level of suffering involved in each of these methods. It has also looked at proposals for alternative methods of killing which might be more acceptable. To provide standards of comparison, it has reviewed information on the level of humaneness in two other circumstances in which great numbers of large mammals are killed, slaughterhouses and big game hunting.

To determine whether any of the Canadian seal populations have been seriously reduced, and particularly whether survival of any species has been endangered by hunting, the Commission has reviewed and sought expert opinion on the available information on the sizes and compositions of the seal populations, and how they have changed in recent years as a result either of hunting or of other causes.

Other human activities could have adverse effects on seal populations. These include the passage of large ice-breakers through the arctic ice and pollution by toxic chemicals. Seals can also become entangled in active or abandoned fishing gear. The Royal Commission has reviewed what is known of these effects.

Three aspects of the interactions of seals with commercial fisheries have been examined. Using the available information on the sizes of the seal populations, the Royal Commission has assessed, as far as possible, the quantities of commercially important fish and other marine animals consumed by seals, and the effect that this consumption is likely to have on the amount and value of the catch of commercial fisheries.

Another complaint raised by fishery interests concerns the transmission of nematode parasites (codworm/sealworm) by seals. The Royal Commission has studied the incidence of parasites, the costs of removing them from fish flesh, and the reduction in value caused to the product. It has also, to the extent possible, examined the relation between seal numbers and parasite frequency, and the degree to which the parasite-related costs could be reduced by reducing seal stocks.



Hooded seal and blueback pup

The Commission has also assessed the available information on the direct losses which seals cause fishermen by robbing their catches and damaging their gear.

Management Issues

Management issues arise at several levels. The current controversy emphasizes the need for the identification and adoption of principles and objectives for the management of seal populations which are widely acceptable to the Canadian people and to the broader international community. If these goals are to be achieved, there is need both for a higher level of public knowledge about seals and seal hunting, and for the establishment of machinery to work out these objectives through wide and reasonably public consultation. The Royal Commission has considered ways in which these processes of public education and consultation could be more effectively advanced.

Once suitable objectives have been identified, their achievement for any particular seal population will require both adequate knowledge of the biological factors involved and efficient administrative mechanisms. Basic to the biological problems are the general principles relating the size and

structure of animal populations to numbers removed by exploitation or predation. These principles apply directly when seals are taken, either by commercial or subsistence harvesting, or by culling with the aim of reducing adverse effects on the fishing industry. Essentially the same principles also apply when seals are preying on commercial fish stocks. In addition to knowledge of these basic principles, management requires knowledge of the population parameters of the particular seal and fish stocks where the problems arise. The Royal Commission has reviewed much of the available information on these biological problems and drawn such conclusions as it could on their implications for management. The Commission has, however, found great deficiencies in the present level of knowledge and has identified requirements for further research to provide a more effective basis for future management.

The Royal Commission has also commented on a number of possible administrative arrangements and practices which might be considered with a view to improving the efficiency of management of seal stocks.