APPENDIX XXII

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ECONOMIC VALUE OF THE ATLANTIC SEAL HUNT

Since the days of the earliest settlements on Canada's east coast, sealing has been an important part of the area's fishing industry, supplying meat for food and oil, and skins for fur and leather products.

In many areas on Canada's Atlantic coast, fishing is a series of seasonal activities. Sealing is one of these fisheries, and produces, in many instances, the only source of income in late winter and early spring.

Value of Sealing in 1980

Estimates place the value (calculated using the 1980 Economic Council of Canada multiplier of 1.685) added to the Atlantic economy by the sealing industry in 1980 at $10.7 million, including a contribution of $7.2 million by the primary, or harvesting sector, and $3.5 million by the secondary, or processing, sector. This compares with $9.5 million value added in 1979.

Total receipts from pelts for the large vessel component of the seal fishery for vessels over 20 meters (65 feet) in length, are estimated at close to $2 million. Receipts from small vessel operations, nine to 20 meters (30 to 65 feet), are estimated at $1.1 million, while those collected by landsmen are estimated at more than $.9 million. Meat and oil from the seals contributed an additional $2.2 million.

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HISTORICAL AND SOCIOLOGICAL PERSPECTIVE OF SEALING

History of Sealing

Sealing on Canada's Atlantic coast began before the arrival of the first European explorers. Jacques Cartier found Labrador Indians taking seals in the Strait of Belle Isle in 1534. By the end of the 16th century, Basque, Norman and Breton fishermen made annual expeditions to the Magdalen Islands in the Gulf of St. Lawrence, where seals formed an important part of their catch. Records of one such expedition in 1591 indicate that sealing had already been taking place for several years and that the Indians of the mainland (Micmacs, who would canoe across the Gulf from Cape Breton or Prince Edward Island) participated in the hunt and assisted the fishermen.

Wherever seals occurred on the rugged coasts of Newfoundland and the Gulf of St. Lawrence, they formed a very important part of the harvested resources of the sea, fundamental to the year-round settlement of some areas. Seals provided the early settlers with food and valuable oil, as well as leather and fur for clothing, all of which soon became important items of trade and commerce. The earliest sealing activities were conducted from shore, a practice which has continued. Various methods were used, ranging from the shooting or stunning of animals which came out on shore or on the ice, to the entanglement of free-swimming migrating seals in nets. In some areas, as on the Labrador and Newfoundland coasts, and the Quebec North Shore of the Gulf of St. Lawrence, migrating seals normally pass quite close to shore and can be caught in the water from small boats on their southward migration and on their return to the northern feeding grounds.

In other areas, the ice pans on which females have hauled themselves out to give birth frequently drift ashore or pass close enough for fishermen to be able to get out on the ice, either on foot or with small specially built ice boats, to harvest some of the nursing or recently weaned pups. This has been the basis of the traditional hunt in the southern Gulf of St. Lawrence which is greatly influenced by year-to-year variations in ice and weather conditions.

Newfoundland has been by far the most important participant in the fishery for the northwest Atlantic harp seal. Its sailing schooners enabled men to get to the whelping* herds on the ice, and the advent of offshore sealing vessels in the late 18th century (1794) heralded the rise of sealing as a major late winter occupation.

Sailing schooners were eventually replaced by wooden steamships, which in turn gave way to steel ships strong enough to withstand the tremendous pressures of the ice. Steel ships increased the safety and to some extent the comfort of the sealers but had no effect on the numbers of seals taken; the herd was already heavily exploited by the schooner fishery, and the peak catch, recorded in the mid-19th century, was taken by the schooner sealing fleet.

Since 1949, when Newfoundland became a province of Canada, the Canadian seal hunt has become more widely based. Companies were established in Nova Scotia employing officers and crews from Newfoundland and Nova Scotia. Some of the large vessels which currently take part in the hunt sail from Nova Scotian ports. However, most of Canada's sealers come from the rugged northeast coast of Newfoundland.

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* Whelping is the act of a seal giving birth.

Components of the Seal Harvest

The northwest Atlantic harp seal hunt really includes several different components. There is a hunt by the native peoples of west Greenland and the Canadian Arctic which takes place during the summer months. There is a hunt by large vessels (more than 20 meters in length and greater than 150 tons displacement) which takes animals from whelping and moulting concentrations on the ice of the "Front" area off northeastern Newfoundland and in the "Gulf" area, in the vicinity of the Magdalen Islands in the Gulf of St. Lawrence. The recent increase in numbers of strongly-built multi-purpose small vessels (11-20 meters in length) has introduced a new component to the seal fishery which takes young animals in early winter and beaters* and moulting adults throughout the spring months, using traditional gear and approved firearms.

"Landsmen", operating on foot or in small boats among the loose ice pans, harvest primarily white coat and beater pups and some adults in late spring, and their catches account for a substantial portion of the total harvest. A small but locally important fishery also occurs from December to February along the coasts of Labrador and the Quebec North Shore, as harp seals migrate to the whelping grounds in the southern Gulf of St. Lawrence, and during the late spring northward migrations.

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* The term "beater" applies to young which have completely shed their white coat. Shedding is normally completed by the 25th day of age, and the pup at this stage is fully weaned and independent.

Sealing is not an industry carried out to any extent by residents of urban centres. Most sealers come from smaller Atlantic coastal communities scattered over thousands of kilometers of indented coastline along the shores of Newfoundland and Labrador, the Magdalen Islands and the Quebec North Shore, and occasionally New Brunswick, Prince Edward Island and Cape Breton. These communities became established in locations selected on the basis of ease of access to the sea in areas where marine resources were abundant. Their success (or failure) depended upon the ability to harvest a variety of species including among others, cod, salmon, capelin, lobsters, and seals as they became seasonably available. This pattern continues to this day and the residents of coastal communities remain closely linked to the natural seasonal succession of species typical of their fishing grounds.

Socio-Economic Considerations

The economy of many small Atlantic coastal communities depends upon a single industry - fishing. Total dependence upon seasonally available resources results in an employment picture which fluctuates wildly from one season to another. Local unemployment rates in certain fishing (and sealing) villages along the northeast coast of Newfoundland and along the shores of the Gulf of St. Lawrence frequently approach 90 per cent in March and April.

The scarcity of alternative employment opportunities in these resource- based communities results in very limited occupational mobility for seal-hunting fishermen. Once their fishing gear is prepared and readied for the next fishing season, there is little to do but to wait out the months which remain, for the weather and ice conditions close down all other fisheries.

A survey carried out in 1980 showed that of the active sealers 74 per cent were married with an average of 2.9 dependents. The total annual family income figure for the sealers (from all sources) showed that 83 per cent made less than $15,000 in the previous year. The study also showed that just over 50 per cent of the sealers were fishermen by occupation while another 22 per cent were in the fisheries-related labour/service sector.

Earnings received from the seal hunt benifited more than 15,000 individuals, including the households of the sealers and those employed in processing and support industries. These earnings provide an important supplement to the sealers' annual income which, for the most part, is gained through employment in other fisheries-related activities during the summer months.

While catches have remained relatively constant since 1976, due to the rigid quota management of the hunt, the value of landings has increased significantly and the harp seal remains important to Canada's Atlantic coast fishing communities.

Value of the Seal Hunt

Preliminary estimates for the seal hunt in 1980 indicate participation by more than 5,000 sealers including 213 on Canadian large vessels, 457 on small vessels, and 4,280 landsmen. Average income to sealers from the hunt ranges from over $3,400 for those on large vessels to close to $1,700 for the operators of small vessels, and to more than $400 for the commercially active landsmen. The value added to the economy is estimated at $10.7 million, comprising $7.2 million for the primary sector (of which, on the whole 76 per cent represents pelts, 10 per cent oil, and 14 per cent meat and other products), and $3.5 million for the secondary sector.

The history of sealing is one of hardship and unfortunately, occasional marine disaster. It has been an integral part of the social, economic and cultural heritage of Canada's east coast. The Canadian government is careful to ensure the application of sound conservation principles and humane treatment in the harvesting of seals, as it does to its other renewable marine resources. Management is guided by a determination to achieve "best use" on the basis of broad socio-economic benefit, taking into account the complex interactions among all of the components of the resource base.

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HARP SEAL POPULATION ASSESSMENT

The precise assessment of population size is difficult to accomplish in the case of most species of animals. However, several techniques are available which can provide approximations of greater or lesser accuracy, depending on the characteristics, natural history and distribution or migratory patterns of the species. Some of these are indirect and involve biomathematical analyses of samples and statistics collected either at random in the population studied, or from the commercial catch. Others depend upon direct counts and observations on the population itself, in those cases where the entire population congregates within a limited, well circumscribed area.

Five general population assessment techniques have been applied to the estimations of the size of the Northwest Atlantic harp seal population during resource assessment meetings on seals conducted in the International Commission for the Northwest Atlantic Fisheries (ICNAF) Standing Committee on Research and Statistics (STACRES) in 1977 and 1978. In 1979 and 1980, these meetings were conducted in the Northwest Atlantic Fisheries Organization (NAFO) Scientific Council which replaced ICNAF/STACRES.

Aerial Survey Technique

The Northwest Atlantic population of harp seals congregates annually on the ice in two distinct areas (the Front*, and the southwestern Gulf of

* The ice front northeast of Newfoundland.

St. Lawrence) to whelp and breed. Aerial photography has been used since 1950 as a means of assessing the stocks in both areas. Standard black and white photography records the dark adults which crawl out on the white ice and snow; white coated pups do not show up however, nor does the film provide any record of the number of adults in the water at the moment the photograph is taken.

Many potential biases relating to the behaviour and biology of the seals are thus inherent to the photographic survey technique. These include, for example: the number of adults and the ratio of males to females; the timing of whelping in the herd (which may vary between patches within a single area); the age of the young (after the pup is a few days old, its mother may leave it for extended periods to feed); the time of day and the extent of cloud cover (which influence the ratio of adults on the ice vs. in the water).

Other problems, of a technical nature, result from the need for absolute precision in altitude control and navigational accuracy, complicated by the uneven and spotty distribution of the herd over enormously large areas (up to thousands of square kilometers) of floating ice pack which may be erratically displaced more than 50 kilometers daily. Unpredictable, abrupt weather changes, typical of the Gulf and Front areas in winter, make it extremely difficult to achieve full or even barely adequate coverage. It is obvious that incomplete photographic coverage of the herds will result in estimates that can fall far short of reality.

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UV Photography

More recently, a new aerial census technique has been developed, based on the use of photographic film sensitive to ultra-violet light (UV). As the body of the white seal pup absorbs ultra-violet radiation, whereas the glacial background reflects it, the seal shows up black against a white background on the photograph. Since the white-coat seal pup is relatively stationary on the ice until weaned, and is not given to disappearing unpredictably in the water, instantaneous full coverage of the whelping patches would allow a more accurate census of the year's reproduction than has been possible with other techniques. This assumes, however, that all whelping has occurred before the survey, and that an adequate ground survey can be made to determine the proportion of pups invisible to the camera (resting under ice ledges, for instance).

Although UV photography is a powerful new tool in population assessment of harp seals, which eliminates some of the potential biases of conventional black and white photographic aerial surveys resulting from the behaviour of adult seals, it remains subject to all of the technical and weather- and ocean-current-related problems previously mentioned. Consequently it has not yet been possible to obtain absolutely reliable UV census coverage of either the Gulf or Front areas although refinements in the technique have produced estimates for the Front area in 1977 which coincide with results of other assessment techniques and warrant a fairly high degree of confidence. The basic problem is that of locating all important whelping patches and photographing them within an adequately short time frame, before they drift, or before the weather breaks.

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It should be noted that, by its very nature, photographic counting inevitably errs on the low side. This was strikingly demonstrated in 1975, during the development period of UV censusing, when the "best estimate" of production in the Front area based on results obtained by this technique was more than 50,000 below the actual catch, due obviously to grossly incomplete coverage.

Biomathematical Techniques

Extensive biological sampling of the harp seal populations of the Northwest Atlantic and of the White Sea has been made since the early 1950's, to provide the information required for the assessment of population size, using techniques involving mathematical modeling. Excellent records have been maintained of the number of animals harvested, of the magnitude of the catching effort, and of the age composition of the catch. Detailed studies have been carried out providing information on fertility rates and growth rates; the influence of population density on population dynamics; rates of maturation and fecundity at different population sizes; natural mortality rates; overall migratory patterns; differential migrations and mixing of the Gulf and Front herds; the extent of genetic variability between herds, to mention but a few.

These data make it possible to estimate the annual level of recruitment to the population (rate of pup production), given up-to-date information on the proportion of mature animals in each age class, and on the rate of fecundity within these. Mortality rates are determined through analyses of the ages of animals in the catch and of the hunting effort. A comparison of the age

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composition of the annual harvest with estimates projected using historical pup production and hunting mortalities provides a means of checking recruitment estimates. It should be noted that productivity estimates arrived at through the several independent biomathematical techniques utilized (including tagging and recapture studies) yield figures which are in close agreement with one another and with those portions of the aerial surveys which are known to have been reasonably complete.

Assessments of Population Size and Production

Five distinct population assessment techniques have been considered in the annual scientific advisory meetings on seals held by ICNAF and recently NAFO since 1977. The independent estimates of total pup production provided by each of these have been in substantial agreement with one another. Projections of pup production for the year following individual assessments have been substantially confirmed by subsequent observations and assessments.

The November 13-16, 1979 Scientific Council meetings on seals estimated the total population of Northwest Atlantic harp seals aged one year or older at 1.38 million animals, at the highest estimate, with a low estimate of 1.23 million, with pup productions of 352,000 and 304,000 respectively.

Mean age at sexual maturity was determined to have declined during the last two decades from 6.2 to 4.3 years. Fertility rate was shown to have increased from 0.85 to 0.94 using data from late pregnancy, while ovulation rates (determined early in the reproductive cycle) remained constant, showing that the reproductive potential of the stock has not been impaired.

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As there were no new analyses of natural mortality, the previously calculated level of (10 per cent), was used in the computations. This value was derived from four estimates considered in 1977, ranging from a mortality rate of 9.8 per cent to 11.4 per cent. A 1978 study yielded the same estimate of natural mortality.

At the November 1980 meeting of the NAFO Scientific Council new estimates of pregnancy rates were adopted for calculation of yields and projections of catch and population size. A mortality rate of 10 per cent was adopted for the assessment, although it was recognized that values from eight per cent to 12 per cent would not be ruled out by existing analyses. Using the best estimate of 375,000 for pup production in 1980, replacement yield was estimated to be 210,000 animals, with a population of 1.57 million animals aged one year or more, and the sustainable yield was estimated to be 234,000 animals. The current replacement yield is lower than the sustainable yield due to the present large proportion of immature animals resulting from the reduced pup catches from 1972 onwards.

The population in 1985, with a continued annual catch of 180,000 (80 per cent pups and 20 per cent aged one year or older) is projected to consist of 425,000 pups and 1.70 million seals aged one year or older, representing an annual growth rate of 1.7 per cent.

Table 1 summarizes pup production estimates of recent years, indicating also projections of production these made possible; a comparison of the projections with estimated production in the following year shows the close agreement between expectations and abundance calculated on the basis of actual observations and data collection, and reinforces confidence in the techniques utilized.

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Estimates of harp seal production in the Northwest Atlantic as produce he 1977 ICNAF meeting (I), 1978 ICNAF meeting (II), 1979 NAFO meeting (III) and AFO meeting (IV) in thousands of pups produced.

	Aerial Census	Cohort Analyses	Survival Indices	Catch/Effort Analysis	Tag/ Recapture	Basis for Calculations
(I) 1977 Gulf	30[1]			93		
Front	204[2]					
1977 TOTAL		320 330	330 315			
Projected 1978		338 347	343 330	309		310-350
(II) 1978 Gulf			103			
Front			235	199[3]		
1978 TOTAL			338			
Projected 1979						335-358
(III) 1979 Gulf					589[5]	
Front					132 (est)[4]	
					220	
1979 TOTAL		304[6]			352	
		352(mean)				
Projected 1980		307[6]				
		359(mean)				359
(IV) 1980					410[7]	375[8]

1 survey incomplete, not considered valid
2 simple random sampling
3 considered to be underestimated due to late availability of northern patch
4 estimate calculated on basis of Gulf/Front ratio of 1/1.67
5 based on tag recoveries from 1 yr. olds. This figure is not used in calculations because of suspected bias
6 lower confidence limit
7 mean estimate of pup production of the 1977-1980 period
8 based on survival index calculations and tag recapture estimates

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In line with the stated policy of the Government of Canada to permit the continued growth of the harp seal herd until the interim target of 1.6 million is attained, the total allowable catch for 1980 was established at 180,000 as for the previous two years. This includes an anticipated catch of up to 10,000 seals by the native peoples of Greenland. The remaining 170,000 were shared among the several components of the Canadian Atlantic and Arctic seal hunt, and included an allocation of 20,000 harp seals to Norwegian sealing vessels at the Front area. For 1981, the total regulated catch in Canadian waters will remain at the level of 170,000 as for the past three years.

Research on harp seals is continuing in 1981.

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[1]Sustainable yield: the maximum harvest allowable on a given population if it is to maintain its present level over the long term.

[2]Replacement yield: the maximum harvest allowable in a given year, if the population level at the year's end is to remain the same as it was in the beginning. In a population in which there is a predominance of juvenile animals, (as in the case of the harp seal) the replacement yield is lower than the sustainable yield. The two values are the same in a population which is in equilibrium.

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RECENT MANAGEMENT OF THE HARP SEAL HUNT (II)

Policy on Sealing

Canadian policy in the harvesting of the seal resource is consistent with its policy regarding the harvest of other renewable resources, i.e., the resources are harvested at levels which are sustainable over the long term, which allow maintenance of an adequate breeding population and which also take into account the relationships among the species managed and their competitors, predators, and prey. The catches of harp seals are restricted to permit the present northwest Atlantic population of 1.3-1.4 million animals to increase in size to an interim target population of 1.6 million animals over the next decade.

Sealing Management Advice

Prior to the extension of Canada's fisheries jurisdiction to 200 miles on January 1, 1977 international consultation and negotiation had been necessary to the management of most Canadian marine resources, including seals. These living resources ranged well beyond Canada's old 12-mile fisheries jurisdiction, hence, it was only in the International Commission for the Northwest Atlantic Fisheries (ICNAF) that the required conservation measures could be achieved. In view of the considerable expertise and experience in harp seal population biology available in the ICNAF Standing Committee on Research and Statistics (STACRES), this committee was also requested to provide scientific advice on northwest Atlantic harp seals for the 1977, 1978 and 1979 hunts.

Scientific advice on the management of the Atlantic seal hunt is provided by Canadian experts in the fields of seal biology and population dynamics. Canadian scientists also work closely with their counterparts in Norway and Denmark and their most recent population data and assessments are annually reviewed by STACRES.

A further source of management advice, independent of governments, is the Committee on Seals and Sealing (COSS) established in 1971, which is composed of scientists, veterinarians and executive members of Canadian and international humane societies. This committee was requested to examine the economic, sociological, ecological and humanitarian aspects of the seal hunt and to recommend to the Canadian Minister of Fisheries any changes in the regulations controlling sealing

which were considered necessary.

Sealing Management 1971-1977

From 1967 to 1976, management of the Atlantic seal hunt was under the aegis of ICNAF. First quotas under the ICNAF Harp Seal and Hooded Seal Protocol were instituted for the 1971 fishery when vessels were limited to 200,000 harp seals and landsmen to 45,000. In 1972, the total allowable catch (TAC) was reduced to 150,000 allocating 120,000 to vessels and 30,000 to landsmen. This TAC remained in effect from 1972 to 1975.

Scientific analyses prepared late in 1975 contained a very wide range of opinion on the status of the harp seal stocks due primarily to disagreement on the rate of natural mortality. ICNAF determined that, because of the existing uncertainties, it was prudent to take a conservative approach, and with Canadian support, the TAC for 1976 was reduced to 127,000. Intense population analyses conducted since the 1976 hunt have resulted in agreement among scientists that the average harp seal natural mortality was approximately 10% and, based on the information provided by these analyses, the 1977 TAC was increased to 170,000. Both the Committee on Seals and Sealing and the Scientific Advisers to ICNAF Panel A (Seals) supported increases in the TAC for 1977.

Prior to 1977, inshore catch levels had fluctuated considerably due to the differential availability of seals to landsmen from year to year, hence, their catches were not under quota. Catches of seals in the four-year period from 1971 to 1974 were consistently below the TAC. However, the catches in 1975 and 1976 exceeded the TAC, this relating to the increasing mobility of inshore sealers by the expanded use of small vessels (generally 11-20 meters). In 1977, the management regime was accordingly modified to place inshore operators under quota management and the proportion of the TAC allocated to these sealers was increased substantially from 30,000 in previous years to 63,000 for 1977. Sub-allotments of this 63,000 seal allocation were designated to various areas throughout the Gulf of St. Lawrence and the northeast shore of Newfoundland so as to allow a fair distribution of the landings.

The commercial catch in 1977 was 155,000 seals (not including the Greenland/Labrador aboriginal catch) - below the TAC of 170,000. A further conservation measure introduced in 1977 was to decrease the number of adult harp seals taken in the commercial catch by restricting the commercial catch to a 5% allowance for older animals. This restriction was implemented because adult seals of breedable age are much more influential to the increase in the seal population than are pups or sub-adults; hence it is preferable in any management regime of this nature to have the fishery based on the young of the year.

In November 1977, the scientific advisers of STACRES agreed that the projected total 1978 pup production would be 309,000-347,000 seals (Gulf and Front areas combined). This magnitude of production would permit a sustainable yield (catch which would maintain population size

over the long term) of 227,000-245,000 animals, well above the conservative 180,000 TAC (including catches by northern peoples) established for 1978. This 180,000 TAC, agreed to by Canada and the EEC (representing Denmark/Greenland, which also harvests this seal resource) was designed to permit the continued increase in the harp seal population, the stated policy of the Government of Canada.

Sealing Management 1978-1979

Harsh ice and weather conditions in 1978 prevented the large vessel component of the sealing fleet from taking its full quota and the uncaught allocation was transferred to inshore sealers, who had their most successful year in history. Total catch within Canadian waters by all sectors was 161,000 in 1978 (excluding the take by northern residents and native peoples).

At a special meeting of STACRES in November 1978, the data provided by research in 1978 was reviewed. Using the most recent information available on natural mortality, pregnancy rate and median age of whelping, STACRES agreed that the projected total 1979 pup production would be 345,000-358,000 for a northwest Atlantic stock of 1.3-1.4 million animals (exclusive of pups). This magnitude of production would permit a sustainable yield ranging between 214,000 to 240,000 depending on shifts in the pup to older seal catch ratio and sex ratio caused by varying strategies of catch allocation between large vessel, small vessel or landsmen sectors of the fishery.

The 1979 regulated northwest Atlantic harp seal TAC, agreed upon by Canada and the EEC, is 170,000 (excluding an unregulated 10,000 seal allocation to northern peoples). Norway has been alloted 20,000 of the TAC, with 150,000 being the Canadian quota. Thus, the total catch permitted is the same as in 1978.

Notes of Interest

Scientists had observed in the 1950's, when harp seal populations were at a higher level, that the incidence of fighting wounds and poor condition in moulting males was much more prevalent than at present. The population has since been thinned and a much improved condition has been recently noted in these moulting males.

Harp seals are estimated to consume 1.5 metric tons of food per animal annually. At a current population size of more than 1.3 million animals, the harp seal population alone would consume three times more food annually than the total 1977 Canadian catch of fish in the northwest Atlantic, an amount within this population's geographical range equivalent to the total catch of all fish species by all countries in 1977. Harp seals are thus, a very significant predatory component of the north Atlantic ecosystem. The moderate growth of the harp seal population, permitted by conservative TACs established by Canada and the EEC, must be in conjunction with the increase in populations of previously overfished prey species which are caught by man, seal and other predators.

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La chasse aux phoques

La chasse aux phoques sur la côte atlantique du Canada a commencé bien avant l'arrivée des premiers explorateurs européens. En effet, Jacques Cartier a rencontré, en 1534, des Indiens du Labrador capturant des phoques dans le détroit de Belle-Isle. La chasse côtière, telle que pratiquée par les Européens à Terre-Neuve, a probablement débuté peu après la découverte de l'île et s'est poursuivie jusqu'à nos jours. Elle consistait alors à capturer les phoques en migration au moyen de filets. Par la suite, les chasseurs ont utilisé des goélettes pour se rendre sur les banquises où se trouvaient les troupeaux de "mise bas" (ou de reproduction); l'affluence de ces bateaux, à partir de la fin du 18e siècle, annonça la montée de la chasse aux phoques en tant qu'importante activité de fin d'hiver.

Avec le temps, les goélettes furent remplacées par des bateaux à vapeur, puis par des bateaux d'acier assez forts pour résister aux pressions considérables de la glace. Il est intéressant de remarquer que le troupeau avait déjà été fortement exploité au temps des goélettes, les nouveaux bateaux servaient donc davantage à augmenter le confort et la sécurité des chasseurs de phoques qu'à accroître leurs prises dont le nombre a atteint un sommet au milieu du 19e siècle.

Après l'accession de Terre-Neuve au rang de province du Canada en 1949, la chasse aux phoques au pays a pris de l'ampleur. Des sociétés se sont établies en Nouvelle-Écosse, employant des officiers et des équipages de Terre-Neuve et de la Nouvelle-Écosse, et plusieurs des gros bateaux qui prennent généralement part à la chasse ont leur port d'attache en Nouvelle-Écosse. Cependant, la plupart des chasseurs de phoques au Canada, aussi bien autrefois qu'à présent, qu'ils aient été à bord de gros ou de petits bateaux, viennent de la côte accidentée du nord-est de Terre-Neuve.

La chasse aux phoques de l'Atlantique nord-ouest comporte vraiment de nombreuses sortes de chasse. Les habitants de l'ouest du Groenland et des îles de l'Arctique canadien chassent durant les mois d'été. D'autres chassent à partir de gros bateaux et capturent les animaux en mue, ou dans les troupeaux de reproduction dans la région appelée "Front" au large du nord-est de Terre-Neuve. Il y a également les chasseurs côtiers qui pratiquent cette activité à pied ou à partir de petits bateaux et se servent d'une variété d'engins pour capturer les phoques. Les filets sont utilisés au cours de la saison de chasse en eau libre, surtout le long de la rive nord du Québec et de la côte nord-est de Terre-Neuve. Plus tard, les chasseurs naviguent parmi les banquises détachées et emploient des gourdins ou des fusils. On chasse ainsi, principalement à Terre-Neuve et aux Îles-de-la-Madeleine, mais aussi parfois à partir de l'Île-du-Prince-Édouard, du Nouveau-Brunswick et de l'île du Cap-Breton. Lorsque les glaces fondent et se retirent vers le Nord, on chasse les phoques qui migrent vers de plus plus hautes latitudes.

L'histoire de la chasse du phoque est remplie de récits de bravoure, d'épreuves et de désastres. Elle fait désormais partie du patrimoine économique et culturel de la côte est du Canada.

Le phoque du Groenland

Distribution et migration

Le phoque du Groenland est une espèce grégaire et migratrice qui vit dans les eaux arctiques et subarctiques de l'Atlantique nord. Il existe trois populations principales de phoques que l'on peut désigner selon leurs régions de reproduction: le troupeau de l'Est ou de la mer Blanche; celui du centre ou de l'île Jan Mayen; et celui de l'ouest qu'on rencontre au large de l'est du Canada et que nous discuterons ici. Le troupeau occidental se divise en deux sous-populations dont l'une se reproduit sur les glaces épaisses de l'Arctique, dans la région du Front, et l'autre, le groupe du Golfe, sur les glaces du golfe Saint-Laurent, en hiver. Les banquises sont la scène de la plus grande et de la plus célèbre chasse, car c'est sur ces glaces que les phoques se reproduisent chaque année au cours du printemps.

A mesure que la glace de la côte atlantique canadienne disparaît au printemps, les animaux émigrent vers le Nord. Ils atteignent l'ouest du Groenland, mais continuent rapidement leur route vers les eaux plus froides du Nord et de l'Ouest. Ils sont nombreux dans la région de Thulé (Groenland), dans les détroits de Jones et de Lancaster situés sur la côte est de l'île Baffin et dans le détroit d'Hudson qu'ils empruntent pour se rendre jusqu'au nord de la baie d'Hudson. On a également retrouvé des jeunes de l'année, dans la baie James, durant les mois d'été.

Après avoir passé l'été à se nourrir dans le Grand Nord, les phoques reviennent vers le Sud, précédant les banquises arctiques, arrivant à Terre-Neuve et dans le golfe Saint-Laurent vers les mois de décembre et de janvier. C'est à la fin de février et au début de mars que les adultes se réunissent en groupes pour mettre bas sur les glaces du golfe Saint-Laurent, à l'ouest des Îles-de-la-Madeleine, et au large du Labrador.

Cycle biologique

Afin de mieux comprendre les problèmes de gestion de la chasse, jetons un coup d'oeil sur les moeurs du phoque du Groenland.

Durant l'hiver, lorsque les phoques vivent dans les limites méridionales de leur aire de répartition, ils se nourrissent de façon intensive, et les femelles en gestation engraissent de façon considérable pour pouvoir allaiter convenablement leur petit, le moment venu.

Les deux troupeaux de phoques du Groenland de l'Atlantique nord-ouest ne se reproduisent pas tout à fait en même temps. Les petits de la région du Golfe naissent entre le 25 février et le 10 mars, tandis que ceux de la région du Front voient le jour un peu plus tard. Les femelles mettent bas à une certaine distance des rives des grandes banquises, sur des sections de glace inégales qui forment des abris pour les petits et dans lesquelles se trouvent des trous permettant l'accès à la mer.

Le nouveau-né est couvert d'une fourrure jaunâtre qui devient blanche au cours des trois premiers jours. À partir de ce moment, et jusqu'à l'âge d'environ deux semaines et demie, il arbore cette fourrure blanche réputée, d'où le nom de "blanchon" qui leur est alors donné. Durant cette période, le petit se nourrit d'un lait riche et engraisse rapidement; pesant 15 livres (7 kg) à la naissance, il en pèsera de 60-70 livres (27 à 32

kg) au bout de 16 à 18 jours.

Quand la période de l'allaitement est terminée, les femelles abandonnent leur petit, s'accouplent avec les mâles et mangent avidement durant plusieurs semaines, avant la mue.

Les jeunes phoques commencent à perdre leur fourrure blanche lorsque les femelles partent; celle-ci se détache en lambeaux, d'où le nom anglais de "ragged-jackets" qui leur est alors donné. Quand la mue est terminée, leur fourrure est d'un gris pâle, parsemée de taches et ils portent le nom anglais de "beater". À l'âge de quatre semaines, ils commencent à se nourrir et, jusqu'au printemps suivant, ils mèneront une existence solitaire.

Durant leur premier printemps, ces jeunes de un à deux mois se laissent dériver vers le sud avec la glace qui fond. Ensuite, ils nagent vers le nord où ils rencontrent d'autres banquises et répètent ce processus jusqu'en juin, époque à laquelle ils commencent le voyage qui les mènera à leur aire estivale d'alimentation, au large de la côte sud-ouest du Groenland.

Il convient de noter que les jeunes peuvent parcourir ces grandes distances à la nage, dès l'âge de quatre semaines; donc, si les glaces se brisent prématurément, cela ne constitue pas une grave menace à leur survie. Par contre, l'amoncellement des glaces, lorsque le vent les écrase contre la côte, peut représenter un danger mortel pour les petits et leur mère.

Pendant que les jeunes de l'année se nourrissent et se laissent dériver, les phoques du Groenland, plus âgés, muent paisiblement sur la glace, en commençant par les immatures de plus d'un an (nommés en anglais "bedlamers") et les mâles adultes, suivis des femelles.

L'accouplement a déjà eu lieu, et il est intéressant de remarquer ici un mode inhabituel de gestation, caractérisé par une implantation différée de l'embryon dans la paroi utérine; chez le phoque du Groenland, cette implantation se produit onze semaines après l'accouplement. Ce mécanisme a l'avantage de permettre l'accouplement et de faire coïncider, le printemps suivant, la parturition avec des conditions optimales de glaces et d'abondance de nourriture. Les phoques du Groenland vivent assez longtemps; ils peuvent dépasser l'âge de trente ans.

État de la population

Pour la plupart des animaux, qu'il s'agisse de poissons, d'oiseaux, de mammifères ou d'autres espèces, il est extrêmement difficile de compter la population de façon précise, mais il existe quelques espèces pour lesquelles de tels comptages ont été effectués. Cependant, puisque les phoques du Groenland se concentrent pour la période de reproduction, cette situation a permis de tenter l'évaluation de la population par des relevés aériens.

Au Canada, les premiers essais dans ce domaine ont eu lieu en 1950. Le but visait à localiser les divers regroupements en les survolant et les photographiant par bandes, en suivant des caps et une altitude connus. À partir de ces photographies, il devenait possible de calculer la densité des phoques et d'obtenir un estimé du nombre total de phoques pour l'ensemble de la région.

Comme pour toutes les études, il y a

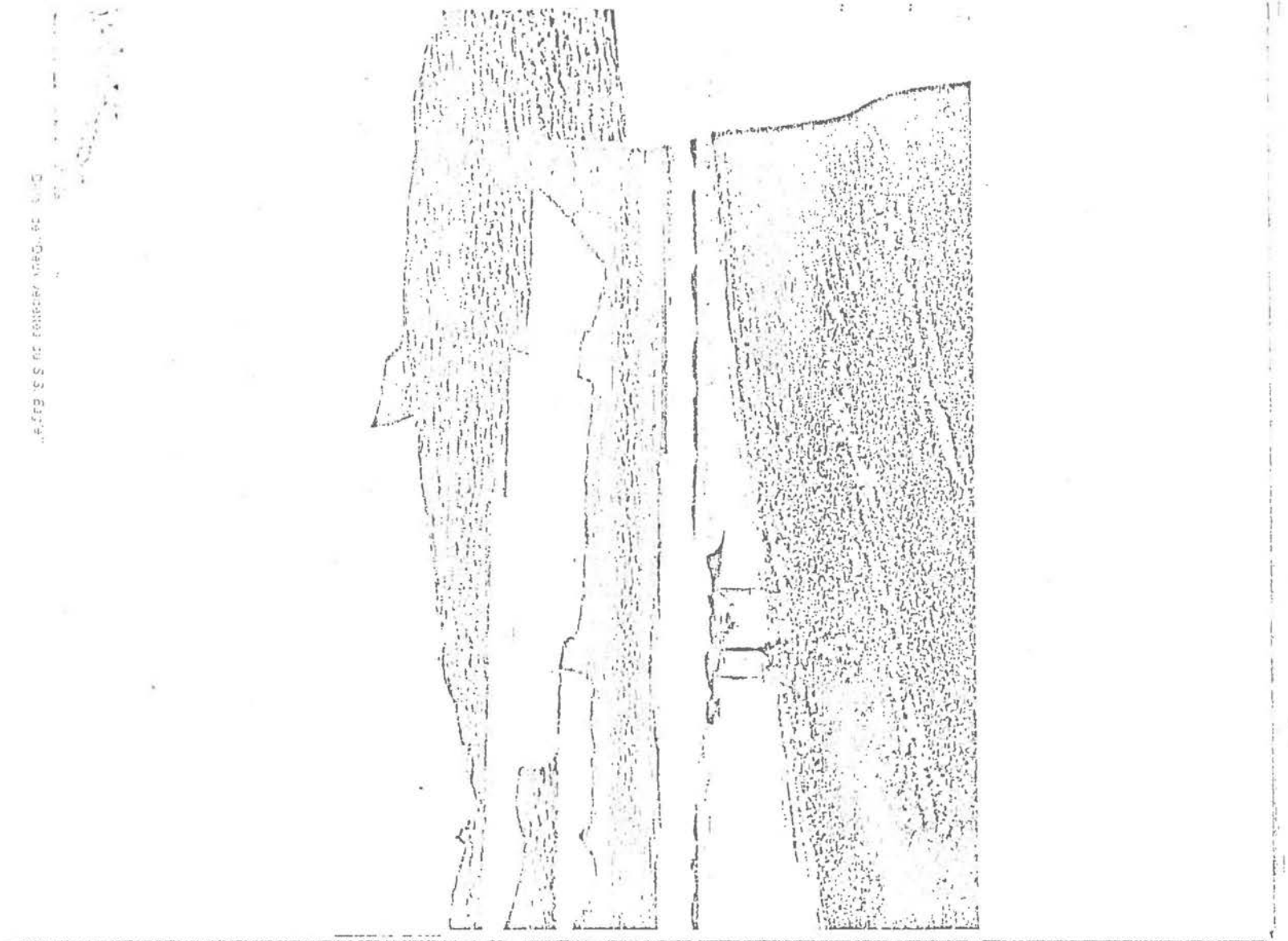
des problèmes attenants. Le contrôle de l'altitude doit être précis, sinon l'échelle des photographies ne sera pas uniforme. La répartition inégale des animaux sur la glace rend difficile une extrapolation valable, étant donné que l'on en photographie seulement une partie. Le recensement doit avoir lieu avant le début de la chasse et, donc, avant que toutes les femelles aient mis bas. Le nombre de mâles adultes sur la glace, par rapport aux femelles, en tout temps; nous est inconnu; des études effectuées en Union Soviétique ont indiqué que la proportion de femelles sur la glace varie au cours d'une même journée, ainsi qu'en fonction de la couverture nuageuse et de l'âge des petits. À cause de ces facteurs, le dénombrement des phoques adultes, dans les aires de reproduction, peut conduire à un estimé inexact des nombres d'adultes et de nouveaux-nés. Les relevés aériens des animaux en mue présentent des difficultés similaires. Ainsi, bien que nous puissions photographier de gros groupes de phoques, il est difficile d'interpréter la signification des photographies par rapport au nombre total d'animaux dans la population.

Les techniques courantes de photographie, mentionnées ci-dessus, ont servi au recensement des phoques foncés, plus âgés, se trouvant sur la glace; il est difficile de discerner la fourrure blanche d'un petit sur un fond blanc. Cependant, on a découvert récemment que le manteau blanc du nouveau-né absorbe les radiations ultra-violettes du soleil, tandis que la neige sur laquelle il se trouve reflète la plus grande partie de ces radiations. Ainsi, une photographie à l'ultra-violet, d'un petit phoque blanc sur la neige, produit une image noire. Puisque les petits naissent durant une période de temps assez courte et qu'ils restent presque tous sur la glace pendant les deux ou trois premières semaines suivant leur naissance, il devrait donc y avoir un certain moment où l'on retrouve presque tous les petits, en même temps sur la glace. Voilà donc une méthode pour recenser les nouveaux-nés.

Il est théoriquement possible d'évaluer la production de petits de n'importe quelle année en effectuant des relevés aériens utilisant la technique de photographie à l'ultra-violet. On a essayé, en 1975, cette technique pleine de promesses et, d'après les résultats de ce premier relevé, certains auteurs ont affirmé qu'il y avait 95 pour cent des chances que la production des petits ait été entre 54 683 et 257 602*. Toutefois, le chiffre représentant la meilleure approximation de la production totale, dans la région du Front, était inférieur au nombre de petits qui ont été tués à cet endroit; la plupart des scientifiques du domaine croient que plus de 300 000 petits ont vu le jour en 1975.

Ceci ne veut pas dire que la méthode n'a pas une certaine valeur pour l'évaluation de la production de petits

*Cet "intervalle de confiance" ne comprend pas la marge d'erreur possible dans l'évaluation de l'étendue géographique des troupeaux, la proportion de petits qui restent à naître, ou le fait que certains des nouveaux-nés puissent être cachés sous des amoncellements de glace.



phoques. L'important, c'est que tous les groupes reproducteurs soient entièrement photographiés et que des vérifications soient faites sur les glaces mêmes afin d'établir le rapport entre le nombre d'animaux détectés photographiquement et le nombre réel présent sur le secteur photographié. Les petits peuvent être cachés sous des crêtes ou amoncellements de glace et ainsi ne pas apparaître sur les photographies. Il nous faut également connaître le pourcentage des petits déjà nés au moment de l'étude car, si la mise bas n'est pas terminée, la production totale de petits sera sous-évaluée. Les chercheurs veulent mettre sur pied un relevé complet, par photographie aérienne à l'ultra-violet, des nouveaux-nés en 1977 pour savoir s'il est possible d'obtenir une idée assez exacte de la production totale des bébés phoques. Le dénombrement des petits nous permettra de vérifier périodiquement le nombre auquel nous sommes arrivés au moyen des méthodes d'analyse de populations. La production des petits phoques n'est qu'un des nombreux facteurs à considérer lors de ces analyses.

À cause des difficultés que présente l'évaluation directe de la densité de la population, plusieurs méthodes indirectes ont été appliquées, comme c'est pratique courante pour d'autres espèces animales. Chez les populations exploitées, deux facteurs contribuent à faire augmenter la population, soient le rythme de croissance de chaque animal et le nombre des naissances. Il existe également deux facteurs qui font diminuer la population, soient la mort naturelle (causée par la maladie ou la prédation) et la mort résultant de la chasse ou de la pêche. Comme il y a peu d'échanges entre les populations de l'Atlantique oriental et occidental, ce facteur n'agit pas de façon significative au point de vue d'augmentation ou de diminution de la population.

On obtient des renseignements détaillés sur la croissance du phoque en comptant les anneaux de croissance de ses dents. En calculant le taux de maturité à tous les âges et en étudiant le taux de gestation, nous sommes en mesure de prévoir l'addition de nouveaux-nés à la population. On peut connaître les taux de mortalité en étudiant l'âge des prises et l'effort de chasse. En se basant sur le calcul de ces taux, nous pouvons analyser l'état des populations et prévoir les tendances de la densité de ces dernières, sous divers régimes de gestion.

La distribution des âges des phoques capturés donne un indice des taux de survie des petits, nés en différentes années. Étant donné que la récolte des nouveaux-nés varie d'une année à l'autre, ceci nous donne un moyen de vérifier nos prédictions. L'étude des populations est très technique; ceux qui veulent l'approfondir devraient consulter les études scientifiques qui contiennent ces analyses (voir les lectures proposées).

En 1976, en se basant sur des analyses semblables, les conseillers scientifiques spécialistes des phoques auprès de la Commission internationale des Pêcheries de l'Atlantique nord-ouest (ICNAF) étaient presque tous d'accord pour affirmer que la population de phoques du Groenland était actuellement à la hausse et ce, depuis 1972-

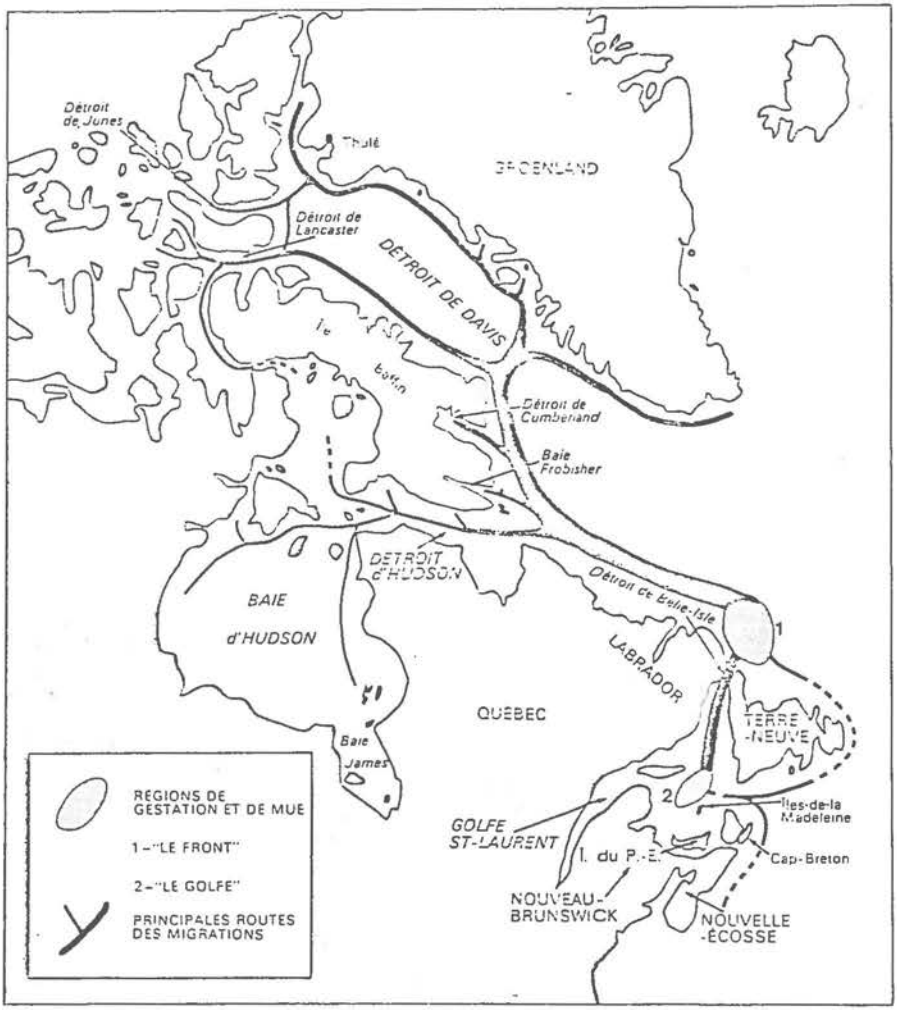
Phoques à capuchon

1973. La majeure partie des analyses montrent qu'une prise totale de l'ordre de 190 000 à 215 000 permettrait à la population de se stabiliser à son niveau actuel, alors que des prises plus faibles la ferait s'accroître. En admettant que la chasse continue de se pratiquer, comme au cours des dernières années (c'est-à-dire, un contingent fixe pour les gros bateaux et une prise variable pour les chasseurs côtiers et les autochtones du Nord), les conseillers scientifiques ont recommandé un total des prises admissibles de 170 000. Ceci permettrait à la population de phoques d'augmenter lentement de son niveau actuel d'environ 1.2 million d'animaux, sans compter les petits, jusqu'au niveau approximatif de 1.6 million qui constituerait, toujours selon les conseillers, le rendement maximum soutenu.

Le phoque à capuchon appartient à la même famille de pinnipèdes que le phoque du Groenland et il habite, comme lui, les banquises dérivantes de l'Atlantique nord. Les deux espèces présentent d'intéressantes différences du point de vue écologique. Par exemple, le phoque à capuchon plonge plus profondément et se nourrit d'organismes de plus grande taille tels le sébaste et le calmar de l'Arctique. L'espèce est moins abondante et se retrouve habituellement sur de plus grosses banquises, au large de l'aire de reproduction des phoques du Groenland dans la région du Front.

Distribution et migration

C'est sur le pack de Jan Mayen que se trouve la plus importante concentration de phoques à capuchon en gestation. Un nombre restreint se reproduit dans la région du Front et une mince proportion, dans le Golfe Saint-Laurent. Une aire de reproduction importante a été retracée dernièrement dans le détroit de Davis. C'est un aéronef militaire canadien, à long rayon d'action, qui a redécouvert cette population que les baleiniers du 19e siècle connaissaient déjà. Les études de marquage et la correspondance exacte des périodes de reproduction permettent d'affirmer que les phoques à capuchon, se reproduisant près de Terre-Neuve, font partie du troupeau principal du Nord, les deux groupes fréquentant principalement le détroit de Danemark, à l'est du Groenland, au cours de l'été, époque de la mue. La population à Terre-Neuve varie suivant le cycle climatique, s'accroissant aux périodes froides



Régions de gestation et de mue, et principales routes des migrations des phoques du Groenland.

Cycle biologique

Le phoque à capuchon vit environ 25 ans et la femelle atteint sa maturité entre trois et cinq ans. L'espèce se reproduit sur les glaces épaisses au printemps et la mue se produit sur les banquises environ trois mois après la reproduction, d'où le contraste avec le cycle du phoque du Groenland dont la mue suit de très près cette période. Les phoques à capuchon forment des cellules familiales et sont beaucoup plus dispersés que les phoques du Groenland; la chasse prend donc un caractère plus individuel. Les jeunes phoques ont déjà perdu leur fourrure blanche avant la naissance et leur période d'allaitement de 12 jours est aussi plus courte que celle des phoques du Groenland.

État de la population

S'il est difficile de faire le recensement des phoques du Groenland, il est encore beaucoup plus ardu de le faire dans le cas des phoques à capuchon, car ils sont plus dispersés dans l'aire de reproduction, leurs naissances s'échelonnent sur une plus longue période et les jeunes "dos bleus" vont à l'eau quelques jours seulement après la naissance. C'est pourquoi seules sont possibles les évaluations visuelles qui servent davantage à l'étude des relations entre populations qu'au calcul exact de l'effectif d'une population donnée.

Selon l'évaluation la plus récente du rendement soutenu, le troupeau de la région du Front pourrait soutenir une chasse de plus de 20 000 animaux, petits et adultes. Ce nombre est beaucoup plus élevé que le contingent de 15 000, en vigueur au cours des dernières années. On projette de mettre sur pied, en 1977, un programme coopératif international en vue de faire une analyse très poussée de toutes données sur le phoque à capuchon de l'Atlantique nord-ouest, analyse comparable à celle de 1976 pour le phoque du Groenland.

Gestion

Les spécialistes du Ministère, dans les domaines de la biologie du phoque et de la dynamique des populations, agissent à titre de conseillers scientifiques de la gestion de la chasse au phoque de l'Atlantique. Les scientifiques canadiens travaillent également en étroite collaboration avec leurs homologues de la Norvège et du Danemark. Les conseils relatifs à la gestion sont aussi puisés dans une source indépendante du secteur public. En 1971, le gouvernement a créé un comité indépendant, le Comité d'Étude des phoques et de leur chasse, composé de scientifiques, de vétérinaires et de cadres des sociétés canadiennes et internationales de protection des animaux. Ce comité a été chargé d'étudier les aspects économiques, sociologiques, écologiques et humanitaires de la chasse aux phoques et de recommander au Ministre toute modification du règlement jugée nécessaire.

Le comité comprend: le président, le professeur Keith Ronald, doyen du Collège des Sciences biologiques de l'Université de Guelph; M. T.I. Hughes, administrateur général de la Société protectrice des animaux de l'Ontario, Toronto; M. Trevor H. Scott, directeur administratif de la Société internationale de la protection des animaux, Londres, Angleterre; M. H. Rowsell, secrétaire administratif du Conseil canadien de protection des animaux, Université d'Ottawa; M. Kjell Henriksen, administrateur de l'industrie de la pêche et représentant canadien à la Commission A de l'ICNAF (phoques); et le professeur H.D. Fisher, du Département de zoologie de l'Université de la Colombie-Britannique, à Vancouver.

Depuis 1967, la gestion de la chasse aux phoques de l'Atlantique est restée sous l'égide de l'ICNAF. Les premiers contingents fixés en vertu du Protocole de l'ICNAF sur le phoque du Groenland et le phoque à capuchon, ont été appliqués à la chasse de 1971, limitant les prises des bateaux à 200 000 phoques du Groenland et les prises côtières à 45 000. En 1972, le total des prises admissibles a été réduit à 150 000, c'est-à-dire 120 000 pour les bateaux et 30 000 pour les chasseurs côtiers, et est resté en vigueur jusqu'à la fin de la saison de 1975.

Les analyses scientifiques effectuées à la fin de 1975 contenaient une très grande diversité d'opinions sur l'état des stocks; cette diversité provient en grande partie d'un désaccord sur le taux de mortalité naturelle. Tandis que les conseillers scientifiques ne jugeaient pas nécessaire de réduire le total des prises admissibles, la Commission a quand même trouvé prudent, à cause de l'incertitude subsistante d'adopter une attitude conservatrice, avec l'appui du Canada, le total des prises admissibles a donc été réduit à 127 000 pour 1976. Après des analyses plus poussées, faites depuis la chasse de 1976, les scientifiques ont convenu que le taux moyen de mortalité naturelle était de 11 pour cent, c'est-à-dire beaucoup plus faible qu'on ne l'avait auparavant supposé. Le Comité d'étude des phoques et de leur chasse, ainsi que les conseillers scientifiques de la Commission A de l'ICNAF, ont donc recommandé une augmentation du total des prises admissibles pour 1977, recommandation qui a été appliquée.

Le total des prises admissibles fixé

pour les années précédentes ne visait que les régions du Front et du Golfe, à l'exclusion des prises du Groenland et de l'Arctique canadien. Le contingent équivalent pour 1977 est de 160 000 prises, total un peu plus élevé que celui de la période allant de 1972 à 1975. En comptant les prises du Groenland et de l'Arctique canadien le total réel des prises admissibles est de 170 000. Pendant quatre ans, de 1971 à 1974, le total des prises a toujours été inférieur au contingent établi sans qu'on y porte beaucoup d'intérêt. Cependant, on a fait grand état du fait, qu'au cours des deux dernières années, les prises ont excédé le total des prises admissibles.

L'augmentation récente des débarquements est liée à l'élément de chasse côtière de l'industrie. La méthode de gestion des quelques dernières années consistait à fixer un contingent pour les activités des gros bateaux et à laisser une certaine "marge" aux chasseurs côtiers, sans limiter le total de leurs prises. Cette méthode a été adoptée à cause des variations extrêmes du nombre de phoques accessibles aux chasseurs côtiers, d'une année à l'autre, dues à l'état des glaces et à l'abondance des phoques, à proximité de la côte.

Toutefois, vu la mobilité accrue des chasseurs côtiers, attribuable à l'usage plus fréquent de petits bateaux de 35 à 65 pieds (de 11 à 20 mètres) en général, nous avons cru bon de modifier notre système de gestion pour l'année en cours. En conséquence, la part du total des prises admissibles, réservée aux chasseurs côtiers, a été augmentée substantiellement, passant de 30 000 pour les années précédentes à 63 000 pour 1977. Depuis l'interdiction, au cours des années 1960, de l'emploi d'hélicoptères, les prises sur la côte n'ont atteint un total aussi élevé qu'une seule année (en 1976). Même sans nouveau règlement, il est donc peu probable que le contingent de 63 000 soit dépassé. On maintiendra toutefois un contrôle de ce contingent. Des contingents secondaires seront fixés en fonction des régions afin de permettre une juste distribution des débarquements. L'application des contingents se fera avec souplesse en tenant compte des impondérables de la saison de chasse, puisque l'abondance du phoque dans les diverses régions varie tellement d'une année à l'autre.

En outre, on a porté une attention particulière aux moyens utilisés pour prendre les contingents. En 1976, les chasseurs côtiers des Îles-de-la-Madeleine n'ont pris que 40 phoques, alors qu'en 1974, par exemple, ils en avaient pris 14 661. C'est pourquoi, en 1977, le gouvernement permet aux habitants des Îles-de-la-Madeleine, à titre d'essai, de prendre une part de leur contingent en se servant de bateaux dont les dimensions dépassent la limite de 65 pieds (vingt mètres) imposée au cours des dernières années.

Les gros bateaux chassant dans la région du Front prendront 97 000 phoques, comme en 1976. La part de ces prises revenant au Canada augmentera de 54 333 qu'elle était en 1976, à 62 000 en 1977 alors que la part de la Norvège baissera de 44 667 à 35 000.

Comme autre mesure de conservation pour la chasse de 1977, on limitera les prises des gros bateaux aux phoques du Groenland, nés en 1977,

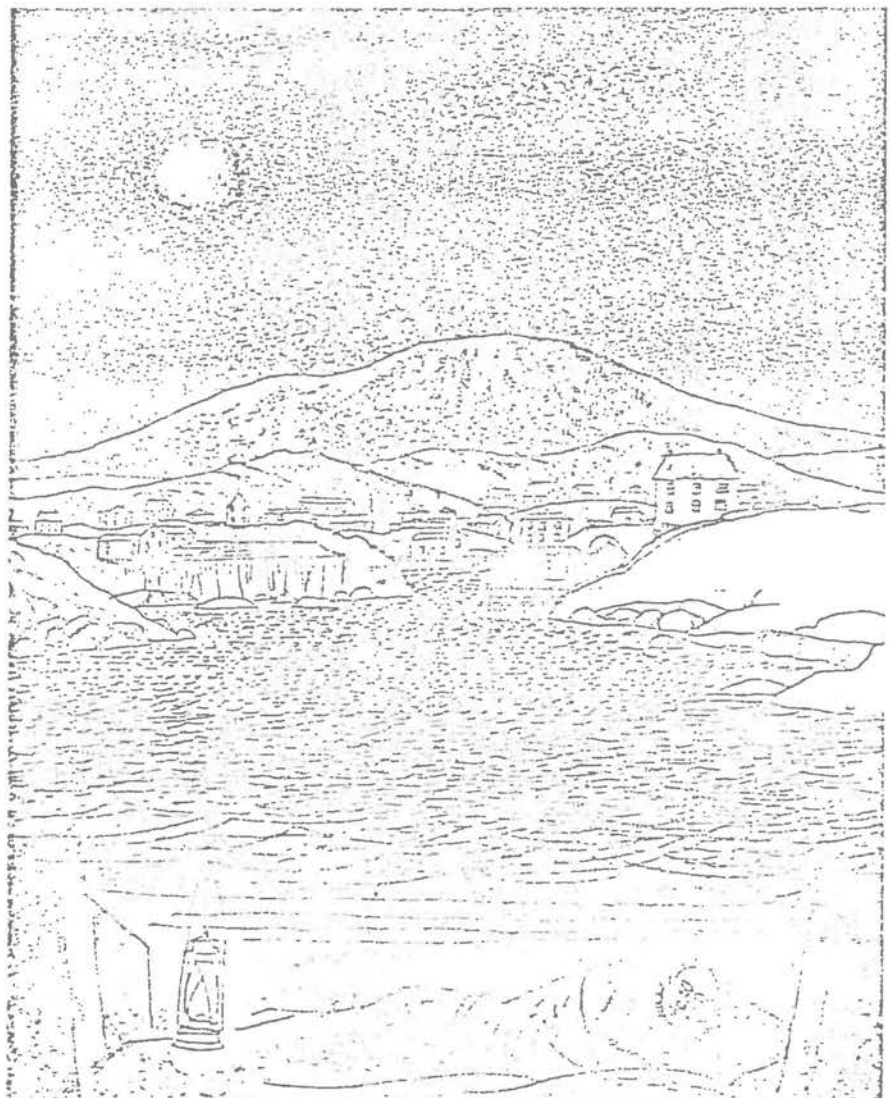
en admettant une marge de 5% de capture d'animaux plus âgés. On maintiendra également l'interdiction de tuer des phoques du Groenland adultes sur les banquises où ils se reproduisent. Ces mesures permettront un accroissement plus rapide de la population.

En 1977, le total des prises admissibles sera le même qu'en 1976 pour les phoques à capuchon, conformément aux recommandations des conseillers scientifiques. Toutefois, la répartition en a été modifiée. En 1976, 9 000 phoques avaient été alloués à la Norvège et 6 000 au Canada. En 1977, 6 000 sont alloués à la Norvège et la flotille canadienne pourra prendre jusqu'à 6 000 phoques, d'ici le 29 mars. À partir du 30 mars, les deux pays se partageront les 3 000 phoques encore disponibles.

L'introduction, pour 1977, d'une mesure de conservation très importante consiste à limiter à moins de 10% du total des prises de phoques à capuchon, l'abattage de femelles adultes. Cette proportion était de 20% en 1976 avant l'adoption de cette mesure. Les scientifiques estiment que cette restriction permettra à la population de s'accroître assez rapidement.

Au cours des dernières décennies, il a fallu recourir à la consultation et à la négociation internationale pour gérer la plupart de nos ressources marines qui ne comprennent pas que les phoques, puisque ces ressources se souciaient peu de l'ancienne limite de 12 milles de la juridiction canadienne en matière de pêche. Les mesures de conservation nécessaires ne pouvaient être prises que par l'intermédiaire d'un organisme international tel que l'ICNAF.

Le système de gestion des pêches se transforme avec l'extension à 200 milles, le 1er janvier 1977, de la limite de juridiction du Canada en matière de pêche et l'adoption de mesures semblables par de nombreux autres pays. Le Canada a choisi de considérer 1977 comme une année de transition et d'agir pour cette année par l'entremise de l'ICNAF; les conseillers scientifiques de cette dernière lui feraient leurs recommandations en ce qui concerne l'établissement du total des prises admissibles et les autres mesures de gestion. Sur réception des recommandations de l'ICNAF, le gouvernement canadien établirait alors les dispositions réglementaires qui devraient être appliquées en 1977 en deçà de sa zone de 200 milles. Si les dispositions prises par l'ICNAF satisfaisaient le Canada, elles seraient alors incluses à ses règlements de pêche. Dans le cas des phoques, ce procédé s'est montré efficace et le Canada a adopté les recommandations de l'ICNAF pour la gestion de la chasse au phoque de 1977.



B[illegible] songe d'un chasseur de briques

Les phoques dans l'écosystème

Il existe des signes évidents que le manque de nourriture pourrait contribuer à limiter les populations de phoques du Groenland. Au début des années 1950, lorsque les populations de cette espèce étaient plus abondantes, des scientifiques ont observé de nombreuses blessures infligées au cours de combats ainsi que le mauvais état des mâles lors de la mue. La population a diminué depuis ce temps et les rapports indiquent que la santé des animaux en mue s'est grandement améliorée. L'âge de maturité des phoques a diminué, ce qui indique une croissance plus rapide qui peut être liée à la diminution de la concurrence pour la nourriture.

En général, la taille des organismes consommés par le phoque augmente à mesure qu'il grandit. Les phoques du Groenland, plus âgés, peuvent plonger à des profondeurs allant jusqu'à 250 mètres, mais les jeunes doivent se nourrir à des niveaux moins profonds. Les jeunes phoques et les femelles qui allaitent consomment de petits animaux qu'ils trouvent dans les eaux de surface, près des banquises, tandis que les phoques plus âgés se nourrissent de poissons pélagiques ainsi que de crustacés et de poissons de fond. En poids, le capelan est le poisson que les phoques consomment le plus dans l'Atlantique nord-ouest. Au niveau où se situe la population actuelle, on estime que la consommation annuelle de capelan du phoque du Groenland se chiffre entre 300 000 et 500 000 tonnes métriques, provenant surtout de la région au large de Terre-Neuve. Les grosses baleines en absorbent une quantité semblable. Comme une vaste biomasse de morues, d'oiseaux de mer, de phoques et de baleines dépend du capelan pour son alimentation, il faudra construire des modèles très complexes contenant des données sur l'alimentation et la croissance ainsi que sur le taux de naissance et de mortalité des diverses espèces afin de prévoir les répercussions de l'exploitation de ces espèces sur les autres espèces du système. Les scientifiques considèrent que l'utilisation de tels modèles pour prévoir les changements au niveau d'une espèce à partir des changements survenus au niveau d'une autre, exigeront des données biologiques et environnementales qui prendront quelques années à s'accumuler. Cet aspect intéressant et complexe de la gestion des pêches suscite de plus en plus de recherches au Ministère.

Méthodes d'exploitation humaines

Au cours de la dernière décennie, la question des méthodes d'exploitation humaines a soulevé bien des controverses à la suite desquelles, scientifiques et vétérinaires expérimentés ont fait beaucoup d'études et d'observations sur le terrain. Il s'agit principalement de déterminer si la façon de tuer est humaine, c'est-à-dire si elle entraîne une mort rapide et sans douleur, sans peur ou sans choc psychologique.

Diverses méthodes ont été étudiées—armes à feu, drogues, bioxyde de carbone et pistolet à cheville percutante. La méthode jugée la moins cruelle pour le jeune phoque est l'abattage au moyen d'un gourdin de bois franc; celle-ci permet de tuer l'animal instantanément ou entraîne un état d'inconscience profonde irrémédiable. C'est d'ailleurs la méthode utilisée dans d'autres pays, aux États-Unis, par exemple, dans le cas de l'otarie à fourrure. Les vétérinaires ont pu déterminer que les femelles ne semblent généralement pas affectées par la perte de leur petit, comme cela peut être le cas chez le chien et de nombreux autres animaux.

En 1976, l'emploi d'un instrument norvégien, l'"hakapik" (équivalent de la gaffe de Terre-Neuve), a été permis dans la région du Front. Les vétérinaires spécialistes l'ont trouvé plus efficace que le gourdin, sans compter qu'il comporte un avantage particulier: les chasseurs peuvent s'en servir pour se secourir quand ils perdent équilibre sur les dangereuses banquises et tombent dans l'eau glacée.

Les agents des pêches font des exposés sur les règlements et les méthodes humaines d'abattage. Le Ministère distribue aussi des brochures sur le sujet. Sur la glace, les chasseurs doivent porter l'insigne qui leur est délivré par le gouvernement afin que les agents des pêches les reconnaissent aisément, car ceux-ci ont le pouvoir de retirer de la chasse toute personne qui emploie des méthodes inconvenables.

L'usage de carabines sur le phoque à capuchon n'est permis que pendant le jour, quand la clarté permet au franc-tireur de très bien voir sa cible.

Les vétérinaires et les représentants des sociétés protectrices d'animaux examinent périodiquement les méthodes de chasse employées et en concluent que, sauf quelques rares exceptions, elles sont très peu cruelles. Parmi les organismes qui ont envoyé des représentants pour observer la chasse au phoque, se trouvent la Fédération canadienne des Sociétés de protection des animaux, la Société protectrice des animaux, la Société internationale de protection des animaux, la Société protectrice des animaux de l'Ontario et la Société canadienne Audubon, ainsi que d'autres sociétés et des vétérinaires indépendants. Leurs rapports sont tous mis à la disposition du public.

Valeur économique

La chasse aux phoques ne peut être considérée sans tenir compte de son impact social et économique. Les populations de la côte est du Canada sont réparties sur des milliers de milles de côte accidentée, ce qui est un désavantage dès le départ. Les premiers colons se sont établis là où ils avaient le meilleur accès possible aux ressources de la mer. Ils chassaient le phoque, pêchaient le homard, la morue, le saumon et d'autres espèces en saison, selon leur abondance. Cette tradition persiste et permet aux habitants des côtes de garder les valeurs culturelles d'une vie rurale axée sur les ressources. La plupart des chasseurs de phoque actifs vivent dans le nord de Terre-Neuve ou dans le sud du Labrador. Dans ces régions, l'abondance des phoques est plus fiable qu'aux Îles-de-la-Madeleine ou au sud-ouest de Terre-Neuve où les glaces entravent souvent la chasse. Mais même dans ces régions, la chasse aux phoques peut présenter un apport très apprécié à l'économie locale. La chasse aux phoques se pratique à un moment de l'année où la température empêche toute autre activité de pêche, le taux de chômage s'élevant alors au-delà de 90% sur une base locale. Les $3 600 000 qu'a rapporté la chasse à l'économie de la région de l'Atlantique sur une période de trois mois en 1976 ont donc eu une valeur très marquée.

En 1976, le nombre de chasseurs côtiers, qui pratiquaient cette activité à pied ou à partir de bateaux de moins de 35 pieds (11 mètres) de longueur, s'est élevé à plus de 4 000; ceux-ci ont passé en moyenne trois semaines à la chasse, rapportant des peaux et de la chair d'une valeur d'un demi-million de dollars et de $100 000, respectivement.

Ces dernières années, les pêcheurs de Terre-Neuve sont revenus de plus en plus à l'utilisation de petits bateaux de 35 à 65 pieds (11 à 20 mètres). En 1976, près de 200 bateaux de ce genre employaient 800 personnes, la plupart ayant leur port d'attache à Terre-Neuve. Environ la moitié d'entre eux pratiquaient une chasse intensive et ont passé une moyenne de 34 jours à chasser. La valeur des peaux débarquées se chiffraient à un peu plus de un demi-million de dollars tandis que les carcasses et les nageoires ont rapporté au-delà de $200 000.

Sept grands bateaux canadiens ont participé à la chasse de 1976 dans la région du Front, la flottille comptait 189 chasseurs, choisis parmi 10 fois ce nombre de demandes. Les places dans une expédition de ce genre sont très en demande. La part des équipages est en moyenne de $1 800 par chasseur pour les peaux et de $500 provenant de la vente des carcasses et des nageoires, dont le profit n'est pas partagé par le bateau. Un chasseur moyen reçoit donc environ $2 300 pour un mois de travail. Le revenu total des gros bateaux s'est élevé à environ 1.1 million de dollars.

Les acheteurs locaux ont fourni de l'emploi à 150 personnes environ, pour une période de trois semaines pendant la saison de la chasse. En retour, ils ont reçu un pourcentage de la valeur des peaux et de l'huile, calculé selon la qualité, ce qui a ajouté $50 000 à l'économie. La première étape du traitement s'est faite ensuite dans la

Sa famille, rêverie d'un chasseur de phoques

Politique canadienne de chasse aux phoques

région de l'Atlantique. Les usines de traitement ont employé approximativement 45 personnes pour une période de deux mois et ont dépensé près de un demi-million de dollars.

Trois conserveries ont acheté plus de 300 000 livres (135 000 kg) de viande à 15 à 18¢/lb (33-40¢/kg.). Ces établissements ont employé environ 65 personnes de mars à mai et les sociétés ont dépensé plus de $100 000 pour assurer la production. En plus des 10 000 phoques utilisés pour la mise en conserve, on peut ajouter, sans risquer de se tromper, que 20 000 carcasses ont probablement servi à la consommation domestique et n'ont pas nécessairement été vendues sur les marchés commerciaux. Les nageoires demeurent un plat de gourmet à Terre-Neuve où elles se détaillent à plus de deux dollars chacune.

Une étude économique de l'industrie de la chasse aux phoques a été faite récemment et on analyse actuellement les résultats afin de les publier. Les renseignements qui précèdent n'en brossent qu'un tableau sommaire. Il ne faut cependant pas se fier uniquement aux données monétaires. La chasse au phoque est une entreprise aventureuse pratiquée dans un environnement hostile mettant à l'épreuve la hardiesse de ses participants. Elle fait partie de notre patrimoine culturel.

L'établissement des contingents de prises et des autres mesures réglementaires dépend des objectifs de gestion. L'unanimité dans ce sens est beaucoup plus difficile à atteindre pour le phoque que pour la plupart des autres espèces. Il y a ceux qui, pour des raisons morales ou d'esthétique, jugent qu'on ne devrait pas chasser le phoque. Cependant, un tel raisonnement entraînerait un accroissement important des populations, particulièrement du phoque du Groenland. Or, comme le phoque se nourrit d'une quantité considérable de poissons dont la valeur commerciale actuelle ou future est reconnue, et que plusieurs espèces de phoques sont infestés de vers parasites dont ils transmettent les larves au poisson, réduisant ainsi sa valeur, l'industrie de la pêche pourrait alléguer que les populations devraient être réduites au plus bas niveau possible. Il serait cependant à l'avantage à long terme de l'industrie de la chasse au phoque de maintenir une situation intermédiaire qui produirait un important rendement économique soutenu pour un avenir indéfini.

La politique du Canada, en ce qui concerne la gestion du phoque, est semblable à toutes ses politiques de gestion des autres ressources marines — les ressources sont exploitées humainement à des niveaux qui permettent un rendement soutenu continu, axé sur des principes rationnels de conservation tout en assurant le maintien des populations et prenant en considération les relations entre espèces en tant que compétiteurs, prédateurs et proies.

L'augmentation incontrôlée des populations des grands prédateurs,

comme le phoque et la baleine, entraînerait une baisse de la santé moyenne et de la vigueur des individus de la population et en ferait des concurrents de l'homme dans ses activités de pêche. La politique canadienne tente donc de maintenir un écosystème équilibré et d'exploiter les diverses espèces en interaction de façon à tirer un rendement maximal de ce vaste complexe, tout en assurant la préservation de toutes les les espèces.

Les objectifs de la politique des pêches doivent tenir compte des réalités sociales et économiques et ce n'est que par l'application de pratiques de conservation rationnelle que seront atteints les objectifs globaux. La gestion des pêches est complexe et il n'existe aucune solution simple, aucune formule magique permettant de calculer le niveau auquel doit être maintenue telle ou telle population. Si le concept du rendement maximal soutenu, par exemple, a été très utile pour l'élaboration d'une science des pêches, il n'y a cependant aucune raison pour qu'il devienne automatiquement l'objectif premier de la gestion des pêches. Biologistes, économistes, groupes de conservation et gestionnaires s'entendent tous sur ce point. Il peut exister des circonstances où nous cherchons à maintenir les populations à des niveaux bien supérieurs ou inférieurs au rendement maximal soutenu. Dans le cas du phoque du Groenland, l'objectif est de laisser la population s'accroître lentement au cours des prochaines années, tout en intensifiant les études sur la biologie de cet animal et ses interactions avec les autres ressources marines.

Une sage opinion ne peut être émise que par une personne bien informée. C'est pourquoi la politique du Ministère vise à assurer l'accès du grand public à toute l'information sur la conservation et les méthodes humaines de chasse. Après avoir étudié attentivement ces données, les groupes intéressés peuvent prendre des positions sensées.

En octobre 1976, le Ministère a demandé à chacun des auteurs des documents de recherche de l'ICNAF sur le phoque, en 1976, la permission de rendre publics leurs manuscrits préliminaires avant même la publication des rapports scientifiques officiels. Tous les auteurs ont accepté, y compris ceux des universités du Danemark, de la Norvège et du Canada, ainsi que ceux qui travaillaient au sein du Ministère. Ainsi ont été rendus publics les documents, le rapport des conseillers scientifiques de la Commission A (phoques) de l'ICNAF et le procès-verbal des négociations de l'ICNAF. De fait, les documents ont été envoyés à des groupes qui avaient exprimé le désir de se les procurer dès qu'ils seraient disponibles. Dans la semaine qui a suivi la fin des délibérations de l'ICNAF, une réunion a été tenue à Ottawa (le 16 décembre 1976), à laquelle ces groupes étaient invités. À cette occasion, les représentants du Ministère ont révélé leurs plans de gestion pour la chasse de 1977. En plus des rapports sus-mentionnés, le Ministère a demandé que soient rendues publiques toutes les recommandations que lui avaient fait le Comité d'étude des phoques et de leur chasse, de même que sa réponse aux recommandations. Toutes les données

scientifiques et les recommandations que possède le gouvernement sont donc mises à la disposition du grand public.

Mentionnons que les représentants de plusieurs organismes de protection et de conservation n'ayant pas de parti-pris, soit pour ou contre la chasse aux phoques, après avoir effectué leur propre évaluation des documents disponibles, ont publiquement félicité le gouvernement de ses méthodes de gestion de la chasse aux phoques, tant sur le plan de la conservation que des méthodes humaines de chasse.

Il existe un grand nombre de documents sur la biologie et la gestion des phoques. Les publications qui figurent ici sont les documents récents traitant de l'état des populations de phoques du Groenland et de phoques à capuchon ainsi que des pratiques d'exploitation humaines, de même que quelques travaux sur l'histoire de la chasse aux phoques. Les méthodes de gestion actuelles doivent être basées sur les données les plus récentes du domaine.

En vertu d'une entente avec le Ministère, le Comité d'étude des phoques et de leur chasse a préparé une bibliographie détaillée des phoques et de la chasse aux phoques que l'on peut se procurer sur demande à l'adresse suivante: Committee on Seals and Sealing, 8064 Yonge Street, Thornhill, Ontario. Il est également possible de se procurer des renseignements à la Direction de l'Information du Ministère (Service des pêches et de la mer, 580, rue Booth, Ottawa).

Benjaminsen, T. & P. F. Lett 1976. A stochastic model for the management of the northwestern Atlantic harp seal, *Pagophilus groenlandicus*, population. ICNAF Res. Doc. 76/X/130. Ser. No. 4016, 68 p.

Chafe, L. G., W. A. Mann, and H. M. Mosdell, 1923. Chafe's Sealing Book, a history of the Newfoundland seal fishery from the earliest available records down to and including the voyage of 1923. The Trade Printers and Publishers Ltd. 108 p.

Colman, J. S. 1937. The present state of the Newfoundland seal fishery. Journ. Animal Ecol. 6,145-159.

Glossaire

_____1949. The Newfoundland seal fishery and the Second World War. Journ. Animal Ecol. 18(1):40-46.

ICNAF. 1976. Report of Scientific Advisers to Panel A (Seals). Copenhagen, Denmark, 11-12 October, 1976. ICNAF Summ. Doc. 76/XXI/47, Appendix III, Ser. No. 4020, 8 p.

Rowsell, H. C. 1971. Report on methods for killing seals. 25 p. plus appendices. Mimeo rept.

Sergeant, D. E. 1973. Feeding, growth, and productivity of northwest Atlantic harp seals *(Pagophilus groenlandicus)*. J. Fish. Res. Bd. Canada, 30:17-29.

_____1973. Environment and reproduction in seals. J. Reprod. Fert., Suppl. 19:55-561.

_____1976. History and present status of populations of harp and hooded seal. Biol. Conserv. 10(2):95-118.

Winters, G. H. 1976. Estimation of mortality rates and surplus production of Northwest Atlantic harp seals. ICNAF Res. Doc. 76/X/127, Ser. No. 4014, 23 p.

"Beater" —il s'agit du phoque du Groenland âgé de moins d'un an et ayant terminé sa première mue qui a lieu vers l'âge de 3 à 4 semaines; il possède alors un pelage gris légèrement tacheté.

"Bedlamer" —le phoque du Groenland adolescent âgé de 1 à 5 ans et ayant un pelage tacheté. C'est au cours des premières années de la maturité sexuelle que, soit le "coeur" noir, soient des taches formant un coeur, caractéristiques de l'adulte, apparaissent graduellement.

Blanchon —terme s'appliquant au nouveau-né du phoque du Groenland jusqu'à une semaine à 10 jours précédant la perte de cette fourrure blanche et douce, ou lanugo, qu'il a à la naissance.

"Dos bleu" —le nouveau-né du phoque à capuchon au dos de couleur bleu-foncé; la mue du lanugo se produit avant la naissance chez cette espèce.

Kilogramme (kg) —un kilogramme équivaut à 2.20 livres.

Metre (m) —un mètre équivaut à 3.28 pieds.

Mise bas — la naissance chez le phoque (et chez tout autre mammifère).

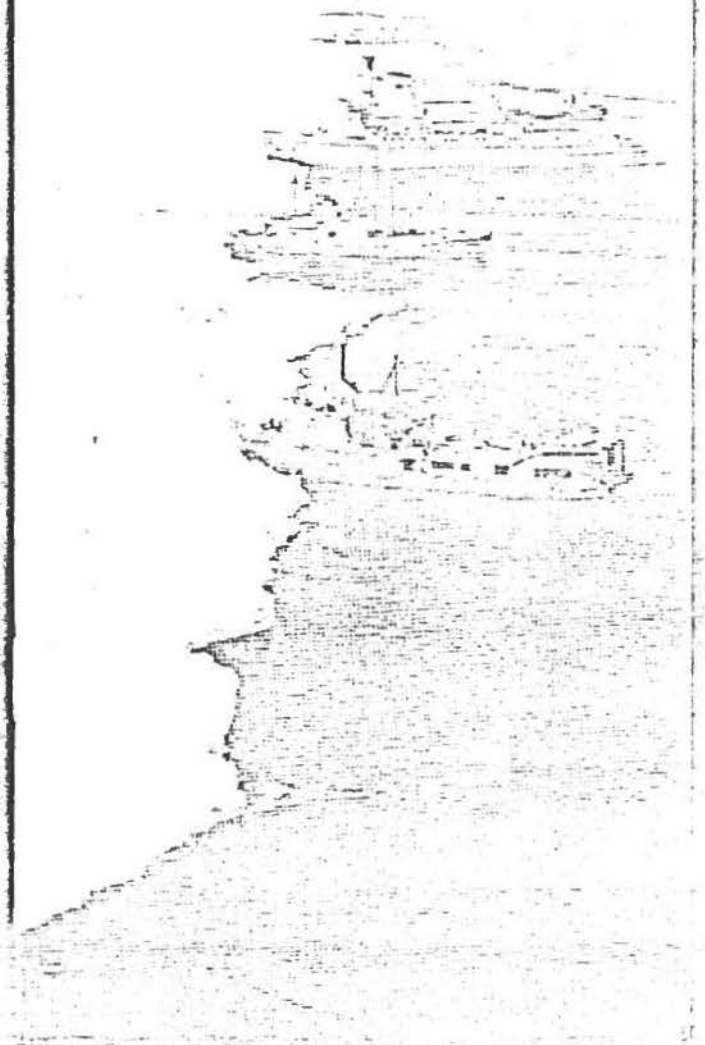
Phoque à capuchon — un pinnipède à poil ras dont le nom latin est *Cystophora cristata*. Aussi connu localement sous le nom de "loup-marin de poche", référant au sac membraneux situé sur le front du mâle.

Phoque du Groenland — un pinnipède à poil ras dont le nom latin est *Pagophilus groenlandicus*. Aussi connu localement sous le nom de: "loup-marin de glace", ou "coeur".

"Ragged-jacket" — terme anglais décrivant le jeune phoque du Groenland lors de sa première mue alors qu'il change de l'état de blanchon à celui de "beater" vers l'âge de 12 jours à 2 semaines.

Rendement maximum soutenu — le nombre ou le poids moyen d'animaux que l'on peut prélever de façon continue dans une population. Ceci sous-entend que la population soit maintenue relativement stable à un niveau situé à environ la moitié du nombre d'animaux présents avant que ne débute l'exploitation.

Questions and answers on the seal hunt



questions and answers on the seal hunt

1980 Update

Regulations for management of the Atlantic seal hunt are modified or adjusted each year to take into account catch records of the previous year, new scientific data and advice, and the results of national and scientific consultations.

This insert updates or supplements information in the brochure "Questions and Answers on the Seal Hunt".

Question 2

On March 15, 1979, the Canadian House of Commons again unanimously reaffirmed the right of Canadians to hunt seals as a legitimate pursuit under the strict supervision of the Government of Canada, free from harassment and interference.

Question 3

Number of sealers' permits issued in 1979:

Newfoundland	10,274
Maritimes	63
Quebec	2,817
TOTAL	13,154

Number of sealers participating in the hunt in 1979:

Large vessels	254
Small vessels	487
Landsmen (estimated)	6,602
TOTAL	7,343

Number of Canadian vessels licensed in 1979:

Large vessels — Front	7
— Gulf	2
Small vessels (9-20 metres)	231
TOTAL	240

Question 4

With the White Sea harp seal population recently estimated at approximately 800,000 animals aged one year or more, the world population of harp seals is clearly well in excess of two million.

The northwest Atlantic population continues its slow increase in abundance under the existing management scheme. The best estimate of abundance for this population in 1979 is 1.38 million animals aged one year and over.

Question 5

The Northwest Atlantic Fisheries Organization (NAFO), which recently replaced the International Commission for the Northwest Atlantic Fisheries (ICNAF), now provides the forum for international scientific review of data on seal populations. At its special meeting on seals held in November, 1979, the Scientific Council of NAFO arrived at a best estimate of pup production for 1979 of 352,000 animals, a figure which is in close agreement with the forecast made in 1978.

The latest data indicate that at least 205,000 - 237,000 animals could be taken in 1980 without reducing the long-term population size.

Question 6

In line with Canada's stated intention of allowing the continued slow increase of the harp seal population, the total allowable catch will remain the same for 1980 as it was in 1979. Minor adjustments will be made within the regulated domestic allocations to compensate for an increase in the unregulated catch by Greenland, which now approaches 10,000.

Providing a further allowance of 1,800 to the native peoples of northern Canada, a total harvest of 168,200 will be permitted in the northwest Atlantic in 1980. Of this total, 20,000 from the Front herd are allocated to Norway.

Allocations made to the various components of the sealing industry within the three Atlantic coast regions (Newfoundland, Quebec, and Maritimes) attempt to provide each component with fair access to the harvest; the allocation system establishes ceilings on allowable catches by each component, and has resulted in actual catches which in total have been from four to seven per cent below the annual quotas established since 1976.

Question 7

In any population, adults of breeding age exert far more influence on the overall productivity of the population than do the very young or sub-adults which have yet to live through years of natural mortality before achieving breeding potential. From the point of view of conservation of the species it is thus preferable to harvest a young of the year rather than an older animal. The harp seal fishery is one of the few fisheries in which it is possible to thus exploit the overabundance of offspring typical of many marine species.

Question 8

Fur, oil and meat remain the principal products of value; these are estimated to have represented 62 per cent, 24 per cent and 14 per cent, respectively, of the income derived from Canadian sealing in 1979. The relative importance of meat varies among the different components of the fishery and ranged from an estimate of five per cent among some landsmen groups to 22 per cent on large vessels.

Pelts, on the average include 18 kg (40 lbs.) of blubber, yielding a total of about 2,025,000 litres (450,000 gal.) of refined oil. The raw blubber represents an estimated value in excess of $1,000,000 to the fisherman, yielding oil with an estimated final market value in excess of $4,000,000.

Question 9

The value added to the economy by the seal hunt in 1979 is estimated at $9.5 million, including $5.3 million to the primary or harvesting sector, and $4.2 million to the secondary sector.

In 1979, nine large vessels participated in the hunt, employing 254 men as crew, with average incomes estimated at $4,754. Because all profits from the sale of meat by vessels go to the sealers, 43 per cent of sealers' income resulted from the sale of meat and oil. Small vessel participation involved 487 men on 126 boats, and the landsmen component is estimated at 6,602. Average income from the seal hunt for the men involved was close to $1,900 for small boat operators and $452 for active landsmen.

Question 13

The Government of Canada has become increasingly involved in organizing and participating in lectures and courses of instruction addressed to sealers and others participating in sealing. Prepared in such a way as to answer specific needs and interests on a regional basis, these involved the participation of experts and spokesmen from societies concerned with animal care, the processing sector of the industry, regional sealers' associations, provincial fisheries officers as well as from regional and headquarters staff of the Department of Fisheries and Oceans.

Topics covered include, among others: safety on the ice; proper equipment and its care; interpretation of the regulations; humane sealing procedure; techniques for the production of high quality products; proper handling, storing and disposal of the products of the seal hunt. The aim of this program is to ensure that Canada's regulations regarding sealing are well understood and observed by all participants, and to provide the sealers with the knowledge and expertise necessary to ensure proper treatment of animals harvested and the highest quality and value possible for their products.

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1. Question: Why is there a seal hunt?

Understanding why sealing occurs in Canada requires an appreciation of the people and places involved.

The development of Atlantic Canada has, since the 15th century, been based on the harvesting of marine fisheries resources. Early settlers founded communities in bays and coves scattered around the rugged coastline where safe anchorage and ready access to these resources were available. Most species were only available for harvesting seasonally — lobster in spring, salmon in summer, cod and other groundfish in late summer and autumn. The vast ice floes which made it impossible to fish with nets in northern communities during the winter and early spring brought another resource — the seal. The seasonal harvesting of these marine species, along with crops eked from the rocky landscape, food from abundant wildlife, and winter logging, evolved a resource-based economy and rural culture which still exists today.

As the income provided by the harvesting of each natural resource — fish, seals and other species — are crucial to the livelihood of Canadian coastal fishermen, the continued existence of the rural fishing communities in which they live depends on the wise use of all available resources.

2. Question: What is the Canadian Government's policy on sealing?

Canadian Government policy on sealing is consistent with its policies on the management of other fisheries or wildlife resources. The government regards seals as a natural resource to be harvested as are many other species. Harvesting of these resources is permitted only within the limits of sound conservation principles, taking into account the role of these species in the ecosystem and in accordance with humane harvesting techniques. The ultimate objective is to gain maximum social and economic benefits for those who depend directly upon such resources and for the country at large.

In March 1977, the Canadian House of Commons *unanimously* passed a resolution reaffirming the right of Canadians to hunt seals.

3. Question: Who hunts seals?

Intensive, well-controlled harvests of a number of species of seals are conducted by Norway, South Africa, the Soviet Union and the United States of America. Less intensive hunting of a variety of seal species is conducted by native peoples throughout the whole Arctic. Fishermen in many areas around the world who have had nets destroyed or catches consumed by seals occasionally hunt these animals.

Sealing in Canada is not an industry carried on by residents of urban centres, but by residents of small communities which are scattered over thousands of miles of indented coastline along the shores of Newfoundland and Labrador, the Magdalen Islands, the Quebec north shore and occasionally by residents of Prince Edward Island, New Brunswick and Cape Breton, Nova Scotia.

More than 12,000 fishermen were licensed to harvest seals in 1978; however, only half of this number actively sealed, as the herds did not come close to shore in some areas.

The major large vessel harvests are from the "Front" seal herds on ice floes to the northeast of Newfoundland and the "Gulf" herds near the Magdalen Islands. Eight large Canadian sealing vessels participated in the 1978 hunt. This fleet accommodated about 200 sealers selected from ten times that number of applicants. A berth on a sealing expedition remains in high demand. There were in excess of 500 licensed sealers on small vessels and approximately 6,000 landsmen who operated from small boats or on foot.

A survey of Canadian sealers conducted in 1976 indicated that the majority were between the ages of 25 to 44 and had lived an average of 34 years in the same community. More than 80 percent of these men were married and supported an average of 3.5 dependents.

4. Question: Is the harp seal an endangered species?

No, definitely not. In fact, the harp seal is considered to be the world's second most abundant species of seal*, numbering close to two million animals. By far the largest herds of this species are those of the northwest Atlantic population which numbers 1.3 - 1.4 million animals appearing each winter off Canada's east coast. The two other harp seal herds occur in the White Sea and to the north and west of Norway.

5. Question: How do you know the size of the harp seal population?

Since the 1950's, extensive annual biological sampling of the northwest Atlantic harp seal population has provided detailed information on the growth of animals, the birth of young, and natural mortality. Records of the numbers of animals harvested, and extent of hunting effort have been maintained. Incorporating this information, scientists have used a variety of methods to assess the size of the harp seal population, such as cohort, survival index, catch and effort, tag/recapture analyses, and even more complex mathematical modelling. Recently, an aerial ultraviolet photography technique has produced an estimate of the number of pups born in the Front area within three percent of that produced by a catch and effort analysis.

Each year, international seal scientists meet in the Standing Committee on Research and Statistics of the International Commission for the Northwest Atlantic Fisheries to consider the most recent scientific data on seal populations. In November 1978, these scientific advisers agreed that between 345,000 and 358,000 seal pups would be born in 1979 (Gulf and Front areas combined) and that between 214,000 and 240,000 animals could be removed and still maintain the present population size over the long term.

* Second only to the unharvested Antarctic crabeater seal.

6. Question: How many seals may be harvested in 1979?

Although scientists have calculated that a larger catch could be taken while maintaining the population at its present level, a total regulated harvest of 170,000 harp seals will be permitted in the entire northwest Atlantic in 1979, not including an expected take of up to 10,000 by native peoples of northern Canada and Greenland. These catch restrictions are designed to permit the harp seal population to increase slowly in size. This policy and annual quotas are established by Canada and the European Economic Community representing Denmark (Greenland) which harvests this resource in its summer range. The slow increase in the harp seal population must be in conjunction with the growth in populations of previously overfished competitor and prey species which are caught and eaten by man and seals.

As in previous years, the actual catch will probably be slightly smaller than the total quota as harsh ice and weather conditions often interfere with efficient sealing.

7. Question: Why are only seal pups killed?

Most of the seals taken are not whitecoated pups, but slightly older animals which have been weaned, or animals which are one year of age or older. The large vessel hunts in offshore areas take primarily whitecoat seals since these are concentrated, hence more easily harvested, and have a high value for their fur, fat, and meat.

For reasons of conservation, it is preferable to take a young, non-breeding animal than an older one. Hence, Canada's Seal Protection Regulations forbid the killing of adult female harp seals in the whelping* areas and stipulate that only five percent of the catch by the large vessels can be animals older than one year of age.

* Whelping is the act of giving birth in a seal

8. Question: For what are seals used?

The pelts of seals receive primary processing in Canada and are then exported to Europe where they are made into a variety of durable and attractive clothing, such as coats, jackets, boots, shoes, handbags and belts. Scraps are used in producing handicraft items and curios.

The most valuable sealskin coats currently marketed are made from fur seal pelts harvested in the United States, the Soviet Union and South Africa.

Seals taken off eastern Canada are not hunted exclusively for their furs. Edible portions such as carcass meat, flippers and fat are important products of Canadian sealing. Meat for human food is taken from about half of the seals harvested. In 1977, over half the large vessel sealers' income was derived from the sale of edible products.

9. Question: What is the economic value of the seal hunt?

A survey conducted by the Canadian Government indicated that the sealing industry contributed $5.5 million to the Atlantic regional economy in 1976. Current estimates place the value added to the economy in 1978 at $6.5 million including the harvesting sector which contributed $3.4 million of this value, and the processing of seal products which generated $3.1 million.

It has been noted that the sealing industry contributes only a small percentage of the total income to the provinces in which it is conducted. The small economic significance of one industrial component to a country can mask its importance in regional areas. For example, the total fishing industry in Atlantic Canada provides about 0.5 percent of the Canadian gross national product (GNP), yet this industry generates employment and incomes to over 53,000 fishermen and fish processing plant workers and is the mainstay of hundreds of coastal communities. As a component of the fishing industry, the sealing industry provides seasonal employment to as many as 6,000 of these people, and for some, generates as much as one third of their annual income.

In 1978, total receipts for large sealing vessels were approximately $1.3 million, while the small vessel operations earned $735,000 and total landsmen receipts were $1.4 million. Eight large vessels participated in the hunt, employing 207 people as crew. The small vessel hunt saw 134 vessels employ 515 people while over 5,000 people participated in the landsmen hunt. Returns to labour for those participating in five weeks work on large vessels was $3,100 with the sale of seal oil and meat representing 37 percent of their income, and the sale of seal skins representing 63 percent. Average incomes to small vessel sealers and landsmen were $1400 and $280, respectively. In 1978 the prices paid to sealers for good quality pelts increased from those of the previous year.

10. Question: Why is there no alternate employment for the sealers?

Many Atlantic coastal communities have small populations and a single industry, fishing, provides the economic base. The total dependence of these communities on the seasonally-available resources of the sea is reflected in the employment structure of these fishing areas. The major sealing areas along the northern coasts of Newfoundland had an unemployment rate of 18 percent in the first half of 1976. Local unemployment rates in certain sealing villages soared to 90 percent in March and April of that year. These rates of unemployment are typical of areas where there exists a limited opportunity for employment in occupations other than fishing.

It has been suggested by some, unfamiliar with the sealing industry, that alternate employment for sealers might be found in a centralized factory. Full-time employment for a few hundred people in a factory cannot, however, replace seasonal occupation for several thousands of people in rural areas. Others have suggested that fishermen should be paid not to harvest seals, however, this form of social degradation is equally unacceptable. Fishermen are proud, independent men who work under rigorous conditions to support themselves and their families.

11. Question: What does the management of the seal resource cost?

The Canadian Government has no employees who work exclusively on the harp seal resource since activity related to seals is highly seasonal.

It is estimated that the total cost of the management of harp and hooded seals in 1976-77 was about $706,000 which compares with the value added contribution of the sealing industry to Atlantic Canada during this period of $5.5 million. It should be noted that, even in the absence of a seal hunt, there would remain the need for a significant research program on seals.

Included within this expenditure was approximately $227,000 in supporting research, including population assessments of seals and a study on the economics of the sealing industry. The enforcement activities of fishery officers cost approximately $264,000 in 1976-77 of which 55 percent was expended for the contracting of surveillance aircraft. Approximately $31,000 was spent for the coordination of all aspects of management of the seal resource. About $84,000 was spent on publications and correspondence to correct misinformation and erroneous statements about the management of Canadian seals.

In addition, the independent Committee on Seals and Sealing, which provides advice and recommendations to improve the management of the seal resource received $100,000 to support its research and operation.

12. Question: Is the clubbing of seals humane?

There is no doubt that the killing of any animal is visually unpleasant, particularly to most of us who have never seen the animals from which we get food and clothing, slaughtered. However, there is unequivocal evidence from thousands of autopsies conducted by veterinary pathologists that a humane death is produced by the method of clubbing and bleeding out; it is more humane in fact than that occurring in most animal slaughter operations. "Humane" killing is the rapid killing of an animal with an absolute minimum of physical pain

or psychological distress. This is the definition generally accepted by the humane movement. Many other more mechanical and more sophisticated methods have been examined by scientists, who continue to recommend that the current method is the most humane and adaptable to the hunt. This method is employed in the seal harvests conducted by Canada, the U.S.A., the U.S.S.R. and other countries.

Observers from the humane movement and veterinary pathologists have annually visited the Canadian sealing operations to observe killing techniques and to perform autopsies on seals. Their reports are publicly available and indicate that the harvest is indeed conducted in a humane manner.

13. Question: How is the harvest regulated?

The harp and hooded seal harvest in Canadian waters is controlled by comprehensive Seal Protection Regulations made under the Fisheries Act of Canada. These regulations include sections on quotas, humane killing, issuance of licences to take seals or visit the sealing operations, the closed hunting seasons and reserved areas.

Each of Canada's large sealing vessels, which collectively take about half of all seals harvested, carries a minimum of one fishery officer on board. Fishery officers also maintain close surveillance of the coastal seal fisheries to ensure that quotas and other regulations are enforced.

All sealers must obtain licences. An apprentice licence is provided to novice sealers who work under the direction of more experienced men. Canadian fishery officers are empowered to suspend the licence of any sealer and remove him from the ice, if the officer has reason to believe that he has violated the regulations.

Licensed sealers are given lectures, instructions and brochures to explain the sealing regulations, particularly with regard to the proper methods of humane killing.

14. Question: Who are the members of the Committee on Seals and Sealing and what is its mandate?

In 1971, the Government of Canada appointed an independent Committee on Seals and Sealing (COSS) which includes scientists, veterinarians and executive members of Canadian and international humane societies. This Committee has a mandate to examine the economic, sociological, ecological and humanitarian aspects of the seal hunt and to recommend any actions, including changes in regulations, which may be considered necessary.

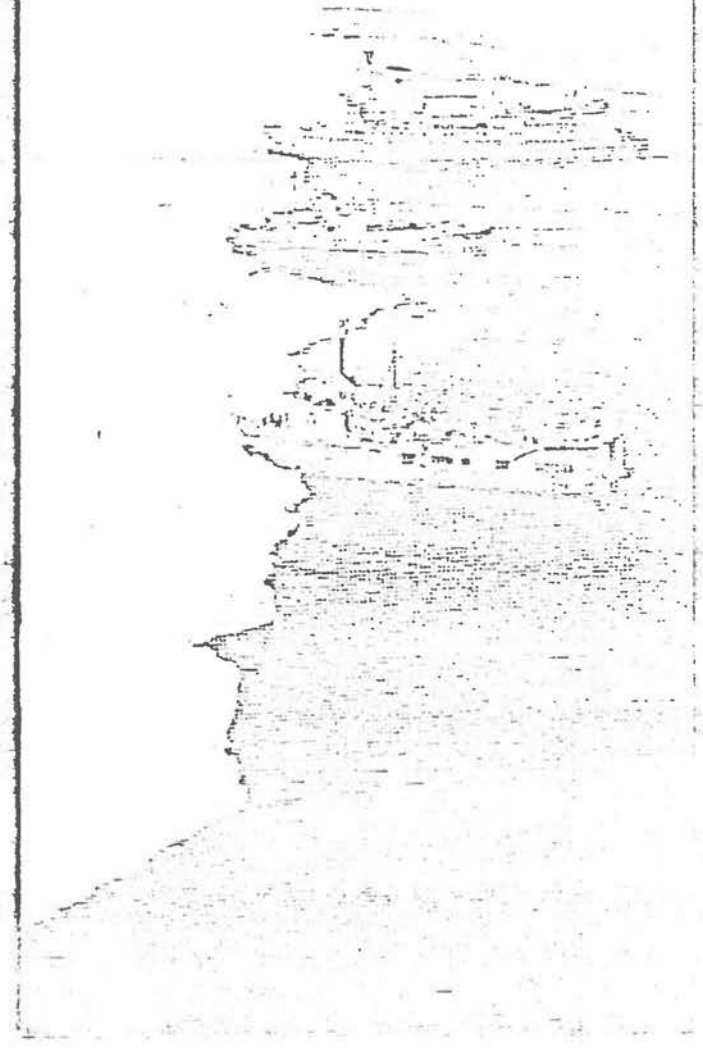
Members of the Committee are: Professor Keith Ronald, Dean of the College of Biological Science, University of Guelph, who is Chairman; Mr. Tom Hughes, Executive Vice-President, Ontario Humane Society, Toronto; Mr. Trevor Scott, Executive Director, International Society for the Protection of Animals, London, England; Dr. H.C. Rowsell, Executive Director, Canadian Council on Animal Care and Professor in the Department of Pathology, University of Ottawa; Mr. Kjell Henriksen, a fishing industry executive and former Canadian ICNAF Commissioner, and Professor H.D. Fisher, Department of Zoology, University of British Columbia. The address is:

Committee on Seals and Sealing
8064 Yonge Street
Thornhill, Ontario
L4J 1W3

Additional information on the seal hunt may be obtained from:

Information Branch
Fisheries and Oceans
Ottawa, Ontario
K1A 0E6

questions et réponses sur la chasse aux phoques



questions et réponses sur la chasse aux phoques

Remise à jour 1980

On apporte, chaque année, des modifications ou des ajustements aux règlements relatifs à la gestion de la chasse aux phoques de l'Atlantique, en tenant compte des données nouvelles accumulées durant l'année, des recommandations scientifiques et des résultats des consultations aux niveaux national et international.

Cet encart met à jour les renseignements fournis dans la brochure intitulée: "La Chasse aux phoques: Questions et réponses".

Question 2

Le 15 mars 1979, la Chambre des communes réaffirmait à l'unanimité le droit des Canadiens à chasser le phoque, sans entrave ou tracasserie, sous le contrôle rigoureux du gouvernement canadien.

Question 3

Nombre de permis de chasse délivrés en 1979:

Terre-Neuve:	10,274
Maritimes:	63
Québec	2,817
TOTAL:	13,154

Nombre de participants à la chasse aux phoques en 1979:

Grands bateaux:	254
Petits bateaux:	487
Chasseurs côtiers: (estimation)	6,602
TOTAL:	7,343

Nombre de bateaux canadiens qui font l'objet d'un permis en 1979:

Grands bateaux — Front	7
Golfe	2
Petits bateaux (de 9 à 20 mètres)	231
TOTAL:	240

Question 4

On a estimé récemment que la population de phoques du Groenland de la mer Blanche comptait près de 800,000 individus d'un an et plus, ce qui donne une population mondiale de plus de 2 millions.

La population de l'Atlantique nord-ouest continue à augmenter lentement dans le cadre du présent plan de gestion. On a estimé qu'elle comptait, en 1979, 1,38 million d'individus d'un an et plus.

Question 5

L'Organisation des pêches de l'Atlantique nord-ouest (OPANO), qui vient de remplacer la Commission internationale des pêches de l'Atlantique nord-ouest (CIPANO) est maintenant l'organisme international responsable de l'examen des données scientifiques sur les populations de phoques. Lors d'une réunion spéciale tenue en novembre 1979, le Conseil scientifique de l'OPANO situait à 352,000 le meilleur estimé des naissances en 1979, chiffre qui est très proche des prévisions faites en 1978.

Les données les plus récentes indiquent qu'au moins 205,000 à 237,000 animaux pourraient être capturés en 1980 sans que cela entraîne une diminution de la population à long terme.

Question 6

Conformément à l'intention déclarée du gouvernement canadien, de permettre une lente augmentation de la population des phoques du Groenland, le total des prises admissibles autorisées pour 1980 sera identique à celui de 1979. De légers rajustements seront faits à l'intérieur des sous-allocations de captures canadiennes réglementées, afin de tenir compte de la hausse des prises non réglementées par les ressortissants du Groenland, prises qui se chiffrent maintenant à près de 10,000.

Puisqu'on prévoit que les autochtones du Nord du Canada captureront 1,800 animaux, le total des prises réglementaires autorisées dans l'Atlantique nord-ouest, en 1980, sera de 168,200 individus dont 20,000 du troupeau du Front sont attribuées à la Norvège.

En affectant des contingents aux divers éléments de l'industrie de la chasse aux phoques dans les trois régions de la côte de l'Atlantique (Terre-Neuve, le Québec et les Maritimes), on s'efforce de donner à chacun d'entre eux un accès équitable à l'exploitation. Conformément à ce système, des plafonds sont fixés pour le nombre de prises auxquels a droit chaque élément, et il en a résulté que les prises réelles ont été au total de 4 à 7 pour cent inférieures aux contingents annuels établis depuis 1976.

Question 7

La fécondité globale de toute population d'animaux dépend beaucoup plus de la proportion d'adultes en âge de procréer que du nombre d'animaux très jeunes ou non adultes qui seront exposés pendant quelques années encore, aux facteurs de mortalité naturelle, avant de pouvoir procréer. Du point de vue de la préservation de l'espèce, il est préférable de capturer un jeune de l'année plutôt qu'un animal plus âgé. La chasse du phoque du Groenland est donc l'une des rares activités où il est possible de tirer parti de la procréation surabondante, caractéristique de plusieurs espèces marines.

Question 8

La fourrure, l'huile et la viande restent les principaux produits de valeur; selon les estimations, ils représentaient au Canada 62 pour cent, 24 pour cent et 14 pour cent respectivement, des revenus dérivés de la chasse aux phoques en 1979. L'importance relative de la viande varie entre cinq pour cent environ pour certains groupes de chasseurs côtiers et 22 pour cent pour les grands bateaux, selon le secteur de la chasse.

Les peaux fournissent chacune en moyenne 18 kilogrammes (40 livres) de graisse, et l'on en tire au total près de 2,025,000 litres (450,000 gallons) d'huile raffinée. Les revenus que les chasseurs perçoivent de la graisse brute sont estimés à plus de $1,000,000 et la valeur marchande de l'huile s'élève à plus de $4,000,000.

Question 9

La contribution de la chasse aux phoques à l'économie est estimée à 9,5 millions de dollars pour 1979, dont 5,3 millions pour la prise et 4,2 millions pour le traitement des produits.

En 1979, neuf grands bateaux ont participé à la chasse avec 254 hommes d'équipage dont les revenus moyens étaient estimés à $4,754. La viande et l'huile représentent 43 pour cent des revenus des chasseurs sur les grands bateaux, en raison du fait que tous les produits de la vente de viande faite par ces chasseurs leur reviennent personnellement. Y ont également pris part, 126 petits bateaux comptant 487 hommes d'équipage, et des chasseurs côtiers dont le nombre est estimé à 6,602. Les revenus moyens se situaient à près de $1,900 pour les exploitants de petits bateaux et à $452 pour les chasseurs côtiers actifs.

Question 13

Le Gouvernement du Canada participe davantage à l'organisation de conférences et de cours éducatifs destinés aux chasseurs de phoques et autres membres du secteur. Ces cours et conférences sont préparés de façon à répondre à certains besoins et intérêts régionaux, avec l'aide de spécialistes et de porte-parole des sociétés de protection des animaux, du secteur du traitement des produits, des associations régionales de chasseurs de phoques, des responsables provinciaux des pêches, ainsi que du personnel des bureaux régionaux et de l'administration centrale du ministre des Pêches et des Océans.

Les sujets étudiés comprennent, entre autres: la sécurité sur la glace; l'équipement approprié et son entretien; l'interprétation des règlements; les méthodes humaines de chasse; les techniques qui assurent des produits de haute qualité; les méthodes appropriées de manutention, d'entreposage et de distribution des produits de la chasse aux phoques. Ce programme vise à assurer que tous les participants comprennent bien et respectent la réglementation canadienne dans ce domaine et à faire acquérir aux membres du secteur les connaissances et le savoir-faire qui leur permettront d'utiliser de manière appropriée les animaux capturés de façon à en tirer des produits de la plus haute qualité et de la plus grande valeur possible.

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1. Question: Pourquoi la chasse aux phoques?

Pour comprendre la raison d'une chasse aux phoques au Canada, il faut savoir qui la pratique et à quel endroit.

Depuis le XVe siècle, le développement de la côte canadienne de l'Atlantique repose sur l'exploitation des ressources halieutiques marines. Les premiers colons fondèrent des communautés dans des baies et des anses qui, semées le long du littoral accidenté, permettaient un mouillage sécuritaire et un accès facile aux ressources. La plupart des espèces se prêtaient seulement à une exploitation saisonnière: le homard au printemps, le saumon à l'été, la morue et les autres poissons de fond à la fin de l'été et à l'automne. Les vastes banquises qui empêchaient les communautés du nord de pêcher aux filets en hiver et au début du printemps, fournissaient toutefois une autre ressource, le phoque. La capture saisonnière de ces espèces marines, ajoutée aux récoltes arrachées au terrain rocailleux, à la nourriture fournie par les nombreux animaux sauvages et à l'exploitation forestière, a donné une économie basée sur les ressources et une culture rurale qui existe toujours.

Comme les revenus tirés de l'exploitation de chaque ressource naturelle — poissons, phoques et autres espèces — sont essentiels à la subsistance des pêcheurs des côtes canadiennes, la préservation des villages de pêche dans lesquels ils vivent dépend de l'utilisation avisée de toutes les ressources disponibles.

2. Question: Quelle est la politique du Gouvernement canadien sur la chasse aux phoques?

La politique du Gouvernement canadien sur la chasse aux phoques correspond à sa politique en matière de gestion des autres ressources halieutiques et fauniques. Le Gouvernement considère le phoque comme une ressource naturelle à exploiter au même titre que de nombreuses autres espèces.

L'exploitation doit respecter de solides principes de conservation, tenir compte du rôle des espèces dans l'écosystème et reposer sur des techniques humaines de récolte. Ce qui importe finalement, c'est d'assurer à ceux qui dépendent directement de ces ressources pour vivre, comme à tous les habitants du pays, un maximum d'avantages socio-économiques.

En mars 1977, la Chambre des communes a passé *à l'unanimité* une résolution réitérant le droit des Canadiens de chasser le phoque.

3. Question: Qui pratique la chasse aux phoques et aux otaries*?

La Norvège, l'Afrique du Sud, l'Union soviétique et les États-Unis d'Amérique exploitent d'une façon intensive et bien dirigée un certain nombre d'espèces de phoques et d'otaries. Une chasse moins intensive de diverses espèces de phoques se fait par les autochtones de tout l'Arctique. En plusieurs endroits du monde, les pêcheurs chassent ces animaux lorsqu'ils détruisent leurs filets ou mangent leurs prises.

Au Canada, la chasse aux phoques est pratiquée non pas par les résidants des centres urbains mais par ceux des petites collectivités éparpillées sur des milliers de milles d'un littoral échancré, le long des côtes de Terre-Neuve et du Labrador, des îles de la Madeleine, de la Côte nord du Québec et, parfois, par les habitants de l'Ile-du-Prince-Édouard, du Nouveau-Brunswick, et du Cap-Breton en Nouvelle-Écosse.

En 1978, plus de 12 000 pêcheurs avaient un permis de chasse aux phoques; toutefois, la moitié seulement a pu s'en prévaloir car, en certains endroits, les troupeaux ne se sont pas approchés des côtes.

* Les phoques et les otaries sont des carnivores marins qui appartiennent au groupe des "pinnipèdes". En anglais, on désigne les espèces appartenant à ces deux familles sous le terme "seal".

Les gros bateaux tirent leurs principales prises parmi les troupeaux du "Front", qui occupent les banquises au nord-est de Terre-Neuve, et parmi les populations du "Golfe", près des îles de la Madeleine. Huit grands bateaux phoquiers canadiens ont participé à la chasse aux phoques de 1978. Cette flottille comptait quelque 200 chasseurs choisis parmi 2 000 candidats qui auraient voulu y participer. On dénombrait également plus de 500 détenteurs de permis oeuvrant à bord de petits bateaux, et quelque 6 000 chasseurs côtiers qui se sont rendus aux glaces à pied ou dans de petites embarcations.

D'après une étude réalisée en 1976, la majorité des chasseurs sont âgés de 25 à 44 ans et ont vécu en moyenne 34 ans dans la même communauté. Plus de 80 pour cent de ces hommes sont mariés et ont en moyenne 3,5 dépendants.

4. Question: Le phoque du Groenland est-il menacé d'extinction?

Absolument pas. De fait, le phoque du Groenland constituerait la deuxième espèce de phoque en importance*, comptant près de deux millions d'animaux. Les plus grands troupeaux de cette espèce sont ceux de la région du nord-ouest de l'Atlantique qui totalisent de 1,3 à 1,4 million d'individus passant l'hiver sur la côte est du Canada. Les deux autres troupeaux de phoques du Groenland se retrouvent dans la mer Blanche ainsi qu'au nord et à l'ouest de la Norvège.

5. Question: Comment dénombrez-vous la population de phoques du Groenland?

Depuis 1950, l'échantillonnage biologique exhaustif dont fait annuellement l'objet la population des phoques du Groenland de la région de l'Atlantique nord-ouest a fourni des données détaillées sur la croissance de ces animaux, la naissance des petits et la mortalité naturelle. On cumule des données sur les prises et l'effort de chasse. En tenant compte de ces renseignements, les scientifiques ont utilisé diverses méthodes pour évaluer l'impor-

*L'espèce la plus abondante est le phoque crabier de l'Antarctique, qui reste inexploité.

tance de la population de phoques du Groenland: étude des générations, analyse des cohortes, de l'indice de survie, du rapport prises-effort, analyses des résultats du marquage-recapture et modèles mathématiques encore plus complexes. Ces derniers temps, le nombre de nouveau-nés estimé dans la région du Front par la photographie aérienne à l'ultra-violet correspond, à 3 pour cent près, à celui que produit l'analyse du rapport des prises en regard de l'effort de chasse.

Chaque année, des spécialistes des phoques de plusieurs nations se réunissent dans le cadre du Comité permanent de la recherche et de la statistique (Organisation des pêches de l'Atlantique Nord-ouest), afin d'étudier les dernières données sur les populations de phoque. En novembre 1978, ces experts-conseils ont déterminé qu'entre 345 000 et 358 000 petits naîtraient en 1979 (dans les régions du Front et du Golfe) et que, si l'on prenait entre 214 000 et 240 000 animaux, la population maintiendrait à long terme son niveau actuel.

6. Question: Combien peut-on prendre de phoques en 1979?

Bien que les scientifiques aient déterminé qu'il serait possible de prendre un plus grand nombre d'animaux tout en maintenant la population à son niveau actuel, le total permis de prises réglementées sera, en 1979, de 170 000 phoques du Groenland dant tout l'Atlantique nord-ouest, exception faite d'un maximum prévu de 10 000 prises par les autochtones du Canada septentrional et du Groenland. Ces restrictions visent à laisser augmenter lentement la population de phoques du Groenland. Les auteurs de cette politique et des contingents annuels sont le Canada et le Marché commun représentant le Danemark (Groenland), qui exploite la ressource dans son aire estivale. L'augmentation des phoques du Groenland est liée à un accroissement des espèces jadis surexploitées dont ils sont les prédateurs, espèces d'ailleurs utilisées autant par les phoques que par l'homme.

Comme par les années passées, la prise réelle sera probablement un peu moindre que le contingent total, car le mauvais temps et les glaces nuisent souvent à la chasse.

7. Question: Pourquoi tuer seulement les petits?

En fait, la plupart des prises ne sont pas des blanchons mais des phoques un peu plus âgés, qui sont sevrés, et des animaux d'un an ou plus. Les gros bateaux qui chassent au large prennent surtout des blanchons puisque, ces derniers se concentrant à ces endroits, ils sont plus faciles à capturer; leur fourrure, leur graisse et leur viande ont beaucoup de valeur.

Du point de vue de la préservation de l'espèce, il est préférable de prendre de jeunes animaux immatures plutôt que ceux plus agés. Ainsi, le Règlement de protection des phoques interdit la prise de femelles adultes du phoque du Groenland dans les aires de mise bas et stipule que seuls 5 pour cent des phoques capturés par les gros bateaux peuvent avoir plus d'un an.

8. Question: Quels produits tire-t-on des phoques?

Les peaux de phoque reçoivent un traitement préliminaire au Canada et sont ensuite acheminées vers l'Europe où on les transforme en une variété d'objets de consommation durables et attrayants comme des manteaux, des bottes, des sacs à main et des ceintures. Les retailles servent à faire des articles d'artisanat et de petits objets d'art.

Les manteaux de fourrure de mammifères marins les plus chers sur le marché proviennent de peaux d'otaries à fourrure des États-Unis, de l'Union soviétique et de l'Afrique du Sud.

Le phoque de l'est du Canada ne sert pas exclusivement à la production de fourrures. On le chasse aussi pour l'alimentation car sa chair, ses nageoires et sa graisse sont comestibles. La chair d'environ la moitié des phoques abattus sert à l'alimentation humaine. En 1977, plus de la moitié des revenus des chasseurs oeuvrant à bord de gros bateaux a découlé de la vente de produits destinés à des fins alimentaires.

9. Question: Quelle est la valeur économique de la chasse aux phoques?

Une étude du Gouvernement canadien a révélé que la chasse aux phoques avait contribué pour $5,5 millions à l'économie de la région atlantique en 1976. Selon les estimations actuelles, la valeur ajoutée à l'économie en 1978 correspondrait à $6,5 millions, ce qui inclut le secteur de la prise, qui représente $3,4 millions et le traitement des produits, qui procure $3,1 millions.

On a souligné que la chasse aux phoques engendre seulement un faible pourcentage du revenu total des provinces où elle a lieu. Or, la faible importance économique d'une industrie sur le plan national peut en cacher l'importance au niveau régional. Les pêches de l'Atlantique, par exemple, représentent environ 0,5 pour cent du produit national brut, mais cette industrie fournit des emplois et des revenus à plus de 53 000 pêcheurs et ouvriers d'usines de traitement et assure l'existence de centaines de petites agglomérations côtières. En tant qu'élément de l'industrie halieutique, la chasse aux phoques fournit des emplois saisonniers à quelque 6 000 personnes dont certaines en tirent le tiers de leurs revenus annuels.

En 1978, les recettes des grands phoquiers ont totalisé environ $1,3 million, tandis que les petits bateaux ont gagné $735 000 et les chasseurs côtiers, $1,4 million. Huit grands bateaux ont participé à la chasse avec 207 membres d'équipage. Les 134 petits bateaux ont employé 515 personnes et l'on a dénombré plus de 5 000 chasseurs côtiers. Les bénéfices de ceux qui ont accompli cinq semaines de travail sur les gros bateaux ont été de $3 100 en moyenne. La vente de l'huile et de la viande représente 37 pour cent de leurs revenus et celle des peaux, 63 pour cent. Les revenus moyens des chasseurs à bord des petits bateaux et ceux des chasseurs côtiers se sont élevés à $1 400 et à $280 respectivement. En 1978, les prix payés aux chasseurs pour des peaux de bonne qualité ont augmenté par rapport à ceux de l'année précédente.

10. Question: Pourquoi n'y a-t-il pas d'autres possibilités d'emploi pour les chasseurs?

De nombreuses agglomérations côtières de l'Atlantique ont une faible population et reposent, au niveau économique, sur une industrie unique: la pêche. La dépendance totale de ces collectivités à l'égard des ressources saisonnières de la mer se reflète dans la structure d'emploi des régions halieutiques. Les principales zones de chasse aux phoques le long des côtes septentrionales de Terre-Neuve accusaient un taux de chômage de 18 pour cent au cours du premier semestre de 1976. Le taux de chômage local dans certains villages de chasse a atteint 90 pour cent en mars et en avril de cette année-là. Cette situation caractérise les régions où les possibilités d'emploi ailleurs que dans l'industrie de la pêche sont limitées.

Certaines personnes qui connaissent mal l'industrie de la chasse aux phoques ont suggéré de créer des emplois de rechange dans une usine centralisée. Or, on ne peut remplacer l'embauche saisonnière de plusieurs milliers d'habitants ruraux par l'emploi à temps plein, dans une usine, de quelques centaines d'entre eux. D'autres ont proposé de payer les pêcheurs pour qu'ils ne chassent pas le phoque, ce qui constitue une forme de dégradation sociale également inacceptable. Les pêcheurs sont des gens fiers et indépendants qui bravent des conditions rigoureuses pour subvenir aux besoins de leur famille.

11. Question: Combien coûte la gestion de cette ressource?

Il n'y a pas de fonctionnaire du Gouvernement du Canada qui ne travaille qu'à la gestion de la chasse aux phoques du Groenland puisqu'il s'agit là d'une activité purement saisonnière.

En 1976-1977, le coût total estimatif de la gestion des phoques du Groenland et des phoques à capuchon a atteint environ $706 000, alors que l'industrie a apporté en valeur ajoutée $5,5 millions à la région canadienne de l'Atlantique durant cette même période. Précisons que, même sans chasse, il faudrait poursuivre une recherche approfondie sur les phoques.

Les dépenses comprennent quelque $227 000 consacrés à la recherche connexe, dont des dénombrements de la population et une étude de l'économie de l'industrie. L'application des règlements par les agents des pêches a coûté à peu près $264 000 en 1976-77, dont 55 pour cent ont servi à noliser les aéronefs de surveillance. Une somme d'environ $31 000 a été consacrée à la coordination de tous les aspects gestionnels de la ressource. Les publications et les pièces de correspondance qui ont servi à réfuter les erreurs ou les inexactitudes prononcées à l'endroit de la gestion des phoques du Canada ont exigé environ $84 000.

Par ailleurs, le Comité d'étude des phoques et de leur chasse, groupe indépendant qui fournit conseils et recommandations destinés à améliorer la gestion de la ressource, a reçu $100 000 pour poursuivre sa recherche et son fonctionnement.

12. Question: Est-ce que l'abattage au gourdin est une méthode "humaine" de chasse?

Il n'est jamais plaisant de voir tuer un animal, surtout pour la plupart d'entre nous qui n'avons jamais assisté à l'abattage des animaux dont nous nous nourrissons et habillons. Pourtant, il est clair, suite aux milliers d'autopsies effectuées par les experts vétérinaires pathologistes, que les phoques assommés au gourdin et saignés par la suite, subissent une mort instantanée et humaine. Tuer un animal de façon "humaine", c'est l'abattre rapidement avec le minimum absolu de stress physique et psychologique. Il s'agit là de la définition généralement acceptée par les groupes de protection. Les scientifiques ont examiné beaucoup d'autres méthodes plus mécaniques et plus complexes, mais soutiennent que la technique actuelle reste la plus humaine et la mieux adaptée à sa fin. C'est celle qu'on emploie au Canada, aux États-Unis, en U.R.S.S. et dans d'autres pays, pour l'abattage des phoques et des otaries.

Chaque année, des représentants de groupes de protection et des vétérinaires se rendent sur les lieux pour observer la chasse canadienne et pratiquer des autopsies. Leurs rapports sont communiqués au public et témoignent du caractère "humain" de la chasse.

13. Question: Comment se fait la réglementation de la chasse?

La chasse aux phoques du Groenland et à capuchon dans les eaux canadiennes est assujettie au Règlement de protection des phoques, mesures exhaustives qui relèvent de la Loi sur les pêcheries du Canada. Le règlement comprend des articles sur les contingents, sur les méthodes "humaines" d'abattage, sur l'émission de permis de capture ou de visite des lieux de chasse, sur les saisons de fermeture et sur les zones réservées.

Chacun des grands phoquiers canadiens, qui prennent ensemble environ la moitié de tous les phoques capturés, compte à bord au moins un agent des pêches. En outre, des agents surveillent étroitement les lieux de chasse côtiers pour voir à l'application des contingents et autres règlements.

Tous les chasseurs de phoques doivent détenir un permis approprié. Les novices qui travaillent sous la direction d'hommes plus expérimentés reçoivent un permis d'aide-chasseur. Les agents des pêches ont le droit de suspendre le permis d'un chasseur et de lui faire quitter l'aire de chasse s'ils ont des raisons de croire qu'il a enfreint le règlement.

Les titulaires de permis reçoivent des exposés, des directives et des publications expliquant le règlement, surtout en ce qui a trait aux méthodes "humaines" de chasse.

14. Question: Quel est le mandat du Comité d'étude des phoques et de leur chasse et qui en fait partie?

Constitué par le Gouvernement fédéral, en 1971, comme organisme indépendant, le Comité se compose de scientifiques, de vétérinaires et d'administrateurs de diverses sociétés canadiennes et internationales de protection des animaux. Le C.E.P.C. est chargé d'étudier les aspects économiques, sociologiques, écologiques et humains de la chasse aux phoques et de recommander toute mesure, y compris la modification des règlements, qu'il jugera nécessaire.

Les membres du Comité sont les suivants: le professeur Keith Ronald, doyen du Collège des sciences biologiques de l'Université de Guelph, qui agit comme président; Tom Hughes, vice-président administratif de l'Ontario Humane Society, de Toronto; Trevor Scott, directeur administratif de l'International Society for the Protection of Animals, de Londres (Angleterre); H.C. Rowsell, directeur administratif du Conseil canadien de protection des animaux et professeur de pathologie à l'Université d'Ottawa; Kjell Henriksen, administrateur de l'industrie de la pêche et ancien membre canadien de la CIPANO, et le professeur H.D. Fisher, du département de zoologie, de l'Université de la Colombie-Britannique.

Voici l'adresse du Comité:

Le Comité d'étude des phoques
et de leur chasse
8064, rue Yonge
THORNHILL (Ontario)
L4J 1W3

Pour renseignements supplémentaires:

Direction de l'information
Pêches et Océans
OTTAWA (Ontario)
K1A 0E6

Government of Canada
Fisheries and Oceans

Gouvernement du Canada
Pêches et Océans

SEALING

Preparing Seal Meat

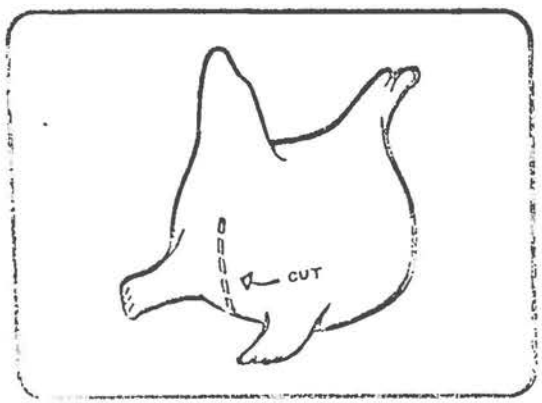
Introduction

Seal meat intended for human consumption must be properly prepared and handled, by both the fishermen and those who distribute it to consumers. The same sanitary precautions must be observed as apply to any other food product. Improper handling affects quality which in turn reduces demand for seal meat, and thus reduces the fisherman's revenue. Moreover, poor handling practices can lead to contamination of the product and as a consequence cause illness.

The present guidelines are intended to help you prepare quality seal meat. As pointed out in the brochure on the handling of seal pelts, **good quality means better financial returns**.

Bleeding

Seals must be bled immediately after being rendered unconscious. Make a cut roughly 35 cm (14") in length down the front of the seal directly between the two fore-flippers, and cut the main blood vessels to the two flippers. When the animal is bled, complete the even cut from the lower jaw to the tail, and open the carcass the whole length of the incision.



Gutting Procedure

Seals should be eviscerated (gutted) immediately after bleeding. In removing the stomach and especially the lower section of the bowels, be very careful not to cut into these. Nicking or cutting the stomach or intestines results in spillage of the contents which will grossly contaminate the meat. Gutting should be completed before sculping.

Removal of Pelt from Carcass (Sculping)

Extreme care must be exercised during sculping; the carcass should not come into contact with any surface other than the fat side of the pelt. The carcass must never come into **direct** contact with the deck of the vessel or any surface in the hold of the vessel.

The Application of Antioxidant to Seal Pelts

Application of antioxidant (anti-yellowing solution) to seal pelts must **never** take place in the same immediate area of the vessel or shore installation in which animals are butchered. The antioxidant must **never** come in contact with any meat intended for a food product.

Triming of Seal Meat

Seal meat intended for human consumption should be properly trimmed by removing all excess fat, the head and neck, and that portion of the fore and hind flippers from which the skin has not been removed in sculping.

Washing

Wherever possible, all seal carcasses intended as food should be thoroughly washed immediately after sculping, to remove all excess blood from the meat. This can easily be done when seals are pelted at sea, since sea water is satisfactory for this purpose.

Under no circumstances should seal meat be washed with water taken directly from any harbour. Bacteriological analyses have proven that in most, if not all, harbours, the water is polluted. Harbour water may be made safe to use for washing by chlorination, following approved treatment methods. Where it is not possible to wash seal meat at sea, and washing will be conducted on shore, the water used **must** come from an approved source. Where suitable water is not available for washing, the carcass should be properly bled drained and placed in a plastic bag without any washing. The bag should then be closed at the mouth and securely tied.

Use of Plastic Bags

All seal carcasses intended for commercial sale should be covered with a protective covering immediately following washing. Due to the excess blood in seal meat, the most satisfactory covering is an approved plastic bag.

The Inspection and Technology Branch, Canada Department of Fisheries and Oceans recommends the use of an approved 0.15 mm (six mil) reinforced polyethylene bag, which is suitable for whole carcasses of all species of seals except adult square-flipper and adult hooded seals. Detailed information on these approved bags can be obtained from the District Offices and field staff of the Inspection and Technology Branch.

Storage of Seal Meat

Once inside the bag, the seal meat should be stored below deck, and covered with ice or snow. On non-decked boats, seals should be bled and gutted immediately after being rendered unconscious, but should not be sculped until arrival in port, if it is intended to save the meat. On arrival, the seal should be sculped, washed if suitable water is available, bagged and stored. Shore installations used for any part of the handling of seal meat must be kept properly cleaned at all times. Clean ice or snow should be spread over all bagged seal meat when stored in shore installations.

Method of Cleaning and Disinfecting

All vessels and storage facilities used in the handling of seal meat must be properly cleaned to remove grease, blood, dirt, etc. District Offices and field staff of the Inspection and Technology Branch can supply a list of approved cleaning and disinfectant compounds, including those effective in cold water.

Further information available from:

Director-General
Newfoundland Region
Department of Fisheries and Oceans
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

Director-General
Maritimes Region
Department of Fisheries and Oceans
P.O. Box 550
Halifax, Nova Scotia
B3J 2S7

Director-General
Quebec Region
Department of Fisheries and Oceans
901 Cap Diamant
P.O. Box 15,500
Quebec City, Quebec
G1K 7Y7

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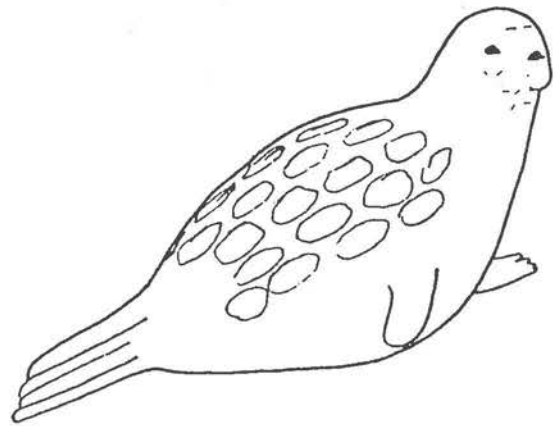
Fisheries and Environment Canada
Pêches et Environnement Canada

SEALING

"Good Quality Pelts Mean Better Financial Returns"



CONSERVATION AND PROTECTION
BRANCH

INTRODUCTION

For centuries sealing has provided, and still continues to provide, an important source of income for the fishermen of the northeast and northwest coast of Newfoundland during the long winter and spring months. With proper management of the herds and the hunt itself, sealing should continue to be a major contributor to the earnings of fishermen at that time of year when other marine species cannot be exploited. However, as in all fisheries, good quality is the criteria for better financial returns. The quality of seal pelts taken by some landsmen in recent years has been questionable and a cause for concern. It is hoped the following tips will assist fishermen in adopting proper procedures to ensure that good quality pelts are produced and better prices obtained.

Killing Methods

Seals should not be shot in the body. This seriously damages the skin and renders the pelt practically worthless to both the buyer and the seller.

The use of shot in hunting seals does irreparable damage to the skins. In addition, the killing of seals by this method, i.e. by the use of **shot,** is prohibited under Section 16 (c) of the Seal Protection Regulations. The Conservation and Protection Branch, federal Fisheries and Environment Department, will be strictly enforcing these regulations during the coming season.

Care should be taken in the use of gaffs or boat hooks in retrieving seals from the water or ice pans. These should be applied to the head only to avoid damage to the main pelt.

Skinning or Pelting

All seals should be properly bled before pelting, and the skinning or pelting should be carried out as soon as possible after killing to avoid so-called "burns", and also to ensure production of a much better quality meat product.

A good, sharp knife should be used, and great care should be taken to avoid making cuts or holes in the skin.

Make an even cut from the lower jaw to the tail.

Flipper holes should be as small as p and even in size. Poor and uneven pelting reduce the value by as much as 90%.

Washing

All pelts should be thoroughly washe cleaned on **both** sides. If any grease or b allowed to dry on the fur it can stain the sk so greatly reduce the value.

If antioxidation fluid is available, tr pelts immediately after washing. Apply to side with a brush.

Storage

The pelts should be stored under co sun and light causes discoloration and per damage.

Store the pelts in a clean area away contact with steel, iron, gasoline, and fuel, dirty substance.

Transportation

Plastic covering is recommended transportation to processing plants.

Avoid hauling pelts over rough gro surfaces. This could do serious damage skin.

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General

It is highly recommended that pelts be sold to plants or buyers as soon as possible to prevent general deterioration through storage.

If these general rules are followed, the quality of the skins should improve considerably with a higher market value resulting. Market conditions for inferior and poor quality skins are presently in a very depressed condition. Some buyers are contemplating compulsory grading of all skins before purchase; so fishermen are urged to take the extra time and care to ensure better quality pelts.

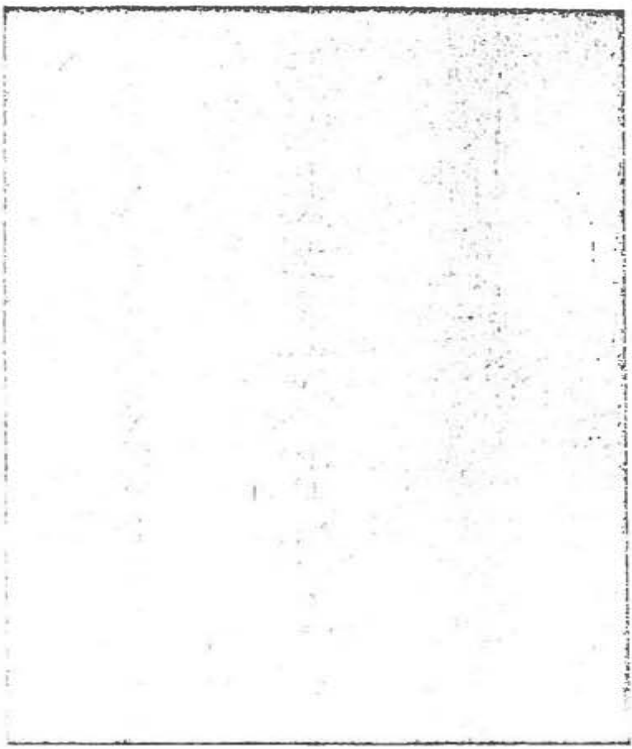
Your co-operation is requested in trying for better quality. It will be to the advantage of all concerned.

FISHERIES AND ENVIRONMENT CANADA

Fisheries and Environment Canada
Pêches et Environnement Canada

Inspection and Technology Branch
Newfoundland Region

Preparing Seal meat



'Harp on Quality'

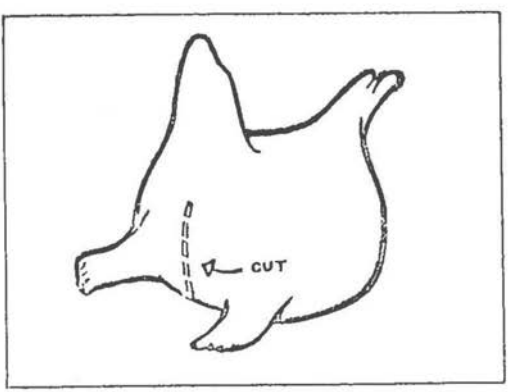
Introduction

For sometime now, both the Federal and Provincial Departments of Fisheries have been concerned about the way in which seal meat, intended for human consumption, is being handled by both the fishermen and those who distribute the meat to consumers. Improper handling reduces the demand for seal meat and thus, may effect the price which fishermen receive. Also, poor handling practices can lead to contamination of the product and as a consequence, cause illness.

The guidelines on the following pages are intended to assist you in the better handling of seal meat. As pointed out in an earlier brochure on the handling of seal pelts, **good quality is the criteria for better financial return.**

Bleeding

Seals should be bled immediately by making an incision approximately 14" in length down the front of the seal directly between the two fore flippers; the carcass should be completely opened the whole length of the incision.



Gutting Procedure

When possible, seals should be eviscerated (gutted) immediately after bleeding. Extreme care should be exercised during the removal of the stomach contents, particularly the lower section of the bowels. Carelessness during any part of this exercise will result in incisions (cuts) being made in the stomach or bowels of the animal, resulting in the meat becoming grossly contaminated with stomach or bowel contents. Gutting should be carried out before removal of the pelt from the carcass.

Removal of Pelt from Carcass

Extreme care should be exercised during the pelting procedure. Whenever possible, care must be taken to prevent the carcass from coming into contact with any surface other than the fat side of the pelt. The carcass should never be permitted to come into **direct** contact with the deck of the vessel, or any surface in the hold of the vessel.

The Application of Antioxidant to Seal Pelts

The application of antioxidant (anti-yellowing solution) to seal pelts must **never** take place in the same immediate area of the vessel or shore installation in which the animal is butchered. The antioxidant must **never** be permitted to come in contact with any meat intended for a food product.

Trimming of Seal Meat

Seal meat intended for commercial sale should be properly trimmed by the removal of all excess fat, the head and the neck, and that portion of all fore and hind flippers from which the skin has not been removed in the pelting process.

Proper Washing of Meat

Where possible, all seal carcasses intended for commercial sale should be thoroughly washed immediately following pelting to remove all excess blood from the meat. This is possible when seals are pelted at sea, since sea water is satisfactory for this purpose.

Under no circumstances should seal meat be washed by using harbour water taken directly from any harbour. Harbour water which has been chlorinated is satisfactory. Bacteriological analyses have proven that in most, if not all harbours, the water is polluted. In cases where it is not possible to wash seal meat at sea and the washing will be conducted on shore, the water used must come from an approved source. Where suitable water is not available for washing, the carcass should be properly bled, drained and placed into a plastic bag without any washing. The bag should then be closed at the mouth and securely tied.

Use of approved Plastic Bags

All seal carcasses intended for commercial sale should be covered with a protective covering immediately following washing. Due to the excess blood in seal meat, the most durable protective covering is an approved plastic bag.

The Inspection and Technology Branch, Fisheries and Environment Canada, is presently investigating an approved six mil bag, five feet in length two feet in width, that would be suitable for all species of whole seal carcasses except the old square-flipper and old hooded species.

Storage of seal meat

Once placed into the bag, the seal meat should be stored below deck. Ice or snow should be spread over the bagged meat. On non-decked boats, the seal should be bled and gutted immediately following the actual kill and the pelt should not be removed from the carcass until arrival in port. On arrival, the seal should be pelted, washed if suitable water is available, bagged and stored. Shore installations used for any part of the handling of seal meat should be kept properly cleaned at all times. Ice or snow should be spread over all bagged seal meat when stored in shore installations.

Method of cleaning and disinfecting vessels and shore installations

All vessels and storage facilities used in the handling of seal meat must be properly cleaned to remove grease, blood, dirt, etc. District Offices and field staff of the Inspection and Technology Branch have a list of approved cleaning compounds, including those effective in cold water. This information is also available from the Inspection and Technology Branch, Fisheries and Marine Service, Fisheries and Environment Canada, P. O. Box 5667, St. John's, Nfld.

The Seal Hunt

[illegible]

No, definitely not. In fact, the harp seal is considered to be the world's second* most abundant species of seal, and by far the largest herds of this species are those which appear each winter off Canada's Atlantic coast. Its population numbers approximately one and a quarter million and is increasing.

HOW DO YOU KNOW HOW MANY SEALS THERE ARE IN THE POPULATION?

Scientists use a variety of methods to assess the size of the seal population. Normal techniques of population assessment for seals, as for other fish and wildlife species, depend upon sampling the catch to determine such factors as mortality rates and maturity and pregnancy rates. One recent technique is through the use of aerial ultraviolet photography. Using this method the white seal pups appear as black spots on a white background, making them easy to count. However, this technique is not foolproof. Based on an incomplete survey conducted in 1975 it was suggested that fewer than 80,000 pups were born at the "Front", i.e. the ice fields northeast of Newfoundland, whereas in actual fact sealers harvested more than 133,000 seal pups in the area that year! In 1977 a more complete survey was conducted and the survey estimate for the main herds at the "Front" was 204,000 - almost exactly the same as estimated by another much less expensive catch and effort analysis. Scientists, including those who conducted the aerial survey, did not recommend that it was necessary to repeat the survey in 1978.

* The most abundant species is the crabeater seal found in the Antarctic

[illegible]

The total permitted kill of harp seals in the entire northwest Atlantic is 180,000 in 1978, approximately six per cent more than in the previous year. About half of these will be taken by large vessels at the "Front", while the remainder are harvested by landsmen and by Canadian and Greenland natives in the north. Scientists have calculated that a catch in excess of 200,000 could be permitted and still maintain the stock at its present level. However, it is the intention of the Canadian Government to allow the stock to continue to grow. Hence, the increase in catch quota has been quite small.

ARE THE SEALS KILLED ONLY TO MAKE FUR COATS OR TRINKETS?

In contrast to the majority of fur-bearing animals harvested in Canada, the United States, the Soviet Union and other major fur producers, the seals taken off eastern Canada are not hunted exclusively for their furs. Meat is taken for human consumption from a large proportion of the seals harvested. Canadian sealers engaged in the large vessel hunt at the "Front" in 1976 gained 45 per cent of their income from carcass meat, flippers and fat. In the 1977 hunt over half of their income related to these items. Edible products as well as the pelts are therefore important in the seal hunt. The pelts of the seals go to make a variety of products, such as fur coats, trim, and boots, and leather products such as handbags and belts. Most of the more valuable sealskin coats on the market are made from pelts taken in the United States' fur seal harvest on the Pribilof Islands and those in the Soviet Union and South Africa.

[illegible]

No. There is evidence from thousands of autopsies conducted by veterinary pathologists that the method of clubbing and bleeding out produces a humane death and is, in fact, more humane than that occurring in most animal slaughter operations. By "humane" we mean that an animal is killed with an absolute minimum of physical pain or psychological distress. Many other methods have been studied by scientists who continue to recommend that the current method is the most humane and adaptable to the hunt. The method continues to be employed by Canada, the U.S.A., U.S.S.R. and other countries. There is no doubt that the appearance of the clubbing of seals is visually upsetting, particularly to most of us who have never seen animals slaughtered. It has been verified that muscular movement observed in seals during this process is due to reflex contraction common in animals shortly after death.

Some people have suggested that the taking of the pup causes distress to the mother seal. However, most harp seals have abandoned their pups by the time they are harvested, and those that have not done so generally desert their pups at the approach of the sealers. Veterinary pathologist Dr. H.C. Rowsell has concluded that the dam-pup relationship in seals is hormonal in nature, and ceases rapidly with either the weaning or loss of the pup.

[illegible] REGULATIONS ON HUMANE KILLING ENFORCED?

All sealers are licensed by the Government of Canada. Each of Canada's large sealing vessels which, collectively take about half of all seals killed, carries a minimum of one fishery officer on board. A fishery officer is empowered to summarily remove any sealer from the ice and to suspend his licence if he has reason to believe that the sealer has violated the regulations on humane killing or any other regulations. Fishery officers also patrol areas where coastal residents take seals. In addition, observers from the humane movement and veterinary pathologists visit the sealing operations to observe killing techniques and to perform autopsies on the seals. Their reports are publicly available and indicate that the harvest of whitecoats is conducted in a humane manner. Lectures and explanatory brochures are given to licensed hunters to explain the sealing regulations, particularly in regard to the proper methods of humane killing.

ARE ONLY SEAL PUPS KILLED?

No. In 1977 approximately 60,000 whitecoat seal pups were harvested out of a total allowable catch of 170,000 seals. Most of the seals taken are, in fact, not whitecoats but slightly older animals which have moulted and changed appearance, or animals which are one year of age or older. The large vessel hunt in offshore areas concentrates primarily on whitecoat seals since these are concentrated and thus easily harvested and have high value both for their fur and for their fat and flippers. In addition, Canada's Seal Protection Regulations stipulate that 95 per cent of the catch by these large vessels must be animals less than one year of age. In terms of conservation, it is preferable to take a young non-breeding animal than an older one. In fact, it is forbidden to kill adult female harp seals during the whitecoat harvest.

[illegible] THE GOVERNMENT'S POLICY ON SEALING?

In March, 1977, the Canadian House of Commons passed a resolution unopposed by *any* Member of Parliament reaffirming the right of Canadians to take seals. The government regards seals as a natural resource to be harvested as are many species of wildlife and fish. Policy regarding sealing is consistent with other aspects of the Canadian government's fisheries policy, that is, the resources are to be harvested in a humane fashion consistent with sound conservation principles and considering the role of the species in the food chain. The ultimate objective is to maximize the social and economic benefits to Canadians who depend upon harvesting Canadian resources, and to the country at large.

WHO HUNTS SEALS?

The majority of active sealers in eastern Canada are located in the northern half of Newfoundland, in southern Labrador, and on the Magdalen Islands of the Gulf of St. Lawrence. There are thousands of such sealers who may earn a few dollars to as much as several thousand dollars from sealing during a time of the year when no other employment is available. A survey conducted in 1976 indicated that the majority of the sealers were between 25 and 44 years of age and had lived an average of 34 years in their present community. Over 80 per cent were married and earned an annual gross income of approximately $7,500 to support an average of 3.5 dependents.

WHAT IS THE ECONOMIC VALUE OF THE SEAL HUNT?

A survey conducted by the Canadian Department of Fisheries indicated that the primary and secondary sectors of the seal hunt contributed $5.5 million to the Atlantic regional economy in 1976. Land based sealers earned an average of $230, those on small boats earned an average of $1,250 and those on large vessels an average of $2,400. The total income to sealers including income from pelts and meat, was approximately $3 million, while the processing sector added a further $2.5 million.

IS THERE NO ALTERNATIVE EMPLOYMENT FOR THE SEALERS?

Sealing is only one part of a seasonal round of activities all based upon harvesting renewable resources, which permits the rural people of such areas as northeastern Newfoundland to continue their resource-based economy and culture. It has been suggested by some people unfamiliar with the sealing industry that alternate employment might be found in a "fake fur" factory. However, a seasonal occupation for several thousands of people in rural areas cannot be replaced by full-time employment for a few hundred people in a factory, even if sealers were interested in such a prospect.

Unemployment on the northeast coast of Newfoundland in the first quarter of 1976 was over 17 per cent, and unemployment rates in many sealing villages reached far higher in late winter and early spring.

[illegible] SEALING, WHO ARE ITS MEMBERS, AND WHAT IS ITS MANDATE?

In 1971, the Government of Canada appointed an independent Committee on Seals and Sealing (COSS) which includes scientists, veterinarians and executive members of Canadian and international humane societies. This Committee has a mandate to examine the economic, sociological, ecological and humanitarian aspects of the seal hunt and to recommend any actions, including changes in regulations, which may be considered necessary.

Members of the Committee are: Chairman, Professor Keith Ronald, Dean of the College of Biological Sciences, University of Guelph; Thomas I. Hughes, Executive Vice-President, International Society for the Protection of Animals, London, England; Dr. H.C. Rowsell, Executive Director, Canadian Council on Animal Care and Professor in the Department of Pathology, University of Ottawa; Kjell Henriksen, a fishing industry executive and former Canadian ICNAF Commissioner and, Professor H.D. Fisher, Department of Zoology, University of British Columbia. The address of the Committee is:

Committee on Seals and Sealing
8064 Yonge Street
Thornhill, Ontario
L4J 1W3

Additional information on the seal hunt is available from:

Information Branch
Fisheries and Marine Service
Fisheries and Environment Canada
Ottawa, Ontario
K1A 0E6

Fisheries and Oceans Pêches et Océans

Information

QUESTIONS AND ANSWERS ON THE SEAL HUNT

1. Question: Why is there a seal hunt?

Understanding why sealing occurs in Canada requires an appreciation of the people and places involved.

The development of Atlantic Canada has, since the 15th century, been based on the harvesting of marine fisheries resources. Early settlers founded communities in bays and coves scattered around the rugged coastline where safe anchorage and ready access to these resources were available. Most species were only available for harvesting seasonally - lobster in spring, salmon in summer, cod and other groundfish in late summer and autumn. The vast ice floes which made it impossible to fish with nets in northern communities during the winter and early spring brought another resource - the seal. From the seasonal harvesting of these marine species, along with crops grown in the rocky landscape, food from abundant wildlife, and winter logging, evolved a resource-based economy and rural culture which still exists.

As the income provided by the harvesting of each natural resource - fish, seals and other species - is crucial to the livelihood of Canadian coastal fishermen, the survival of the rural fishing communities in which they live depends on the wise use of all available resources.

2. Question: What is the Canadian Government's policy on sealing?

The Canadian Government's policy on sealing is consistent with its policies on the management of other fisheries or wildlife resources. The government regards seals as a natural renewable resource available to be harvested in the same manner as other species. Harvesting of seals is permitted only within the limits of sound conservation principles, taking into account their role in the ecosystem and in accordance with humane harvesting techniques. The ultimate objective is to gain maximum social and economic benefits for those who depend directly upon these resources.

The Canadian House of Commons has repeatedly and unanimously affirmed the right of Canadians to hunt seals as a legitimate pursuit under the strict supervision of the Government of Canada, free from harassment and interference.

3. Question: Who hunts seals?

Harvests of a number of species of seals are conducted by Norway, South Africa, Uruguay, the Soviet Union and the United States of America. Less intensive hunting of a variety of seal species is conducted by native peoples throughout the whole Arctic. Fishermen in many areas around the world who have had nets destroyed or catches consumed by seals occasionally hunt these animals.

Sealing in Canada is an industry carried on by residents of small communities scattered over thousands of kilometres of indented coastline along the shores of Newfoundland and Labrador, the Magdalen Islands, the Quebec north shore and the Arctic.

These communities and their residents are almost entirely dependent upon harvesting the varied resources of the sea as they become seasonally available. Seals have always been basic to survival in the coastal Arctic, and remain so, providing the principal source of revenue to the modern Inuit, who now depend upon a variety of goods which must be shipped in. In more southerly fishing communities, the arrival of the seals in late winter provides most fishermen with their only relief from unemployment, and with the chance to earn the money they will need to purchase and repair their gear, and to outfit their boats for the forthcoming fishing season.

4. Question: Is the harp seal an endangered species?

Definitely not. In fact, the harp seal is considered to be the world's third most abundant species of seal*, numbering well in excess of 3,000,000 animals. By far the largest population of this species is that of the northwest Atlantic. Its herds appear each winter off Canada's east coast and in the summer in Canada's eastern Arctic, and on the coasts of Greenland. The other two harp seal populations occur in the White Sea and to the north and west of Norway.

The northwest Atlantic population continues to increase under the current management scheme. The best current estimate of this population is about two million animals aged one year and over.

With the White Sea harp seal population recently estimated at approximately 1,000,000 animals aged one year or more, and the Jan Mayen population in excess of 200,000, the world population of harp seals is now close to three and one quarter million animals.

5. Question: How is size of the harp seal population determined?

Since the 1950s, extensive annual biological sampling of the northwest Atlantic harp seal population has provided detailed information on the growth of animals, the birth of young, and natural mortality. Records of the numbers of animals harvested, and extent of hunting effort have been maintained. Incorporating this information, scientists have used a variety of methods to assess the size of the harp seal population, such as cohort, survival index, catch and effort, tag/recapture analyses, involving complex mathematical modelling. Aerial photography has been

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* The world population of the unharvested Antarctic crabeater seal is estimated to be in excess of 15 million and the ringed seal is estimated to be between six and seven million animals.

used since the 1950's as a means to census seals in whelping patches. The technique was refined in the 1970's through the use of ultra-violet photography, in which whitecoat pups show up as black spots against the white background of ice and snow. Each technique of population assessment has its inherent strengths, weaknesses and biases.

The Northwest Atlantic Fisheries Organization (NAFO), provides the forum for international scientific review of data on seal populations. At its November 1981 meeting, the Scientific Council of NAFO reviewed evidence of past years combined with new data from mark-recapture experiments acquired in 1981, and concluded that the production of pups in 1978, 1979 and 1980 had in fact been substantially higher than indicated in the best estimates of previous years. It was estimated that pup production in 1978 and 1979 was between 443,000 and 495,000, and 440,000 and 512,000 respectively. Projected pup production in 1981 was close to 500,000, and slightly in excess of this for 1982 and 1983.

These data indicated that 239,000 to 285,000 animals could be taken in 1982 without reducing the size of the population aged one year or more.

An exhaustive review of harp seal population studies, carried out in 1982 by the International Council for the Exploration of the Sea (ICES) has confirmed evidence of increase in population size from the late 1960's to the late 1970's. The present population level is now approximately two million animals.

6. Question: How many seals may be harvested in 1983?

In view of the evidence of the increasing abundance of the harp seal population, the total allowable catch in 1982 in the area within Canadian jurisdiction was increased slightly to 186,000 animals. Of this amount, 11,000 was set aside for the catch in the Canadian Arctic and Labrador. This brought the allowance more closely in line with actual catches by this sector, which have been increasing in recent years, reflecting increased availability of seals. A total of 151,000 was allocated to the regulated components of the Canadian seal hunt, while the allocation to Norwegian sealing vessels on the Front was 24,000. The Total Allowable Catch (TAC) and allocations for 1983 remain unchanged.

Sub-allocations to the various components of the sealing industry within the Atlantic region attempt to provide each component with fair access to the harvest. The allocation system establishes ceilings on allowable catches by each component, and has resulted in actual catches which in total have been slightly below the annual quotas established since 1977, when the previously unregulated landsmen were placed under quotas.

As in most past years, the actual catch is likely to be slightly smaller than the total quota, because ice and harsh weather conditions and possibly other factors are likely to interfere with sealing in some areas.

7. Question: Are only seal pups killed?

In fact, animals of all ages are taken. However, most of the seals in the catch have traditionally been young animals, and management of the resource has been predicated upon there being no more than about 20% animals aged one year or more in the total catch by all components of the hunt. Large vessels in offshore areas have traditionally taken principally whitecoat seals since these are concentrated, and hence more easily harvested in a humane and closely-regulated fashion.

In any population, adults of breeding age exert far more influence on the overall productivity of the population than do the very young or sub-adults which have yet to live through years of natural mortality before achieving breeding potential. From the point of view of conservation of the species it is thus preferable to harvest younger rather than older animals. The harp seal fishery is one of the few fisheries in which it has been possible to exploit the overabundance of offspring typical of many marine species. Canada's Seal Protection Regulations prohibit the killing of adult harp seals in whelping* areas, and stipulate that no more than six per cent of the catch by large vessels can be animals aged one year or older, moreover, that these can not be taken in whelping or breeding areas.

8. Question: For what are seals used?

Fur, oil and meat remain the principal products of value; these are estimated to have represented 76 per cent, 10 per cent and 14 per cent, respectively, of the income derived from Canadian sealing in 1980.

The pelts of seals receive primary processing in Canada and are then exported to be made into a variety of durable and attractive clothing such as coats, jackets, boots, shoes, handbags and belts. Scraps are used in producing handicraft items and curios.

Seals taken off eastern Canada are not hunted exclusively for their fur. Edible portions such as carcass meat, flippers and fat are important products of Canadian sealing. Meat for human food is taken from about half of the seals harvested. In 1977, more than half the large vessel sealers' income was derived from the sale of edible products. The relative portion of income derived from the sale of edible products varies depending on the value of the pelts.

In some sectors of the landsmen sealing operations, such as on the Quebec North Shore, virtually all the meat is saved for local consumption throughout the year and seals are locally one of the most important food items.

* Whelping is the act of giving birth.

9. Question: What is the economic value of the seal hunt?

It is estimated that the primary sector of the sealing industry contributed $4.6 million in gross revenues directly to the Atlantic regional economy in 1982. Current estimates (based on economic multipliers developed following an extensive survey of the sealing industry in 1976) establish the value added to the Atlantic economy in 1982 at about $10 million, down from some $12 million in 1981. This includes a contribution of $4.6 million by the primary or harvesting sector, and $2.4 million by the secondary, or processing sector. Value added to the Atlantic economy by the sealing industry in 1980 and 1981 was $10.7 million and $12.8 million respectively. When the value of the Inuit hunt is included, the total economic impact for 1982 rises to $11 to $12 million.

The sealing industry contributes only a small percentage of the total income of the provinces where hunting occurs. However, the relatively small economic significance of one economic component nationally can mask its importance in regional areas. For example, the total fishing industry in Atlantic Canada provides less than one per cent of the Canadian gross national product (GNP). Yet this industry generates employment and income for an estimated 89,000 fishermen and fish processing plant workers and is the mainstay of hundreds of coastal communities. As a component of the fishing industry, sealing provides seasonal employment for 5,000 to 6,000 of these people, and for some, generates as much as one third of their annual income. The significance of sealing and of the cash income it brings to the fisherman and native hunter can only be understood in the context of their lifestyle and of the harsh environment in which they live.

In 1982, eight large Canadian vessels participated in the hunt, employing 204 crew members, with average incomes estimated at more than $5,000 for less than four weeks work. Because profits from the sale of meat taken by vessels go to the sealers, about 25 per cent of sealers' income resulted from the sale of meat. Small vessel participation involved about 700 men on over 160 boats, and the active landsmen component was estimated at 2,000. Average income from the seal hunt was about $1,450 for small boat operators and about $400 for active landsmen. Lower inshore landings in 1982 combined with a 10% reduction in prices paid for pelts resulted in a decline in earnings for small vessel sealers and landsmen.

10. Question: Is there no alternate employment for the sealers?

Many Atlantic coastal communities have small populations and a single industry - fishing - which provides the economic base. The total dependence of these communities on the seasonally-available resources of the sea is reflected in the employment structure of these fishing areas. Local unemployment rates in certain sealing villages soar to 90 per cent or more in March and April. These rates of unemployment are typical of areas where there exists a limited opportunity for employment in occupations other than fishing.

It has been suggested by some, unfamiliar with the sealing industry, that alternate employment for sealers might be found in a centralized factory. Full-time employment for a few hundred people in a factory cannot, however, replace seasonal occupation for several thousands of people in small rural communities scattered over thousands of kilometers of Canada's rugged Atlantic coast. There have also been suggestions that fishermen should be paid not to harvest seals. However, such a form of welfare is equally unacceptable since there is no conservation basis to stop the harvest. Fishermen are proud, independent people who work under rigorous conditions to support themselves and their families.

11. Question: Is the clubbing of seals humane?

The killing of any animal is visually unpleasant, particularly to those who have never seen the slaughter of animals from which we get food and clothing. However, there is unequivocal evidence from thousands of autopsies conducted by veterinary pathologists that a humane death is produced by the method of clubbing and bleeding out. In fact, it is more humane than most animal slaughter operations since it involves none of the fear, panic and injury which is inevitable in the herding and transportation of animals destined to be slaughtered in a central abattoir. "Humane" killing is the rapid killing of an animal with an absolute minimum of physical pain or psychological distress. Many other methods have been examined, but scientists reiterate that the current method is the most humane and best adapted to the hunt. This method is employed in seal harvests conducted by Canada, the U.S.A., the U.S.S.R. and other countries.

Observers from humane organizations and veterinary pathologists have annually visited the Canadian sealing operations to observe killing techniques and to perform autopsies on seals. The reports of many of these are publicly available and indicate that the whitecoat harvest, which has attracted the most publicity, is conducted in a humane manner.

Recognizing the unaesthetic visual impact of the club or hakapik in sealing, the Canadian Government supports research on alternate methods for killing young seals. One of the most promising of these is a specially-designed handgun which would be safe for use on the ice. Preliminary trials during 1979 and 1980 have shown this technique to be acceptable from a humane point of view, and that it may have advantages over stunning, especially from the visual aspect. Extensive field trials with a specially-commissioned prototype firearm were scheduled for the 1982 hunt. These were cancelled after the first day when it became evident after a few trials that the pistol and special ammunition provided with it, did not uniformly achieve the level of instantaneous brain death set out as a pre-requisite. The design of the pistol, and its ammunition have since been altered by the manufacturer and it is intended to test it fully in the field during 1983. In order to be acceptable, the firearm must meet or exceed the level of efficiency and humaneness attained by current approved stunning instruments.

12. Question: How is the harvest regulated?

The harp and hooded seal harvest in Canadian waters is controlled by comprehensive Seal Protection Regulations made under the Fisheries Act of Canada. These regulations deal with quotas, humane and conservation aspects of harvesting, issuance of licences to take seals or visit the sealing operations, hunting seasons and reserved areas.

Each of Canada's large sealing vessels, which collectively take about half of all seals harvested in the Northwest Atlantic commercial catch, carries at least one fishery officer on board. Fishery officers also maintain close surveillance of the coastal seal fisheries to ensure that quotas are respected and regulations enforced.

All sealers must obtain licences from the Government of Canada. In 1982, licences were issued only to individuals who held valid sealing licences during two of the past five years. This decision was taken in order to limit participation in the seal hunt to experienced, responsible sealers. The same limitation will prevail in 1983.

Canadian fishery officers are empowered to suspend the licence of any sealer and remove him from the ice, if the officer has reason to believe that he has violated a regulation.

The Government of Canada has become increasingly involved in organizing and participating in lectures and courses of instruction for sealers and others involved in sealing. Topics cover: safety on the ice; proper equipment and its care; interpretation of regulations; humane sealing procedures; techniques for the production of high quality products; and proper handling, storage and disposal of products of the seal hunt. This program is designed to ensure that Canada's regulations regarding sealing are thoroughly understood and observed by all participants, and to provide sealers with the knowledge and expertise necessary to ensure proper treatment of the animals and the highest quality and value possible for their products.

13. Question: What is the Committee on Seals and Sealing and what is its mandate?

The Government of Canada appointed an independent Committee on Seals and Sealing (COSS) in 1971. It includes scientists, veterinarians, executive members of Canadian and international humane societies, and representatives of the Canadian sealing industry.

This Committee has a mandate to examine the economic, sociological, ecological and humane aspects of the seal hunt and to recommend to the Minister of Fisheries and Oceans any actions, including changes in regulations, which may be considered necessary.

INFORMATION leaflets are issued by the Department of Fisheries and Oceans to describe and explain departmental policies, programs and activities.

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SEALING

Instructions for the Humane Killing of Seals

Introduction

Sealing as a legitimate industry must be conducted in a professional manner as are our other fisheries. While the majority of our fishermen are well versed in proper killing methods, the following instructions are provided to ensure that seals are killed in the most humane and efficient manner possible.

Killing Methods

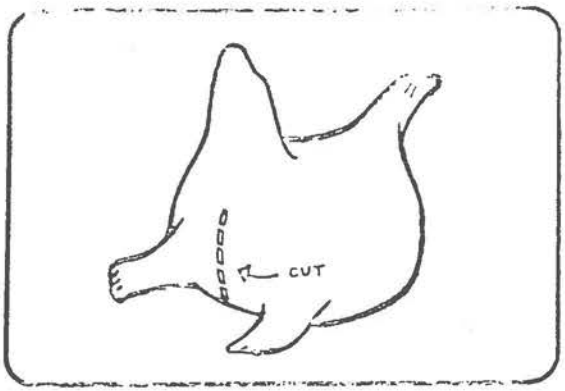
The seal's brain, located in its skull, is responsible for the sensation of pain. Therefore, this pain terminal should be destroyed as quickly as possible. Using the regulation club or hakapik, this can be done by striking the top of the animal's head three times or until the skull is crushed; using the regulation fire-arm, a bullet through the brain will also render the animal immediately unconscious so that it cannot feel any pain. In either case, the aim is to produce instantaneous unconsciousness.

Test for Unconsciousness

Never, ever attempt to skin a seal until you are sure it is irreversibly unconscious. This can and must be done by the simple procedure of touching the animal's eye. If the seal blinks, some reflexes remain and it must be struck again and the skull crushed in order to ensure brain death.

Bleeding

You must make sure that the blinking reflex has disappeared and the eye is glazed and staring, before attempting to skin a seal. As soon as you are sure the blinking reflex is gone, turn the seal over and bleed it by cutting the main blood vessels to the front flippers. When the animal is bled, complete the even cut from the lower jaw to the tail, and commence sculping.



"Swimming" Reflex

Some seals, even after the blinking response is gone, may move with a "swimming" motion. This is a spinal reflex action which is not produced by the brain and will quickly stop. If such movements occur, immediately recheck the blinking response of the eye. If it is gone, wait for the "swimming" movement to stop before proceeding with the sculping.

Humane Slaughter

Remember, sealing is similar to the slaughter house operation for our meat producing animals, and the production of rapid unconsciousness is the objective of humane slaughter procedures in both cases. Make sure the blinking response in the eye is gone then proceed to bleed and then skin the animal. You will produce a quality pelt which will give you the best price and you will ensure your critics — and yourself — that the most humane death has been produced. Remember, the most important factor in humane slaughter is the man doing the job. A crushed skull is the proof that the job was done correctly.

Further information available from:

Director-General
Newfoundland Region
Department of Fisheries and Oceans
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

Director-General
Maritimes Region
Department of Fisheries and Oceans
P.O. Box 550
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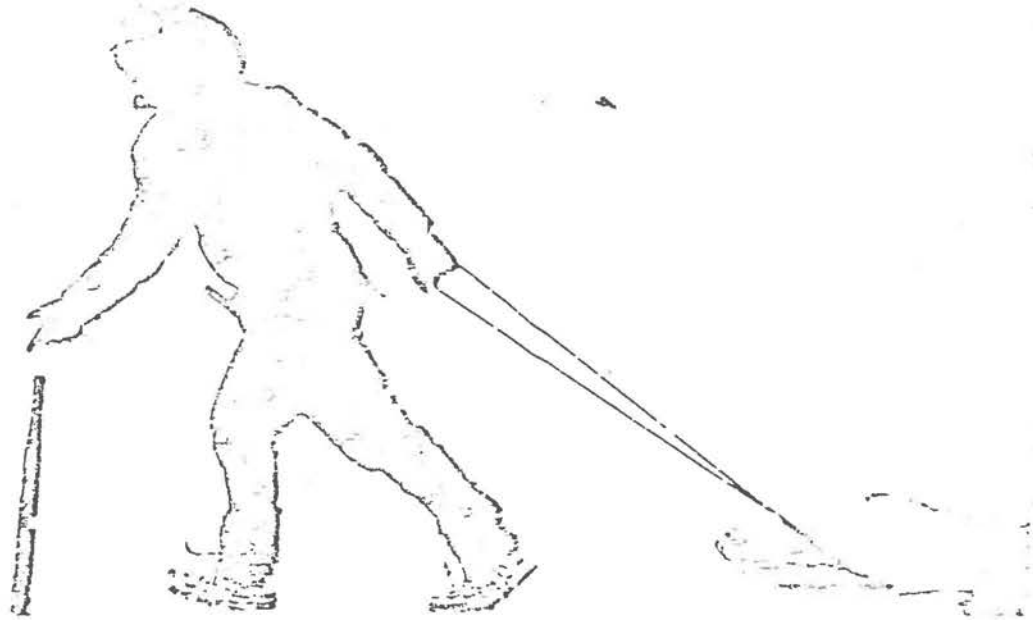
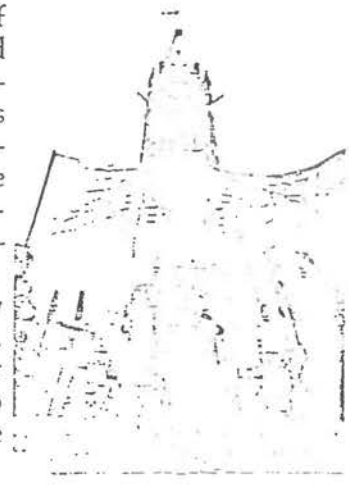
A FACT SHEET ON SEALING



There have been and are two views of the harp seal hunt which takes place each spring off the coasts of Newfoundland and in the Gulf of St. Lawrence. They involve emotions, aesthetics and economics. There are honest people on both sides.

In this issue of CANADA TODAY/D'AUJOURD'HUI we try to present a factual history of the controversy and a fair-minded picture of the hunt. There are two points on which there is no real disagreement: The hunt is harsh, and it has been going on for hundreds of years.

There are other areas in which—to the surprise of many—there is also agreement among scientists and other objective observers: The harp seal is not an endangered species. Seals are not skinned alive. The seals taken are not all young whitecoats. (In 1977 whitecoats accounted for only 35 per cent of the total.) The hunt is the most closely regulated killing of wild animals in North America. It is also a vital part of the subsistance incomes of the people who do the hunting.



It is difficult for some animal lovers, particularly those living in urban areas far from the northern seas, to understand the hunters' viewpoint. It is difficult for the hunters to understand the logic of those who would abolish their jobs. In the following pages we will try to shed some light in both directions.

The Past and Present Status of the Seals

Harp and hooded seals have been hunted off the coasts of Newfoundland and in the Gulf of St. Lawrence for hundreds of years.

The harp seals travel in herds, moving south from the coast of Greenland and the Canadian Arctic to winter in the Gulf of St. Lawrence and off the northeast coast of Labrador. In late February or early March the females give birth to single pups, weighing about fifteen pounds. The young are called whitecoats, although the pup's temporary coat is transparent rather than truly white. The hair focuses the sun's heat on the animal's skin, protecting it from the cold, while a thick layer of insulating blubber is built up. The mothers nurse the pups for three weeks with a milk of astonishing richness, and the pups gain nearly eighty-five pounds. The pups' coats then change to mottled grey, and the mothers abandon the pups. Female harp seals have pups yearly for as long as twenty-five years.

Three groups hunt seals: the sealers from large vessels, the landsmen of Newfoundland and the coastal islands, and the native peoples of the Canadian Arctic and Greenland.

The large ships, under Canadian and Norwegian flags, are the only vessels capable of reaching the whelping ice, and they hunt whitecoats almost exclusively. (By law, no more than five per cent of their catch may be over one year old.) The quota for these hunters this year will be no more than 97,000: not more than 62,000 for the Canadian ships and 35,000 for the Norwegian. (The total Canadian quota is 135,000, divided between all types of hunters.) The large vessel hunters take the fur, flippers and fat of the whitecoats. Each whitecoat has about forty pounds of fat, or blubber, which is used for oil. The flippers are a delicacy in Newfoundland.

From 1972 to 1976 large vessels were barred from the Gulf, and few whitecoats were taken. The herd built up, and last year one vessel was given a Gulf permit. It was manned by sealers from the Magdalen Islands—an area where landsmen normally hunt whitecoats but where the hunt has been unsuccessful in recent years.

Most landsmen take beaters (older than white-

"It's not surprising that 500 intensely religious Little Bay islanders put their trust in the seal, for it provides their main financial support during the seven months of the year when blizzards and sea ice buffet the two tiny islands, making fishing impossible. Their islands are too remote for manufacturing. Their weathered frame houses, circled by dirt roads, cling to hills too rocky for farming. On the desolate mainland, a 45-minute ferry ride away, there are few jobs." SHARON CHURCHER, *The Wall Street Journal*, 27 May 1976.

coats but under one year old) and bedlamers (immature seals over one year old). They reach the ice on foot or in small vessels. Most use the meat as well as the fur, flippers and oil. The natives of the Canadian Arctic and Greenland also take older seals which are used for food, clothing and trade.

The hunting days are few. The hunting season is short, and the Canadian government sets a strict quota. The quota for all harp seals this year is 180,000. It is set low enough to allow continued growth of the herd.

Some Numbers

[THE PEOPLE]

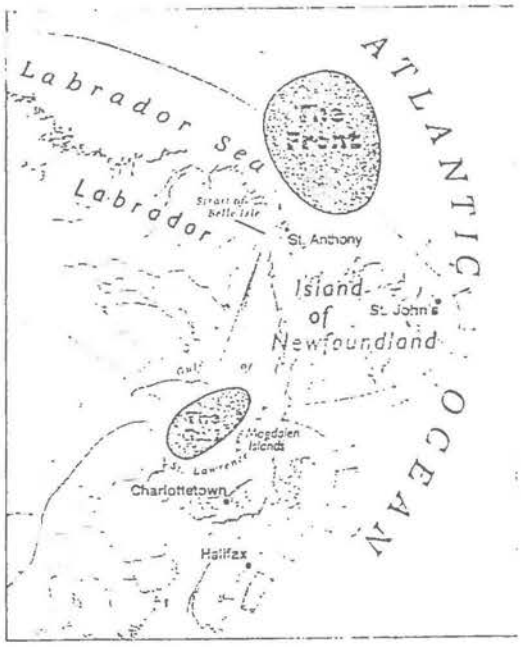
In 1976 most Newfoundland fishermen were between 25 and 44 years old. Sixty-five per cent had less than a ninth grade education. The average man had 3.5 dependents and an annual income of $7,500. An average landsman earned $232 from the seal hunt; a small-vessel man, $1,256; and a large-vessel man, $2,401. Unemployment in the villages where the sealers live runs between 16 and 19 per cent, and in March and April it can reach 90 per cent.

[THE SEALS]

Scientists project that between 310,000 and 350,000 harp seals will be born in 1978. The current harp seal population is about 1.3 million. They estimate that if 218,000 to 240,000 seals were killed annually, the population would remain stable. The 1977 quota was 160,000 harp seals (excluding 10,000 in the Arctic). Indications are that 155,000 were killed. This year's quota of 170,000 (again excluding the 10,000 in the Arctic) will allow the increase in the population that began in 1972-73 to continue.

[THE ECONOMICS]

An economic survey in 1976 indicated that sealers received 77 per cent of their incomes from the sale of pelts, 9 per cent from oil and 14 per cent from meat and other seal products. Those harvesting whitecoats from large vessels received 45 per cent of their incomes from meat and oil. (The percentage for 1977 was even higher.) The sealers took meat from about half the seals killed, and over half this meat was used by the sealers.



1957: Tom Hughes, a humane society official, called a meeting in Vancouver, British Columbia, to protest some aspects of the harp seal hunt. Seals wounded by shotgun pellets, for example, would escape into the sea and bleed to death.

1960: New Canadian government regulations provided that "no one may hook, commence to skin, bleed, slash or make any incision with a knife or any implement until the seal is, without doubt, dead."

1964: A Montreal firm, Artek Productions, filmed the hunt for the Canadian Broadcasting Corporation. The film, *Artek*, was produced and directed by André Fleury and Serge Deyglun; it was photographed by Uwe Koneman. Henry Stadt provided the musical background. Made in the Gulf of St. Lawrence, it showed one scene in which a seal was apparently skinned alive and another in which a rifleman shot several seals. Still pictures from *Artek* appeared in Paris *Match* and other publications, and the film was shown frequently as evidence of the deliberate cruelty of the hunt.

Brian Davies, an employee of the New Brunswick SPCA, organized the Save the Seals fund-raising campaign. In subsequent years the organization would conduct an international advertising campaign and raise millions of dollars. Mr. Davies would become the organization's full-time paid executive.

1965: Mr. Davies inspected the seal hunt for the first time.

1966: Gustave A. Poirier, a native of the Magdalen Islands, said in a sworn affadavit that he had been paid by the makers of *Artek* to attempt to skin a seal alive before the camera. He said that he had been instructed not to hit the seal with a club first.

1967: Mr. Davies issued a statement saying that Dr. Elizabeth Simpson, a veterinarian who had accompanied him to the Front, had found that more than a third of the seal carcasses that she examined had their "skulls intact." This statement was used as a basis for later claims that as many as 45,000 seal pups were skinned alive in a single hunt.

Dr. B. Johannson, a veterinarian representing the Canadian SPCA, inspected seal carcasses during the same hunt. His March report concluded that much of the hunt was more humane than was slaughtering in modern abattoirs.

The managing director of the Saint John and District SPCA offered $1,000 to anyone producing scientific proof that it is possible to skin a seal alive. The money has never been claimed.

Mr. Davies and the Save the Seals fund hired Ralph Kay to make a film of the hunt.

1969: The House of Commons Standing Committee on Fisheries and Forestry held hearings on the seal hunt. Henry Stadt, who arranged the music for *Artek*, testified that the film was "very tendentious and I did not agree with it." He said that the unidentified hunter in a scene showing seals being shot with a rifle was actually Serge Deyglun, one of the film makers. "I really think it is ridiculous to show the hunter who is Serge Deyglun killing the seal to demonstrate God only

In 1976, Greenpeace planned to destroy the value of seal pups by marking their fur with green dye. After abandoning this plan, Bob Hunter (left) and Paul Watson of Greenpeace turned the dye over to Roy Pilgrim (right), representative of the people of St. Anthony, Newfoundland.

knows what. . . . Perhaps he did it for the kick of it, I do not know. The film does not explain it. They said that is the proper way to kill a seal but why kill four or five of them in front of the camera." Mr. Stadt also criticized the Save the Seals film commissioned by Brian Davies. "I think the man who did that film not only sold himself but all of us in all of the country, purely and simply. At no time did I see any scenes like the one of the hunter with his seal waiting for it to die. I have never seen this." He said the implication that a third of the seals skinned had their skulls intact "really is not true. I have been on the ice and I did not see it even once."

Brian Davies was called as a witness. He testified that he was not present when the film he commissioned was made. He agreed that the film was tendentious, but said that it "would be unreasonable to expect an animal welfare society to make a film about the seal hunt, that it is dedicated to stop, without, even unconsciously, producing a film that is very detrimental to the seal hunt." One scene in the film showed a whitecoat in a pool of blood moving and apparently alive, but experienced observers had testified that they had never seen anything resembling that scene. Mr. Davies was asked if the scene had been staged. He said that to the best of his knowledge it had not. "I have no idea whether it [the seal pictured] was alive or dead. In fact I have seen many seals moving like that that in fact are dead." Mr. Davies said of the hunt itself, "I frankly feel it is being made as less cruel, probably, as it is possible to make right now." He said, however, that he was "basically against killing these animals regardless." Questioned about the danger of extinction of the harp seal, he replied, "I would say that the Department of Fisheries, through a quota system, certainly has ensured the continuation of the seal herd in the Gulf of St. Lawrence." He refused to answer questions about whether or not he was a vegetarian or opposed to the killing of all animals, but he did say "I am not saying that I am, as a person, opposed to the killing of animals to eat."*

1971: The Canadian government created The Committee on Seals and Sealing, an independent advisory board, to examine all aspects of the hunt.

1972: The government limited the seal hunt in the Gulf of St. Lawrence to landsmen and small vessels. A quota was set, dividing the take between the large vessels on the Front (four-fifths) and the coastal residents (one-fifth).

1973: David M. Lavigne, PhD, of the University of Guelph, and Nils Øritsland devised a method to count the seal population by aerial infrared photography. Their count became one of three methods used to estimate herd size and set quotas.

1977: The government permitted one large vessel to hunt in the Gulf.

The Save the Seals organization flew in Brigitte Bardot, dozens of reporters and other outsiders to observe the seal hunt. Ms. Bardot missed her helicopter and returned to France without seeing what she described as the "cruelty of the hunt."

Tom Hughs, who organized the first protest meeting, said, "The government has accepted changes. The abuses we saw in the '60s and early '70s are gone."

* In order to update Mr. Davies' statements, CANADA TODAY/D'AUJOURD'HUI made repeated attempts to interview him in his offices in Washington, DC. Mr. Davies broke two appointments and then sent a message declining to be interviewed. His spokesman also declined to arrange interviews with any other officers of the organization.

At this 1976 meeting between Greenpeace and the citizens of St. Anthony, Greenpeace agreed not to use the dye on seal pups.

The Clubbing

The traditional method for killing young harp seals has been to hit them with a hardwood bat or a *hakapik*, a spiked club developed by Norwegian hunters. The seals are struck on the skull, and in almost every case a single blow causes instant death or renders the animal deeply and irreversibly unconscious. Fisheries officers examine the carcasses to make sure the seals are being killed before they are skinned. There is no reason to believe that seals are (or indeed could be) skinned alive.

Dr. L. Karstad, DVM, PhD, representing New Brunswick's Society for the Prevention of Cruelty to Animals, examined 361 seal carcasses on 18 and 19 March 1968. In his report Dr. Karstad said that of these 361, twelve "may" have been alive after the blows, although it was impossible to be sure. If any had survived the blows, they would be dead within a few seconds after skinning began. Dr. Karstad said that when approached by humans, seals often go into "trances" similar to the "freezing" action of opossums and that if some of the twelve had been in this state, they might have been mistaken for dead. "I cannot say whether or not such an animal would feel pain," Dr. Karstad said, but opossums in a similar state did not give "the slightest reaction to the pricking and entering of the needle." Dr. Karstad said he "did not see any instance of intentional contravention or disregard of the sealing regulations" while on the ice.

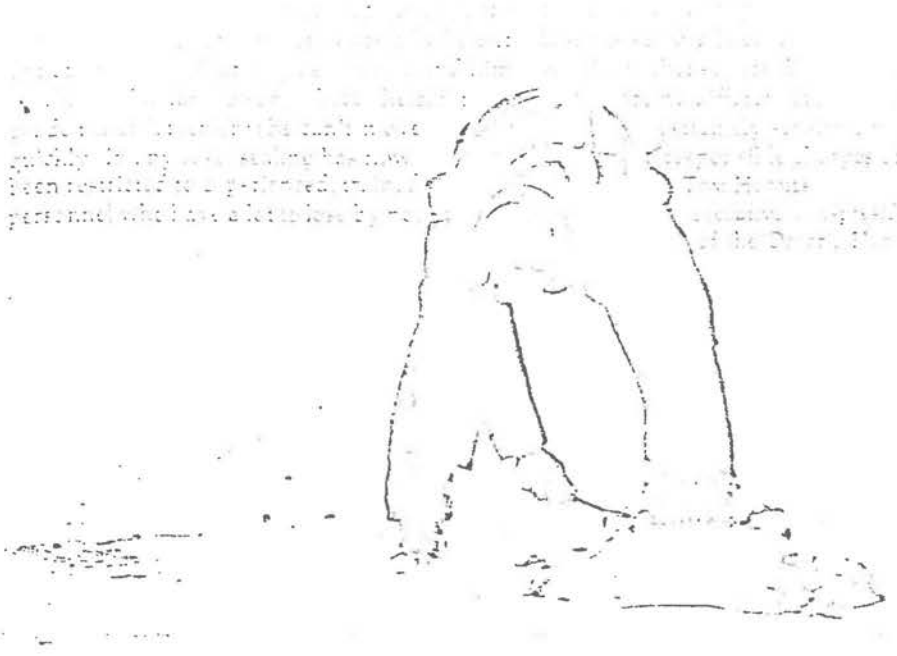
In 1968 a United States Department of the Interior team studied slaughtering methods to determine the most humane that might be used in the US government-supervised seal hunt on the Pribilof Islands off Alaska. The methods included carbon dioxide inhalation, electric shocks, captive bolt stunning, shooting and clubbing. The group concluded that clubbing, traditionally used in both the Pribilofs and off the Newfoundland coast, was the most humane.

A Statement by Dr. Lavigne, of the University of Guelph

Dr. David M. Lavigne, of the University of Guelph, and Nils Øritsland, Norwegian physiologist, developed an infrared photographic method of counting harp seal whitecoats in the early seventies. His incomplete count in 1975 showed only 80,000 whitecoats at the Front, and in January 1976 he suggested, in an article in National Geographic, *that the harp seal might be in danger of extinction. His most recent count showed 204,000 on the Front. Below is an excerpt from a statement made by Dr. Lavigne on 25 October 1977:*

"Preliminary catch statistics for the 1977 seal hunt indicate that about 149,000 harp seals of all ages were landed by sealers. On the Front 108,632, or about 54 per cent of the pups surveyed, were killed. A similar calculation for the Gulf of St. Lawrence is not possible. Nevertheless, on the basis of aerial survey data it is unlikely that the total number of pups killed in the western Atlantic in 1977 (124,932) exceeds 50 per cent of the total pup production. There is no indication that 74 per cent of the 1977 pup production was taken by sealers as implied in various press releases this past September."

"Historically Newfoundland sealing was a natural part of the fisherman's years, filling the gap between winter occupations such as trapping and woodcutting and preparations for summer codfishing. Seal-hunting records go back to the early eighteenth century, and by the 1800s a shipbuilding industry had sprung up to provide craft for the growing number of sealers. Approximately 12 million seals were taken between 1865 and 1925, but apparently this didn't make a dent in the herds. Today, experts say there are 1½ million seals, and 300,000 pups are born each year. The hunt lapsed during World War II and when started again soon became the target of pressure groups, which charged it was cruel, economically unnecessary and ecologically destructive. Protests increased after Newfoundland became part of Canada, and by the mid-1960s [the] federal government had so stiffened the rules and regulations that many sealing firms went out of business. . . . In the 1960s and early 1970s the Federal authorities were ready to end the hunt. . . . Now they appear equally convinced that the hunt is a necessity, part of the balance of nature." MICHAEL HARRINGTON *The Financial Post*, 26 February 1977.



Novice

Jiri Novak was a novice hunter on the M. S. Gulf Star, *a 145-foot sealer built in 1944, during the 1975 seal hunt. On March 9, the ship sailed from St. John's, Newfoundland, with a crew of twenty-seven and a fisheries officer. (Sealers are licenced and must wear government-issued badges. Fisheries officers may summarily remove anyone using improper methods.) It headed for the Strait of Belle Isle. Below are excerpts from Novak's account of the voyage from Indian and Northern Affairs'* North/Nord Magazine, *June 1976.*

The second day out we laid planks on the deck to protect it from seal oil and other filth. Then we prepared port and starboard ladders, opened hatches, prepared flags and rigged the booms with new wire. We were issued knives, sunglasses, shetting steels, and thermoses. The thermoses were not large enough to carry a twelve-hour daily ration of water and the other equipment was inadequate. We spent the remainder of the day fixing our gaffs and making knife sheaths from wood. . . .

By the third day out the ship was stuck fast in the ice. Because there was not enough dynamite to blast our way out, we had to free ourselves from the jam with axes and clear the drifts with long poles. We repeated this process for several days without seeing any seals. . . .

We were stuck in the ice again. I was downcast. I wanted to have the hunt over with, to get my first seal and to call myself a hunter.

Everyone's mood grew worse. Only a few men worked to free the ship. The rest of the men went in search of seals only to return, hours later, empty handed.

That afternoon we got our first seal. Two men came running and wiping their bloody hands on the aft bollards, smearing the blood all over the bulkheads of the deckhouse for good luck. . . .

In the morning we were awakened at five o'clock. After breakfast we formed two groups with each man carrying a flag on a light pole to mark the location of a pile of fat. In my knee rubbers and oversized army jacket, with a club swinging on my back, a knife on my belt, a tow line coiled over my left shoulder, sunglasses and canvas lunch bag I was ready. We were a motley group of men. . . .

If you would like more information on Canada's seal hunt or copies of the scientific reports on which Canada's policy is based, write: Information Branch, Fisheries and Marine Service, 7th Floor, 240 Sparks Street, Ottawa, Ontario, Canada.

Then I saw mine and began to run. He did not move when I hit him with the club over the head. Again and again I hit him as the blood ran from his nose. I saw another and another seal and kept clubbing them all; I was excited. When I began to skin the first one, I looked for help. . . .

As the day ended I followed the men to the ship. I wanted to relax but could not. . . . I did not want to see another whitecoat. I smelled of blood, oil and sweat and was dead tired. . . .

We spent three days hunting, taking in a total of two thousand seals. Then the bad weather came. The ice pans separated and came together again. . . .

Men went snowblind but they kept working because the seal hunting ship is the worst place in the world to be ill. I got a headache and went snowblind too. When the pain grew unbearable, I stole into my cabin and laid there unsuspected in the dark. . . .

The discontent began to grow. On March 22nd, Good Friday, it began to snow. I thought, "I do not want to go out there, on the ice." But I went because everybody else did. . . .

On the following morning most of the experienced hunters decided it would be suicide to go out on the ice. "We cannot go home," insisted the captain. "We have not got our quota of 7,500 seals yet."

Then the 17-year-old kid almost died after they had pulled him from under the ice. . . .

The captain finally gave in. . . .

It was my first seal hunt. I wanted to know the thinking process that goes on in a man's mind, just one man. I didn't arrive in a helicopter and take a few pictures of the hunters. I did it, I was a hunter. I skinned the seals. . . . I observed myself. It's not my business to criticize anybody. For the Newfoundlanders there's money in it. I am not speaking for anyone other than myself. It's just what happened to me.

The hunt, as is clear from Mr. Novak's account, is not a form of recreation. It is extraordinarily hard, dangerous work. The hunters have one compelling motive—to make money to feed, clothe, house and care for their families. There is however another, lesser motive. The hunt is an enormous challenge and a male rite of passage. A man who has survived the seal hunt is recognized as a full-fledged member of the masculine community.

"In March, 1976, we were invited to a day-long government meeting for a briefing in preparation for the Canadian position on whaling. It was quickly followed by another on sealing in December. In both cases we supported the notion of harvesting as long as no species was endangered or threatened. The seal hunt, in particular, is a highly emotional and controversial issue—and will become more so as the hunting season approaches. Each year the Federation reassesses its stand on the issue. During the past year, of course, we have kept in constant contact with the best scientific authorities. Our conclusion is that this year's hunt will not only allow the seal population to be maintained, but it will permit the increase in that population to continue. We also believe that this year's hunt will be humane, strictly regulated and of no harm to the status of the harp seal population." Canadian Wildlife Federation President Robert N. Pedersen, reporting to the annual meeting of the Canadian Wildlife Federation Provincial Affiliates.

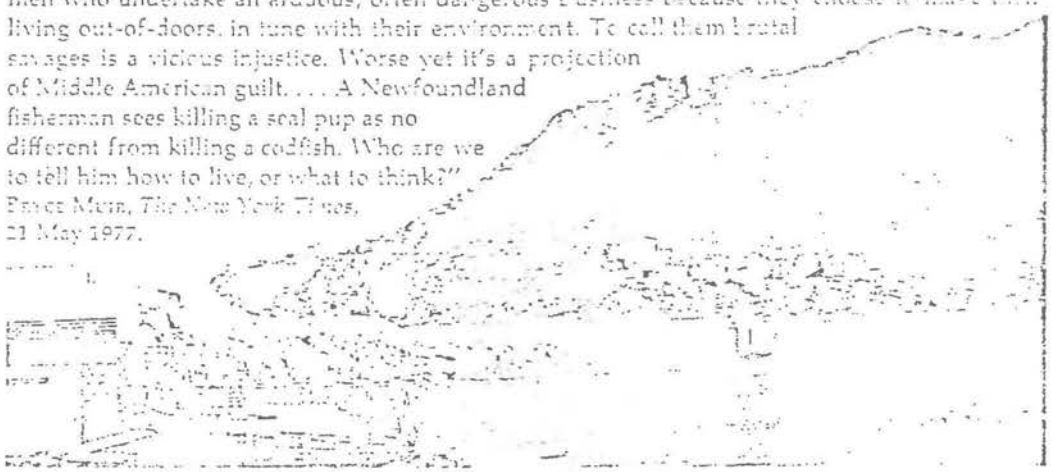
Between Ourselves

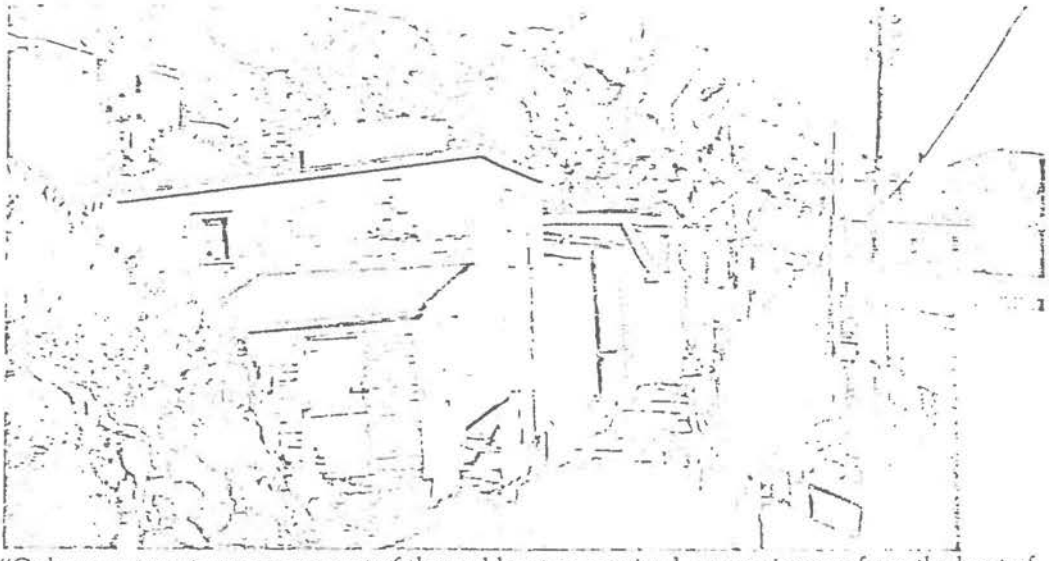
In 1977 Jim Winter signed on the Arctic Explorer *as a licenced sealer and a CBC radio broadcaster. He participated in the hunt and transmitted his reactions. The following excerpts are from his radio diary, broadcast on the CBC radio program, "Between Ourselves," on 14 May 1977.*

I found out when we got back on board the ship this evening that the Greenpeace crowd had landed over by another ship about a mile and a half away from us. And they had impeded her practically all afternoon, gotten in everybody's way and done one thing and another, and that one of the things that they were doing was throwing panned pelts into the water. And the fellows were ignoring them. . . . After you have lugged the pelt maybe over five hundred yards of broken up, dirty ice, that you are trying to keep yourself from falling in, get the pelt over, get it panned, get out and get another one . . . those pelts take on a very personal relationship to you. I was feeling in my own mind, by golly, if somebody came along and threw my pelts, my hard-earned pelts into the water, I am not so sure I wouldn't be reacting. I am not so sure that I wouldn't ignore the advice that has been given to us by the Fisheries Department and by the skipper of the ship . . . to ignore these people. I think that would be very hard. Evidently, they also took clubs and picks from some of the fellows and threw them in the water, and the fellows still ignored them. It amazes me the restraint that they are showing. It is incredible. Can you imagine a whole day's work and somebody comin along and throwing it away on you. It is not a though we are doing something that is out o the way. Or anything illegal. This is a perfectl legal, well supervised hunt. And the people tha are here are here because they need the mone that they get from the hunt. . . . The way the system works on the ship is that the man's wage are deducted as a share from the total value o the catch. . . .

Paul Watson [of Greenpeace] was around the ship and the skipper got it stopped when he was in front of the ship . . . and there was a big swell. Anyway, [Watson] got completely mad then, totally frustrated and mad, and he ran towards the line or cable that we pull out from the side of the ship and use to drag the pans in. Well, there was one load coming in and this chap ran over and he had some kind of a hook-like device and some thing, and he snapped himself onto the cable. And the guy running the cable luckily saw him and stopped the cable. But with the tension on the line and the ship rolling back and forth on the fifteen-foot swells, the line kept moving, the ship rolled away and it pulled him and he went two or three yards off the pan and into the water. The guys immediately went over the side and got him. They fished him out and brought him aboard their ship and checked him out and he seemed alright . . . although, he kept

"The available resources are thin way Down East. A man must take what he can when he can, to get by. These aren't poor fishermen with nothing else to do. These are proud, hard-working men who undertake an arduous, often dangerous business because they choose to make their living out-of-doors, in tune with their environment. To call them brutal savages is a vicious injustice. Worse yet it's a projection of Middle American guilt. . . . A Newfoundland fisherman sees killing a seal pup as no different from killing a codfish. Who are we to tell him how to live, or what to think?"
Bruce Main, *The New York Times*, 21 May 1977.





"Only some twenty-seven per cent of the seal hunters received a gross income from the hunt of more than five hundred dollars. That isn't a tremendous amount of money in the more affluent areas of the world. It isn't a major contribution to the gross national product of our country or our province. But the people who engage in the hunt don't see themselves in terms of gross national product. They look upon themselves as individuals trying to earn a living. Insignificant as a few dollars may be in some places, it's a lot of money to them." FRANK DUFF MOORES, Premier of Newfoundland and Labrador, Washington, DC, 11 January 1978.

saying he had a bad back and it was broken and this, that and the other thing . . . they fed him a meal, which he ate, and they gave him new clothes, which he took, and they gave him a cabin where he went to sleep. Actually we checked the ship just a couple of minutes ago and . . . he doesn't seem to be any worse for wear. So, this is the kind of thing that is frustrating our sailors. We take everything going, and these people come out and create an incident like that and all you get in the newspapers is their version of what happened. It is really annoying. That particular chap, the stupidity involved . . . I mean, he could have very easily killed himself. . . It was just pure luck that everybody managed to see what happened, get the reaction quick enough, fish him out of the water and all the rest of it. But, I just don't understand these people at all.

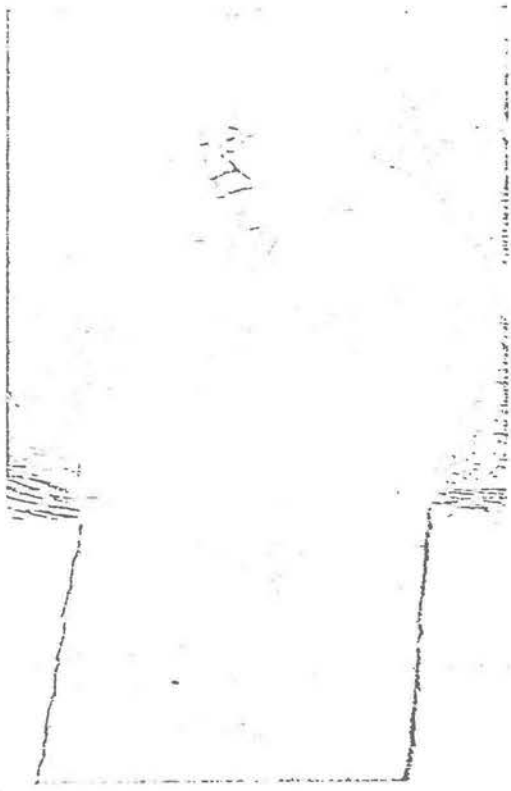
A Romantic View

In Wake of the Great Sealers *(McClelland and Stewart, Atlantic-Little Brown, 1973), Farley Mowat has recorded the legends and the folklore that make sealing more than a job for Newfoundlanders.*

Ours was a timeless way of life. Three centuries ago when our ancestors crossed the Western Ocean they had already been committed to the sea since time out of memory. They neither knew, nor wished for, any way of life not of the sea. Because the land meant little to them, except as a place to rest, procreate, build one's vessel, or repair one's gear, they did not greatly care what kind of land it was. As long as it was washed by fruitful waters, any bald lump of an islet or rocky cleft on the mainland shore was good enough.

My people were sea-hunters and the two great quarries of these cold northern seas were the cod and the seal, so they became cod fishers and sealers, and proud of the calling.

Winter times we youngsters used to chase one another on the running ice offshore. You had to be quick, jumping from pan to pan, so the ice wouldn't founder under you. 'Twas called copying and 'twas rare sport, and it come in handy when you was old enough to try for a berth on a sealing ship bound off for the northern ice.

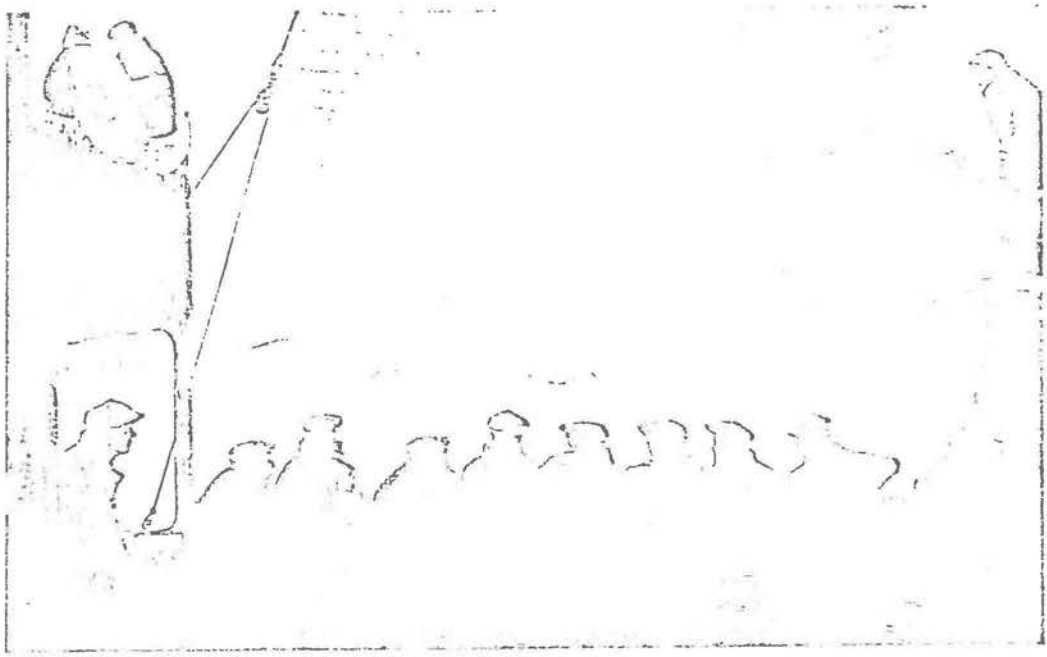


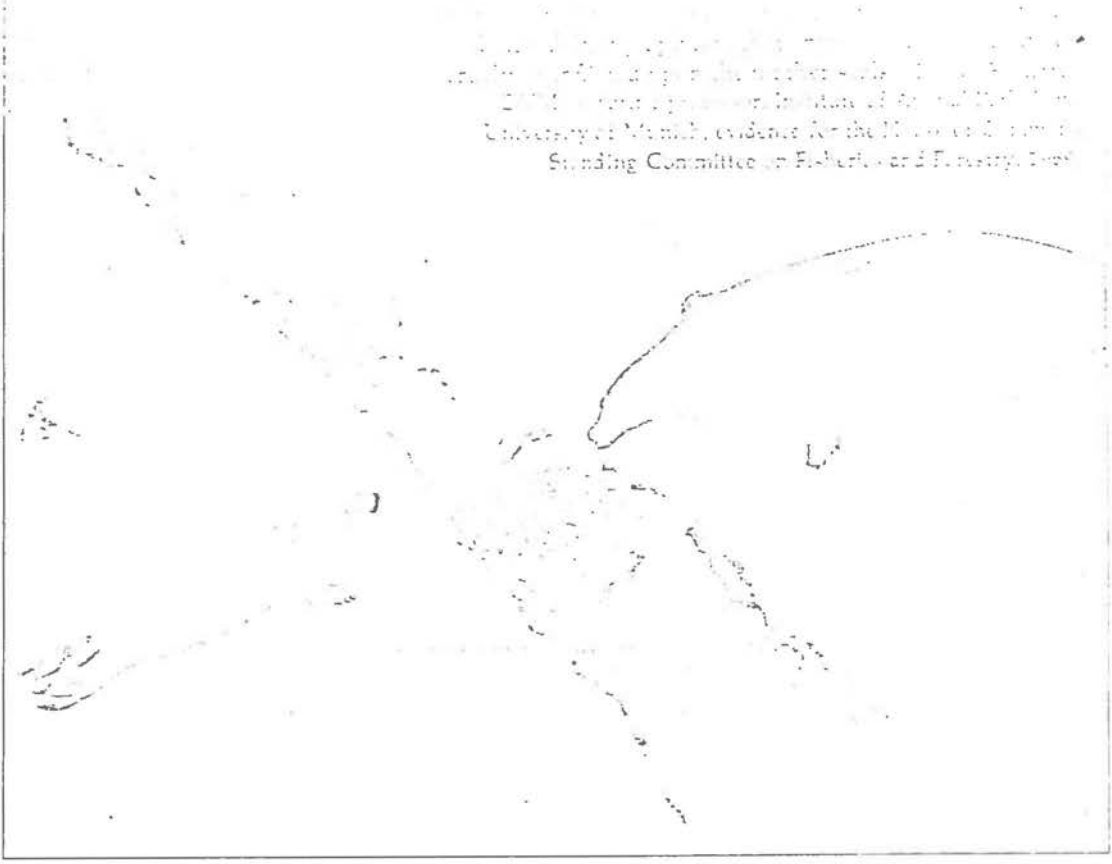
In 1914, the *Southern Cross*, a 500-ton wooden steamer set out with 174 men: In that ill-omened spring of 1914 most of the wooden walls went to the Gulf of St. Lawrence to the [illegible] islands rather than to the floes, partly to avoid competition with the steel ships and partly because ice conditions were always easier there since the heavy arctic pack was absent. . . .

By Sunday, March 29th . . . the *Cross* was log-loaded with about twenty-five thousand seals. Her holds were jammed full and several thousand pelts had been precariously penned on deck.

The weather that was on its way was the same violent storm that killed so many of the men of Newfoundland on the northern ice fields. Monday night, it caught the *Cross* in open water on the dangerous lee coast of southern Newfoundland. Another captain might have run for shelter, but Clarke chose not to do so despite the fact that his leaking, strained old vessel was grossly overloaded; was crank in a seaway at the best of times, and had almost no lifesaving gear aboard apart from a few flimsy wooden punts, which would not have lasted ten minutes in the great turmoil of wind and water that was already turning the ocean feather-white. The *Southern Cross* held to her course, corkscrewing into an increasingly savage sou'easter until she must have been acting more like a submarine than a surface ship. That was how she appeared to Captain Thomas Connors, skipper of the coastal freighter *Portia* . . . .

It was the last time she was ever seen. Not a single trace of the *Southern Cross* or of her crew was ever found, except for a broken life belt bearing her name that washed ashore in Ireland many months later.





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CANADA

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SEALING

Good Quality Pelts Mean Better Financial Returns

Introduction

For centuries, during the long winter and spring months, sealing has provided, and continues to provide, an important source of income for the fishermen of the coasts of Newfoundland and Labrador, of the Quebec North Shore, and the Magdalen Islands and Cape Breton.

With proper management of the herds and of the hunt itself, sealing can continue to be a major contributor to the earnings of fishermen at that time of year when other species cannot be exploited. However, as in all fisheries, the quality of the product determines its value. The following suggestions will help the sealer to obtain better quality pelts, and, hence, better prices for his product.

Killing Methods

The proper killing techniques must be used to dispatch the seal rapidly, efficiently and without suffering (see SEALING: Instructions for the Humane Killing of Seals). Approved methods include the use of the regulation club and hakapik, or firearm, depending on the area and circumstances of the hunt, as defined in the Seal Protection Regulations.

Seals must not be shot in the body. This seriously damages the skin and renders the pelt practically worthless to both the buyer and the seller, not to mention the unnecessary suffering it causes to the animal. The use of shot in hunting seals does irreparable damage to the skins and is prohibited under Section 15 of the Seal Protection Regulations.

Care must be taken in using gaffs or boat hooks in retrieving seals from the water or ice pans. These should be applied to the head only to avoid damaging the pelt.

Skinning or Sculping

All seals should be properly bled before sculping. Skinning or sculping should take place as soon as possible after bleeding is completed to avoid so-called "burns" and also to ensure production of a better quality meat product.

A good sharp knife should be used for sculping, and great care must be taken to avoid making cuts or holes in the skin.

Make an even cut from the lower jaw to the tail.

Flipper holes should be as small as possible, and equal in size. Free the blubber from the carcass evenly all around, being especially careful along the back, where it is thinnest, not to nick the hide. The slightest nick or cut to the inner side of the pelt results in a large gash on the tanned skin, and greatly affects value. Poor and uneven sculping can reduce the value by as much as 90 per cent. Remember that a top quality pelt must have the tail attached.

Washing

All pelts should be thoroughly washed and cleaned on **both** sides. Any grease or blood left to dry on the fur will cause staining which greatly reduces its value.

If antioxidation fluid is available, treat pelts immediately after washing. Apply to the fur side with a brush.

Pelts should be cooled as soon as possible after sculping by spreading them out individually on the ice, blubber side down.

Storage

The pelts should be stored under cover, as sun and light discolour the fur and cause permanent damage. Furthermore, they should be kept away from bulkheads and from engine-room heat.

Store the pelts in a clean area away from contact with steel, iron, gasoline and fuel, or any dirty substance.

Transportation

Avoid hauling pelts over rough ground or surfaces. This can do serious damage to the skin.

Plastic covering is recommended during transportation to processing plants.

General

It is highly recommended that pelts be sold to the plants or buyers as soon as possible to prevent deterioration through storage.

These simple suggestions will help you obtain better quality skins with substantially higher market value. Sealers and fishermen are urged to take the extra time and care to ensure better return for their effort.

Your cooperation is essential in attaining better quality. It will be to the advantage of all concerned.

Further information available from:

Director-General
Newfoundland Region
Department of Fisheries and Oceans
P.O. Box 5667
St. John's, Newfoundland
A1C 5X1

Director-General
Maritimes Region
Department of Fisheries and Oceans
P.O. Box 550
Halifax, Nova Scotia
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Quebec Region
Department of Fisheries and Oceans
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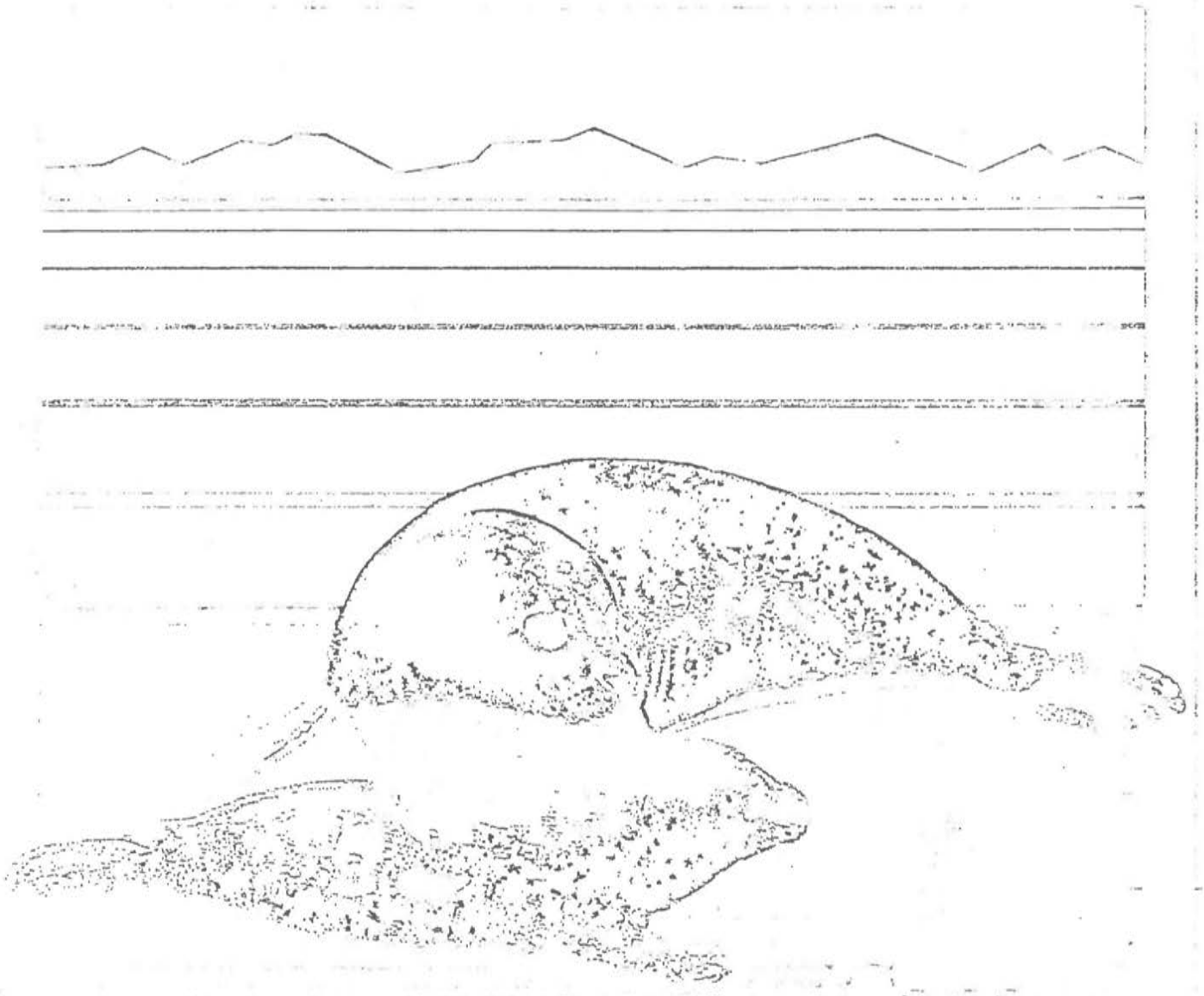


The Harbour Seal in Canada

The harbour seal in Canada is widely distributed along the entire length of both the east and west coasts, with scattered pockets from Herschel Island in the western Arctic to Baffin Island in the east, and throughout Hudson Bay.

There are three distinct subspecies of harbour seals in Canada: *Phoca vitulina richardi* on the Pacific Coast, *Phoca vitulina concolor* in the Maritime Provinces, and a small isolated population, *Phoca vitulina mellonae*, living in certain freshwater lakes in Northern Quebec.

The harbour seal has a liking for fresh water, and is often found in estuaries, rivers and lakes, sometimes far from the sea. It is seen fairly regularly at Montreal on the St. Lawrence River. Another group spends much of its time in the freshwater lake systems of Northern Manitoba, and has been observed 240 km inland from the western shore of Hudson Bay. The number of seals in this system appears to be relatively low. The one specimen examined from Edehon Lake (in the N.W.T. west of Hudson Bay) showed no particular characteristic which could identify it as a separate species; thus it appears that this group of freshwater seals is the same as those in the closest salt water of Hudson Bay. There appears to be no impediment of movement between these areas via the Thlewiaza River which connects Hudson Bay with Lake Edehon.

Fig. 1 Adult harbour seals

Description

Free-swimming harbour seals are hard to distinguish from the young of the grey seal, although the massive "horse head" of the adult grey seals makes adult identification easier. Harbour seals can best be identified by their small round heads, slightly upturned tip of the nose, and by their distinctive white mottling. When viewed full face, the nostrils appear as a "V", whereas young grey seals, with which they may be confused, have a more parallel set to the nostrils. The white mottling is absent in the juveniles and young adults. This feature no doubt resulted in the trivial epithet of the scientific name for the East Coast sub-species *Phoca vitulina concolor*.

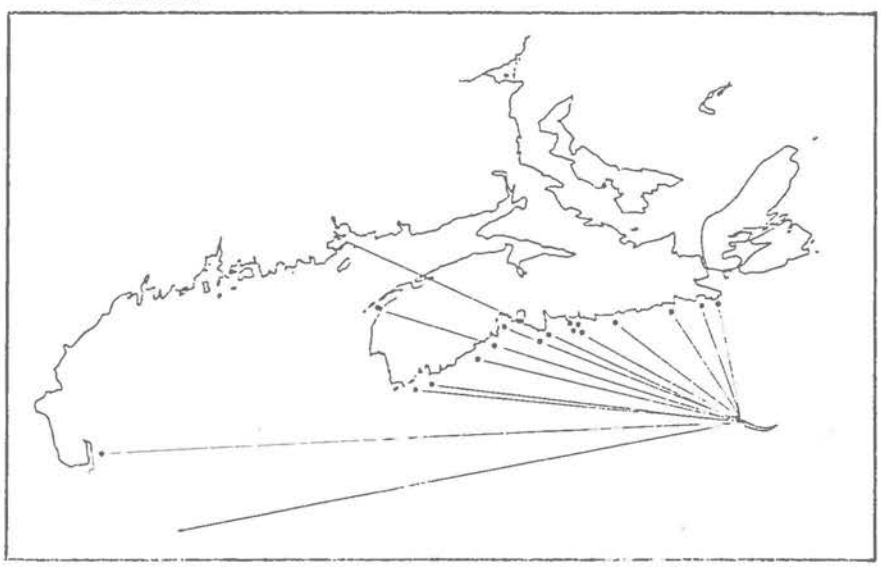
When out of the water, at rest, harbour seals frequently lie on one side, with their heads raised, their rear flippers elevated and pressed tightly together, giving them a "banana" shape to the observer. They are the smallest seal in the Maritimes, reaching a maximum of 170 cm in length, and weighing 100 kg. Harbour seals "in hand" are best identified by their distinctive tricornuate molars, closely set, and angled slightly across the line of the jaw.

As the name implies, harbour seals are a coastal species, preferring the quiet waters of bays and inlets. They generally use inshore rocks and sand bars for resting. There is some evidence that they form distinct sub-groups, with little exchange between areas. This discontinuous distribution leads to certain areas having large numbers of harbour seals, sometimes resulting in interference with fixed fishing gear.

Recent tagging studies of juvenile harbour seals have shown extensive movements of a few individuals (Fig. 3). Young harbour seals tagged at Sable Island, N.S., have been recovered from Manasquan, New Jersey, a straight line distance of 1,475 km. Other seals tagged in the same location have been recovered from the adjacent mainland areas of Shelburne, Lunenburg, and Guysborough counties. It is not known if these seals remain in the area as adults or if they return to their birthplace to breed.

Fig. 2 Female adult with two young seals

Fig. 3 Movement of harbour seals from Sable Island



Feeding

Like the grey seal, harbour seals are opportunistic feeders. The food items listed in Table 1 probably represent the availability of the prey, rather than a food preference.

Table 1
Stomach Content of Harbour Seals

Species	Per cent Occurrence
Herring	24.2
Squid	20.6
Flounder	14.1
Alewife	6.8
Hake	6.0
Smelt	3.7
Mackerel	3.6
Sand lance	2.9
Capelin	2.9
Shrimp	2.2
Cod	2.1

Harbour seals appear to consume the equivalent of between three to six per cent of their body weight each day. This means that the present East Coast harbour seal population consumes about 10,000 tons of fish per year. When compared to the catches of the commercial fishery fleet, the amount consumed by harbour seals is insignificant.

Impact on Fisheries

A bounty was originally placed on harbour seals in response to complaints by inshore fishermen regarding damage to fixed gear, competition for fish, and the role of the harbour seal in the transmission of codworm. Damage to fixed fishing gear which can be attributed to harbour seals can be a costly nuisance for fishermen, although not a serious disruption to the fishery. As previously noted, the amount of fish consumed by harbour seals is small relative to total commercial fish catches. The role of the harbour seal in the transmission of codworm is not clear, although recent studies show it to be a non-preferred host. For these reasons, plus the fact that the population had been significantly reduced, the bounty was removed from harbour seals in 1976.

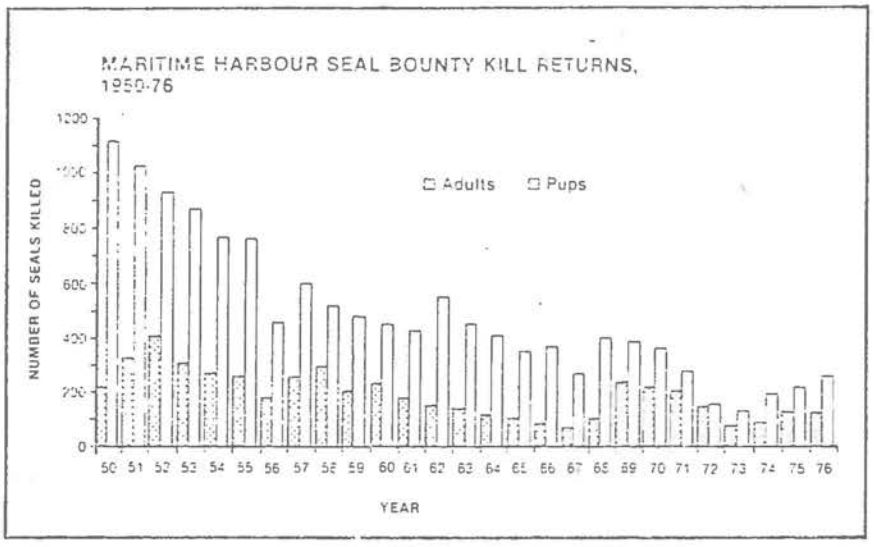


Fig. 4

Fig. 5 Typical "V" of nostrils in full-face view

Population

Fig. 4 shows the number of seal jaws submitted for bounty during the period 1950-76. The overall decline in returns is apparent, except for the periods 1968-71 and 1975-76. The increase during these years was the result of a special payment made to trained hunters, to collect scientific samples.

The last survey of the total east coast population was conducted in 1973, and the results are outlined in Table 2. Estimates of numbers for the west coast vary widely, but 35,000 would appear to be most likely.

Table 2

New Brunswick	1,000
Nova Scotia (including Sable Island)	5,000
Prince Edward Island	500
St. Pierre & Miquelon	300
Newfoundland	2,000
Quebec	4,000
Total	12,800

The removal of the bounty in 1976 will undoubtedly result in an increase of harbour seals in all areas. This increase will accelerate once the survivors of the post-1976 year classes reach sexual maturity and begin producing offspring of their own.

Reproduction

The mean age of sexual maturity for female harbour seals is between three and four years. They give birth to a single pup during May and June. The young are born with the short, stiff, hair coat of the adult, having shed their long fetal hair in the uterus; this is expelled with the placenta.

Once the mother-pup bond is established, harbour seals are very solicitous mothers. On calm days they take their young into shallow tidal pools to swim. Here the young seals take their first solid food, usually small coastal crustaceans, such as Gammarus. If danger threatens, the female will take the pup by the scruff of the neck and drag it into the sea. Here she will place herself between the incoming waves and keep the pup between her fore flippers. If a longer journey is necessary she will carry the young on her belly, holding it with her flippers. Journeys of several

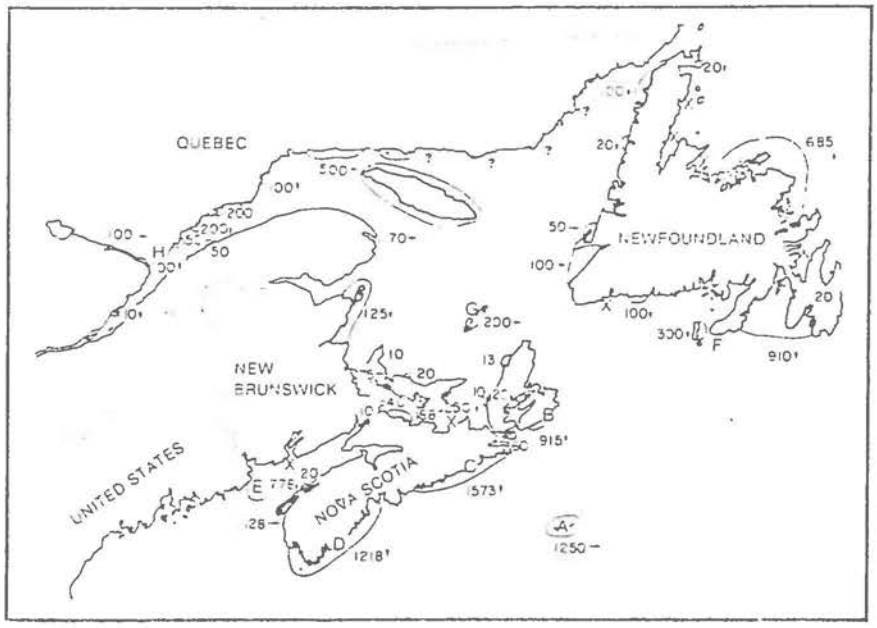


Fig. 6 Occurrence of harbour seals in eastern Canada, indicated by hatching. The estimated number of seals in 1973 in each area is given with the reported current trend: stationary (horizontal arrow) or decreasing (downward arrow). An X indicates that seals are reported to have disappeared during the last 15 years. Question marks mean absence of information.

kilometres can be made in this fashion.

The females suckle their young for about one month, and during this time the young double their birth weight of 10 kg. The new-born pups have the ability to swim within a few hours of birth. By the end of the second day they regularly go into the sea. Due to their naiveté they fall easy prey to sharks which are attracted to the large breeding groups. Dead pups, severely mutilated by sharks, are a common sight on Sable Island. As an example, in a three-day period during the 1980 breeding season, sharks killed 23 pups along an eight-kilometre stretch of the beach.

Males become sexually mature between five and six years of age; social maturity also apparently occurs at this age since harbour seals appear to be monogamous. They mate immediately after the pup is weaned; the beginning of the growth of the fetus, however, is delayed until mid-September.

Commercial Importance

Harbour seals in the Maritime Provinces are not hunted for their pelts, although they are hunted commercially along the North Shore of the Gulf of St. Lawrence. A few animals are taken in British Columbia for their skins, but most are shot by irate fishermen because of the seals interfering with fishing gear. The Inuit highly prize the pelt of "Kasigiak", although its value is prestigious, rather than economic, because of its rarity in the Arctic.

The removal of the bounty in 1976 has resulted in reduced interest in hunting, and the commercial value of the species is now negligible.

Harbour seal numbers are generally increasing or stable over most of their range, and apart from the occasional seal shot for interfering with fixed fishing gear, the populations are unmolested.

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Integrated Work

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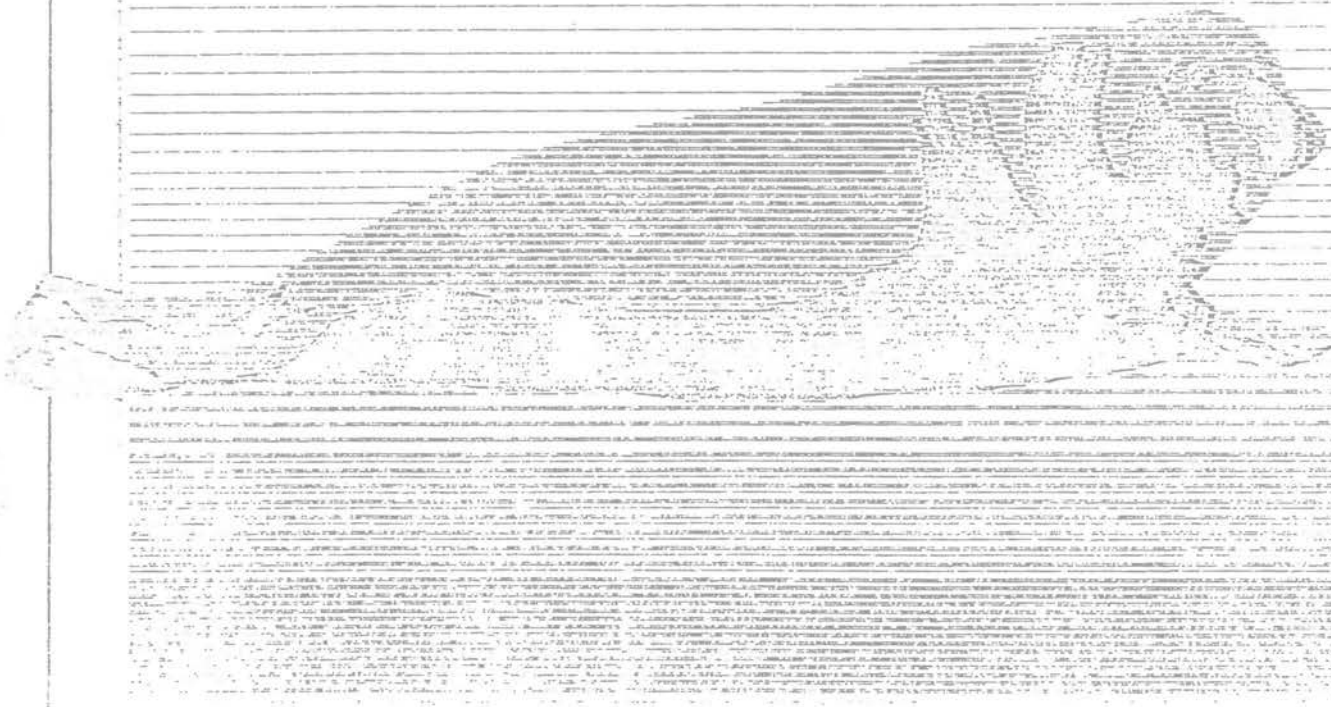


Canada

The Grey Seal in Eastern Canada

The grey seal, *Halichoerus grypus*, is found in temperate and sub-arctic waters on both sides of the North Atlantic. It is a gregarious species, forming large concentrations during a generally well-defined breeding season. Although similar in appearance and life history, there is no exchange between the Canadian grey seals and those of Europe and the Baltic.

In Canada it is variously known as the Atlantic seal, horsehead, Phoque gris, Tête de cheval, Hopper (Newfoundland) and Cowmore seal. This latter name is from the Magdalen Islands and is a corruption of Corps mort seal, or the seal that breeds on Deadman's Island.

Description

At birth, the young weigh about 16 kg and have long greyish-white coats. They fatten quickly on the rich milk produced by their mothers, and by three weeks of age have grown to average 58 kg. They lose their natal coat in the process and develop a short stiff hair coat similar to that of the adult.

At this time the young females and males show the difference in coat patterns which characterize them as adults. The female moulter is silver grey in colour, with small scattered dark spots. The males are a plush dark grey with silver grey spots. Towards the end of their first year these distinctive patterns are lost, and juveniles of both sexes become a uniform dark grey or sandy colour.

Fig. 1 Shark bite on male

The adult male is the largest of the Canadian seals, and when fully grown weighs up to 450 kg and averages 235 cm in length. His most striking feature is the long arched "Roman nose" which is the reason for its Latin name *Halichoerus grypus* (the hooked-nose sea pig) and the vernacular "horse head". The shoulders are heavy and folded, with the overall bulk supplemented by a buildup of scar tissue from fighting on the breeding grounds. His coat is dark grey, almost black, with lighter grey on the sides. The overall effect is very dark.

The adult female is smaller, up to 270 kg with an average length of 200 cm. She can easily be recognized by a much shorter and narrower nose, but particularly by the cream-coloured throat, chest, and flanks, with irregular chocolate-brown splotches. The back is covered by smokey grey hair. Both sexes show a curious "wrong way" growth of the back hair from tail to head, resulting in an irregular demarcation line where it meets with the hair on the flanks.

The breeding season starts in mid-December and lasts until early February. There are two major breeding areas in Canada: the drifting ice of Northumberland Strait and St. George's Bay, where an estimated 3,000 to 5,000 pups are born, and Sable Island where 3,000 to 4,000 pups are produced each year. Fig. 3 shows the important breeding areas, and the general number of young born each year.

More is known of the island breeders since they are comparatively easy to count. By contrast, the ice breeding seals are often difficult to locate, especially after strong winds have broken up and dispersed the ice. Thus population estimates are reasonably accurate for the island-breeding seals, but only approximate for the ice-breeding population.

During their first year, young grey seals travel great distances from their place of birth. By mid-February the adults have quit the breeding grounds, leaving the young to fend for themselves. Some of these young depart immediately and by late March are either feeding at sea over the shallow

Fig. 2 Whitecoat pup

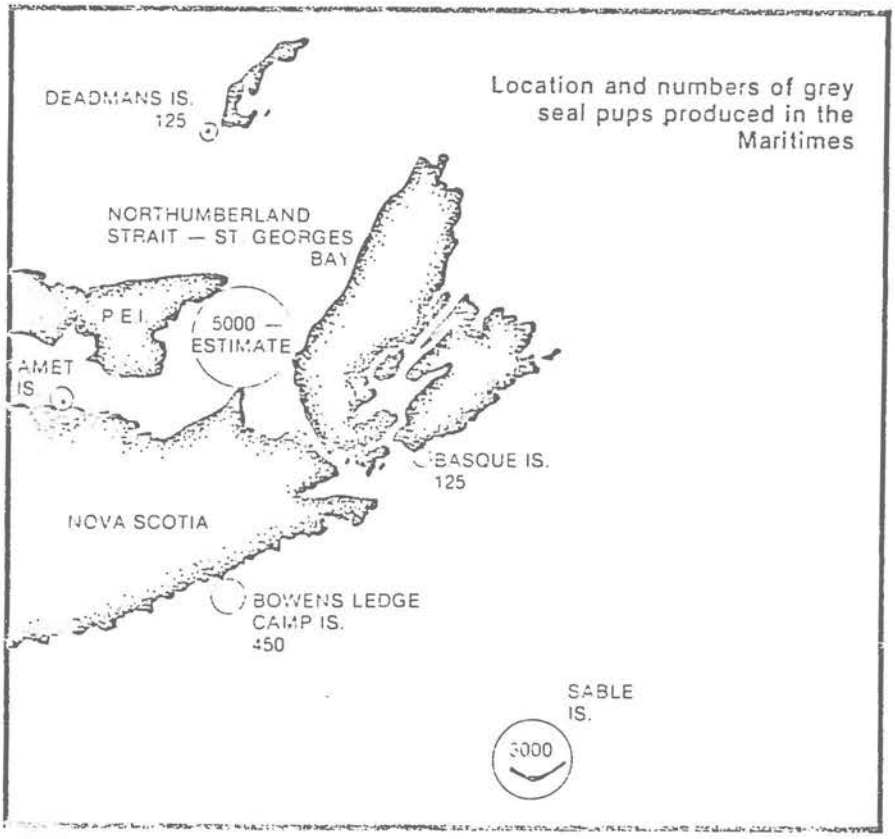
fishing banks, or have moved inshore to the Nova Scotia mainland, southern Newfoundland, and the northeastern United States. Others leave later following the same pattern of dispersal. They also enter the Gulf of St. Lawrence, where many take up residence along the North Shore and around Anticosti Island. Some find their way north to Labrador and spend the year as far north as Nain, more than halfway up the coast. The exact rate of this movement is not known, but by August only a few young seals remain on the breeding beaches. By the time the next breeding aggregation assembles, they have all left. There is no well-defined migration, or even migration time; they disperse from the area by whatever forces drive young seals to wander. Fig. 4 shows recoveries of marked seals in 1979. Recoveries of marked adults show a similar dispersal, but in most cases the range is more restricted. Observations of branded adults on Sable Island indicate a large percentage of the seals born on the Island return there, as adults, to breed.

Seals marked as pups in other breeding areas also breed on Sable Island. Their numbers are relatively few, and it appears that crossover between the various breeding groups is of a low order. Once established, however, it remains a constant feature of that particular animal. Sable-born seals have been observed breeding in mainland colonies, but here again only in low numbers.

The adult seals remain at sea, feeding until early May. Some of the Sable Island group remain in the vicinity of the island, while others cross the 160 km of ocean to the mainland of Nova Scotia. Here they join up with the majority of the ice-breeding seals, and by early May have started to moult. February to May is spent feeding, and during this time the grey seals come into conflict with the inshore fisheries. They feed on the same stocks of schooling fish as those utilized by the fishermen. Some individuals become very adept at robbing nets, and once this pattern is established they seem to prefer it to the more normal method of obtaining food. Apart from the amount of fish they eat and spoil, they frequently tear holes in gillnets, or in the case of box traps, make large holes which allow the fish to escape.

During the May-June moult, feeding continues on a reduced scale, but by mid-July the animals are once again feeding at their normal levels. Some of the adults, and most of the subadults, go offshore and spend the remainder of the year (until November) feeding on the fishing banks of the east coast continental shelf. The immatures (1½ to 4 years old) remain at sea for most of the year, and during this period suffer heavy predation from pelagic sharks. The great white shark is the largest of the predators and can inflict spectacular wounds on the adults; 10 per cent of all adults returning to the breeding colonies carry massive scars as a result of such attacks. No juveniles, and relatively few females have been seen with shark-attack scars, suggesting that these encounters are usually fatal.

Fig. 3



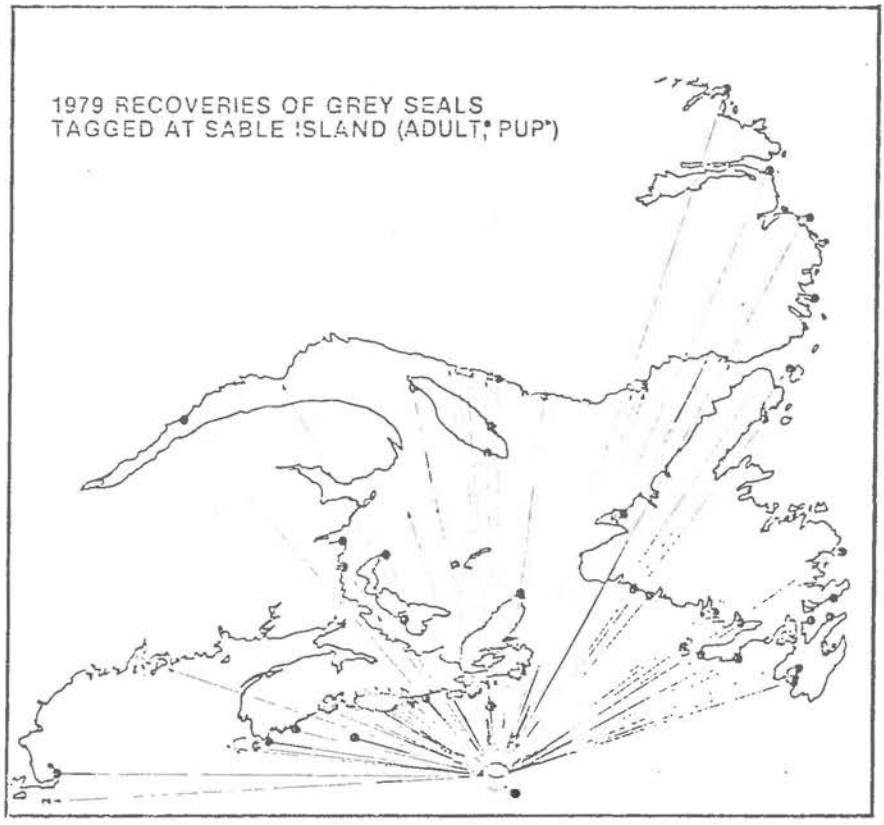


Fig. 4

Food

The grey seal is essentially a coastal species, though it appears to spend part of its time at sea feeding on the shallow offshore fishing banks. Like many seals, it is an opportunistic feeder and will take any of the various species of fish as they occur. They appear to eat once each day, and consume between 4.0 and 6.0 per cent of their body weight.

Food Consumption of Grey Seals (1969-1972)

	Per cent Occurrence
Herring	15.9
Cod	11.6
Flounder	9.9
Skate	9.6
Squid	5.6
Mackerel	5.0
Hake	2.6
Shrimp	2.6
Rock Crab	2.3
Algae	2.0

With this large variety of fish being consumed, feeding methods vary. There is good evidence that grey seals are social feeders, which vastly reduces the opportunity for the prey to escape. Large fish are brought to the surface and held in the prehensile front flippers, the head is bitten off and discarded, with the remainder being ripped into pieces small enough to swallow. Small fish are swallowed whole, usually underwater.

It is quite apparent that catching food is a relatively simple operation for grey seals. Investigation of stomach contents shows a uniform rate of digestion of the food species. Raw fish has a rapid digestion rate, and if the seals spent long hours hunting for food, the stomach contents would show all stages from freshly ingested to totally digested fish. Since this is never the case, we can infer that each seal spends less than one hour fishing for each feeding period.

Breeding

Sixteen per cent of female grey seals are sexually mature on their third birthday and give birth to their first young a year later. This figure has risen to 71 per cent by the fourth year and 89 per cent by the fifth. The lapse of one year between copulation and giving birth is not an indication that the gestation period of grey seals is one year. The biology of the females is such that they delay implantation of the blastocyst until early May, when embryonic growth commences. This means the active growth of the fetus is 238 days.

The males also become sexually mature at age three or four, but due to competition on the breeding grounds,

Fig. 5 Sable Island breeding ground

rarely mate before they are eight years old, and even then usually only with one female. Older, more aggressive bulls may hold several females in a loose territory.

During the months prior to the breeding season the seals have been actively feeding — the females to grow the developing fetus to full term, and to build the thick fat layer which will sustain them and their calf for the month or so of fasting which follows the birth. The males also are actively feeding, since they also will fast for the breeding season.

Shortly before the birth, the female leaves the sea and picks her birth site. In most cases this site is the same, or close to the place she gave birth the previous year. Grey seals are very solicitous mothers and defend their pups against any intrusion. Black-back gulls are attracted to the birth site, no doubt to eat the placenta expelled in the birth process. If one should approach the still helpless pup, the mother drives it off or in some cases kills it. If any male should attend too close, he also is threatened, rebuffed, and finally driven away.

The tenured or dominant males enter the breeding group as they form, and attempt to stay in the proximity of females. They do not hold territory, as do the Ottarid seals, nor do they attempt to keep or control the movement of the females. If another bull approaches too close, they threaten the intruder, who usually stops at that point. Sometimes if the newcomer is persistant, a fight ensues between the two bulls. These are short-lived affairs, and result in only minor damage to both participants. A compromise is reached with both bulls now associating with fewer females in a smaller area. Sexually mature, but non-dominant bulls (three to eight years old) constantly challenge tenured males. They are very unsure of themselves and quickly retreat to the sea if a dominant bull threatens.

The females suckle their young for about two weeks. As they become more receptive to the advances of the male, their concern for the calf lessens. Mating takes place at this time. The female will stay with the pup for another few days, but suckling is much reduced. The pup by now is extremely fat and the female has lost most of her blubber. She leaves the island and once more returns to the sea. Dominant bulls often follow a receptive female to the ocean, and by this method the colony is reduced to only pups by mid-February.

The ice-breeding seals do not appear to have the same social structure during the breeding season. Due to the instability of early-January ice, little is known of their habits. Overflights and brief groundwork indicate a more monogamous system.

Economics and Exploitation

In recent historic times, seals were assessed for their valuable oil yield. In 1672 Nicholas Denys wrote the following:

Between Cape Fourchu and Cap de Sable, three or four leagues out to sea, there are several Islands, some of a league, others of two, three and up to four in circumference, which are named the Isles aux Loups Marins [Seal Islands]. They are rather difficult to approach because of the rocks which surround them. They are covered with Firs, Birches, and other woods which are not very large. They are called Seal Islands because those [animals] go there to bring forth their young, which are large and strong. There are several species of

them, of which I shall make a paragraph separately. They come for lying-in about the month of February; they climb out upon the rocks, and take position around the islands where they give birth to their young. These are at birth stouter than the largest pig that one ever sees, and longer. They remain on land only a brief time, after which their father and mother drive them into the sea; they return sometimes to land, or to the rocks, where the mother suckles them. Monsieur d'Aunay sent men from Port Royal with longboats to make a fishery of them in the season, which is in the month of February while the young are there. The men go all round the islands with strong clubs; the fathers and mothers flee into the sea, and the young which are trying to follow them are stopped, being given a blow of the club upon the nose of which they die. One moves as quickly as possible, for the fathers and mothers, being in the sea, make a great disturbance thus giving the alarm for all, which makes them all flee. But few young ones save themselves, for there is not time allowed them. There are days on which there have been killed as many as six, seven and eight hundred. It is the young which are the fattest, for the father and mother are thin in the winter. Fully three or four young ones are needed to make one barrel of oil, which is good to eat when fresh, and as good for burning as olive oil. It has not the odour in burning of other fish oils, which are always full of thick dregs or of settlings at the bottom of the barrels; but this is always clear.

This letter clearly shows the value of marine mammals as a source of oil and food, during a period when most people were subsisting on the land. There is good evidence of hardy men crossing to Sable Island in small boats to hunt the seals and walrus on the island. In 1753 a man called Le Mercier advertised Sable Island for sale in the Boston Weekly News and said, "In winter they go to kill seals and boil their fat into oyl". Walrus ivory and skins were shipped from the island in large quantities, but it is not clear if seal skins were also included.

There can be little doubt that the ice-breeding seals were exploited in similar fashion by the early settlers around the Gulf of St. Lawrence. Evidence from Indian middens has turned up various seal bones, including those of grey seals, from Labrador to Cape Cod.

In Europe and the Baltic, grey seals were being exploited in similar fashion. The discovery of kerosene marked the end of marine mammals as a source of oil for fuel, although the seal fat continued to be a valuable item for production of food, primarily margarine. (The Canadian harp seal fishery was operated principally for seal fat until the early 1950s when the "white coat" fur became the principal item of trade.) The long hair "white coat" of the grey seal is not suitable for manufacture into luxury goods and today the seal is not exploited as a cash resource. There is a small "cottage industry" type of exploitation being carried out in the Hebrides at the present time, with a few hundred moulters being taken each year. Most grey seals killed today are the result of various government control programs. These programs are designed to control the expansion of grey seal numbers and range in an attempt to reduce seal damage to fixed fishing gear and the number of parasites in food fish.

Parasites

The grey seal is the principal vector of *Phocanema decipiens*, the so-called "cod worm". *Phocanema decipiens* is a nematode which encysts in the muscle of fish, mainly cod and flatfish. Since the worms render the fillets undesirable, they have to be removed before the product is sold. This is a slow, tedious, hand operation. Fish plant managers in certain areas have had to greatly increase their personnel at the inspection tables to cope with "wormy fish" from the inshore areas. Recent scientific information suggests that a relatively small grey seal population could maintain the "cod worm" at existing levels, since each grey seal carries a burden of several hundred porrocaecum nematodes, which are capable of producing several hundred thousand viable eggs at any time. In British home waters and Iceland, a relationship has been established between an increase in cod worm infestation and the increase in the numbers of grey seals. In

Fig. 6 Sull. cow. pup

Canada, cod-worm infestation is increasing in range, and is invading previously uninfested stocks.

Because of the long life history of the cod worm in various stages prior to entering cod, beneficial effects from a control program would not likely be observed for three to five years. There is as yet no scientific proof that a grey seal control program would relieve the cod worm problem although a reduction in seal numbers may control the spread and infestation rate of the various fish species.

Seal Bounties

Historically, the number of grey seals has been held in check by a variety of circumstances. The most effective of these appears to have been the bounty on harbour seals, which originally called for the submission of the seal's snout as evidence of destruction. Since it is almost impossible to tell the difference between the two snouts, many grey seals were shot for the "harbour seal" bounty.

In 1949 the regulations were changed and fishermen were required to submit the lower jaw, instead of the snout as evidence of destruction. Since the jaws from the two species are readily identifiable, this change essentially eliminated the kill of grey seals from the harbour seal bounty.

However, in April, 1976, the Department of Fisheries and Oceans attempted to alleviate the pressure on the inshore fishery by introducing a bounty on grey seals. The bounty is in effect from March 15 to December 15, and the present payment is $50 for each adult (more than one year old) and $25 for each pup. Seals may not be taken during the breeding season. The lower jaw, with the place and date of capture are required as evidence of destruction.

Similar programs are in effect in the United Kingdom. There, adult females and their pups are killed on the breeding grounds in an attempt to control or reduce the rapidly expanding grey seal population. At one colony, seals are taken because their increasing numbers had turned the island top soil into mud, making it no longer suitable for the nesting puffins to dig their breeding burrows.

In Norway the government has hired fulltime seal hunters in an attempt to reduce their seal population by 75 per cent. The main reason is to reduce the incidence of the cod worm, an important consideration to a nation whose inshore fishermen make their living from the production of high quality fresh fish.

The Irish government recently introduced legislation to investigate the possibility of reducing grey seal numbers.

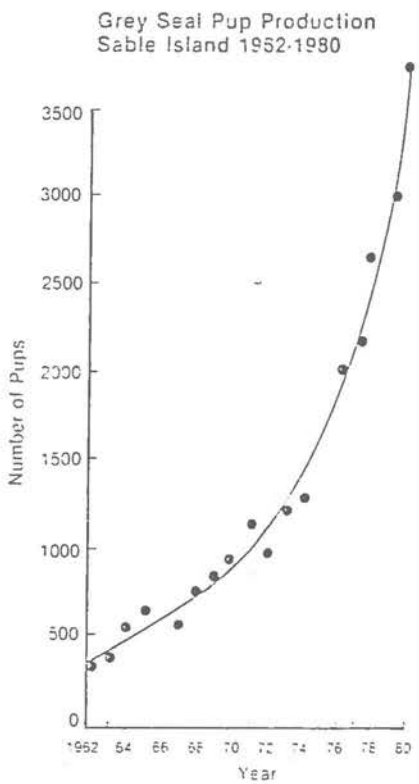
The only major fishing nation with a large grey seal population that has no control program is Iceland. They submit their finished fish product to rigourous examination for cod worms. The fillets are inspected in three separate operations and the worms handpicked before the product is sold.

Marked Seals

In addition to the bounty payment, there is a further reward for marked seals — $50 for a brand (a letter/number combination on the lower back) and $10 for a tag, which is placed on the rear flippers.

Most scientists agree that the Canadian grey seal population is at its highest level in recorded history (between 30,000 and 40,000 animals). The dramatic increase in the number of pups produced on Sable Island suggests that the population is growing. The number of pups born there has increased from 350 in 1962 to 3,700 in 1980 (Fig. 7). If the Sable Island population reflects the trend of the total population, this represents a real increase in the number of grey seals.

Fig. 7



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Harp Seal
Irish Moss
Pacific Herring
Red Hake
Red Tides
Roundnose Grenadier
Sea Scallop
Selected Freshwater Fish
Selected Shrimps of British Columbia
Spiny Dogfish
Thorny and Smooth Skates
Turbot (Greenland Halibut)
Witch Flounder
Yellowtail Flounder

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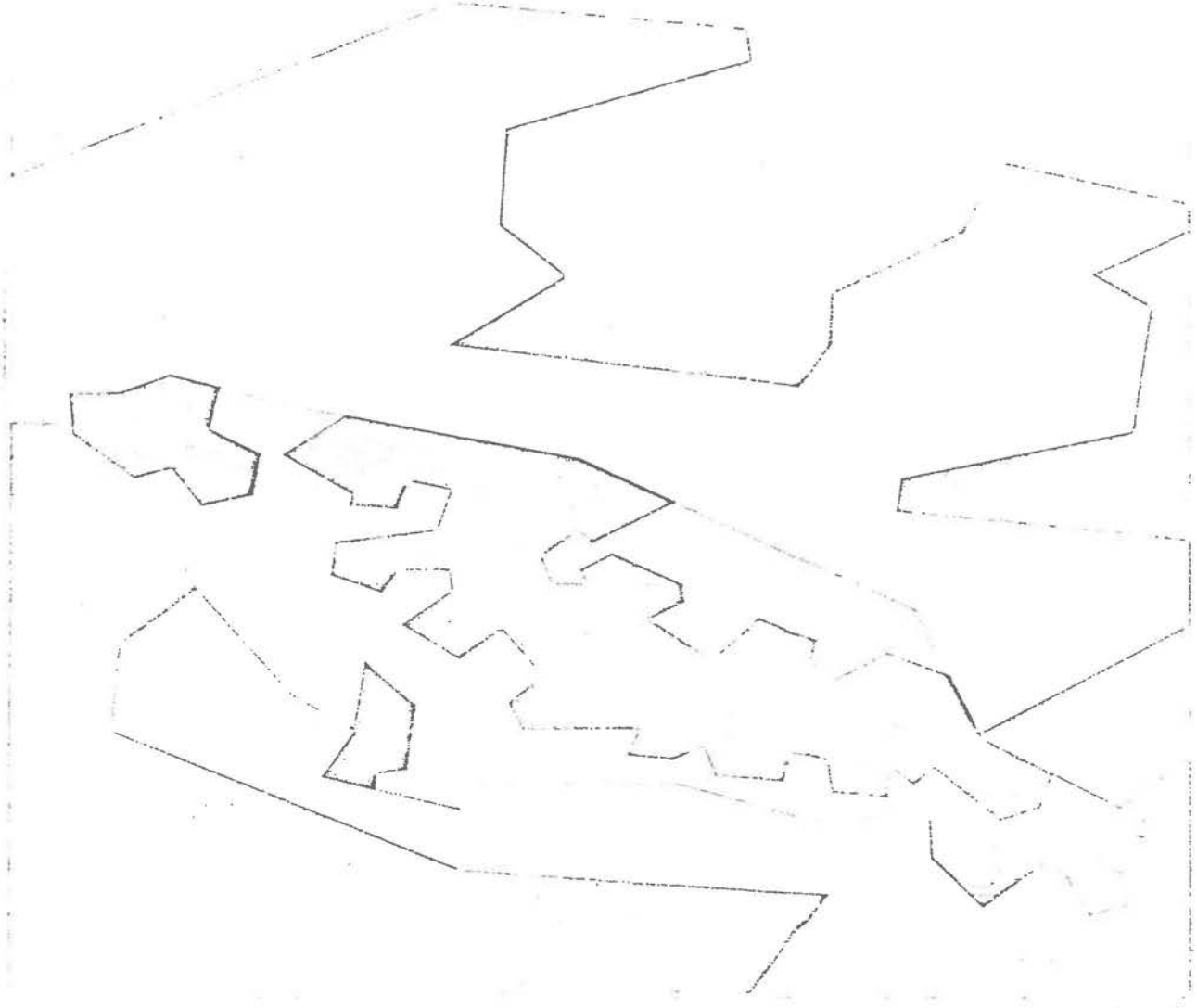
Underwater Worlds

The Harp Seal



Canada

THE HARP SEAL

Each spring the vast ice floes off Labrador and in the Gulf of St. Lawrence come alive with the arrival of adult female harp seals. There they give birth, each usually to a single pup (twins are uncommon). These pups, known as whitecoats at the time of birth, have been the focus of an annual hunt that antedates the time of Jacques Cartier.

Description

The harp seal (*Phoca groenlandica)* is a marine mammal belonging to the Suborder Pinnipedia (fin-footed animals) and the Family Phocidae (true seals lacking external ears). The fossil remains of harp seals indicate they existed during the middle Miocene age, approximately 20 million years ago. They apparently originated in the northern hemisphere and are derived from a stock of land-based flesh-eating mammals. The Norwegian name for the harp seal, Selhund, which means Sea Dog, and the French name, loup-marin, or sea wolf, aptly reflect the evolutionary origin of the harp seal. Other common names for this species are the Greenland seal, the saddle seal and the saddleback seal.

Harp seals owe their name to the irregular horseshoe-shaped band of black straddling the back in the adult male (Fig. 1). This band, or "harp", unites across the shoulders, curves down toward the abdominal region and then back up toward the posterior flippers where it abruptly disappears. The background colour of the pelt is steel blue when wet and pale grey when dry. The head and tail are black, while the anterior flippers and belly are whitish. Adult females are similarly patterned, except that the "harp", the head, and the tail are usually somewhat lighter in colour. Some adult females have irregular dark grey spots on the back with no clearly defined "harp". Occasionally very dark "smutty" seals are observed; these are generally males and are thought to be melanistic (darkly pigmented) colour forms.

Fig. 1. Adult male harp seal.

Males are only slightly larger than females: the average length (from the nose to the tip of the tail) of adult males is 169 cm. and of adult females 162 cm. Weight ranges from 85 to 190 kg depending on time of year. Harp seals may live 35 years or more.

Distribution and Migration

Harp seals occur in Arctic and sub-Arctic waters of the North Atlantic Ocean. They are confined to three widely separated populations breeding in the White Sea north of the U.S.S.R., the "West Ice" near Jan Mayen Island southeast of Spitsbergen, Norway, and off Newfoundland (Fig. 2a). Studies of skull and body dimensions indicate that Northwest Atlantic harp seals (the Newfoundland population) may be genetically distinct from the two eastern stocks.

The Northwest Atlantic harp seal population is divided into two herds, one breeding on the southward drifting Arctic pack ice off Southern Labrador (called the "Front" sub-population), and the other breeding on ice in the Gulf of St. Lawrence near the Magdalen Islands (called the "Gulf" sub-population) (Fig. 2b). Until recently the relationship between these two sub-populations was unclear. In years of negligible ice in the Southern Gulf, some seals that would normally have whelped (given birth) on that ice reproduced instead on the Labrador ice floes. In spite of this evidence of mixing between the sub-populations, there is a consistent difference of about five days in the dates of whelping between the two areas. From recent marking studies and blood protein analyses, it now seems likely that these sub-populations do interbreed. The difference in birth dates of pups between the two areas appears to be the result of environmental differences.

The survival of a harp seal pup during its first two weeks depends upon the availability of stable habitat. At the Front, heavy Arctic ice provides this stability until late March or early April. In the Gulf, the ice usually begins to disappear by mid-March and for the pup to survive, it must be born earlier than at the Front.

During spring, harp seals migrate north following the receding pack ice. Through their summer residence in the Arctic, harp seals reach as far north as Jones and Lancaster Sounds in the Canadian Arctic and Thule in northwestern Greenland (Fig. 2b).

Fig. 2. Locations of a) the three breeding populations of harp seals and b) the Front and Gulf herds of the Newfoundland population, also main migration routes.

To reach these northern waters, harp seals must swim more than 3,200 km. Small numbers also move westward into Hudson Bay, reaching Southampton Island and occasionally as far south as the Belcher Islands near James Bay. The southward migration begins just ahead of the formation of new Arctic ice and involves all adults and most juveniles. Some immature seals spend much of the winter in the Arctic, as tagged seals have been recorded at West Greenland in all months.

Life History

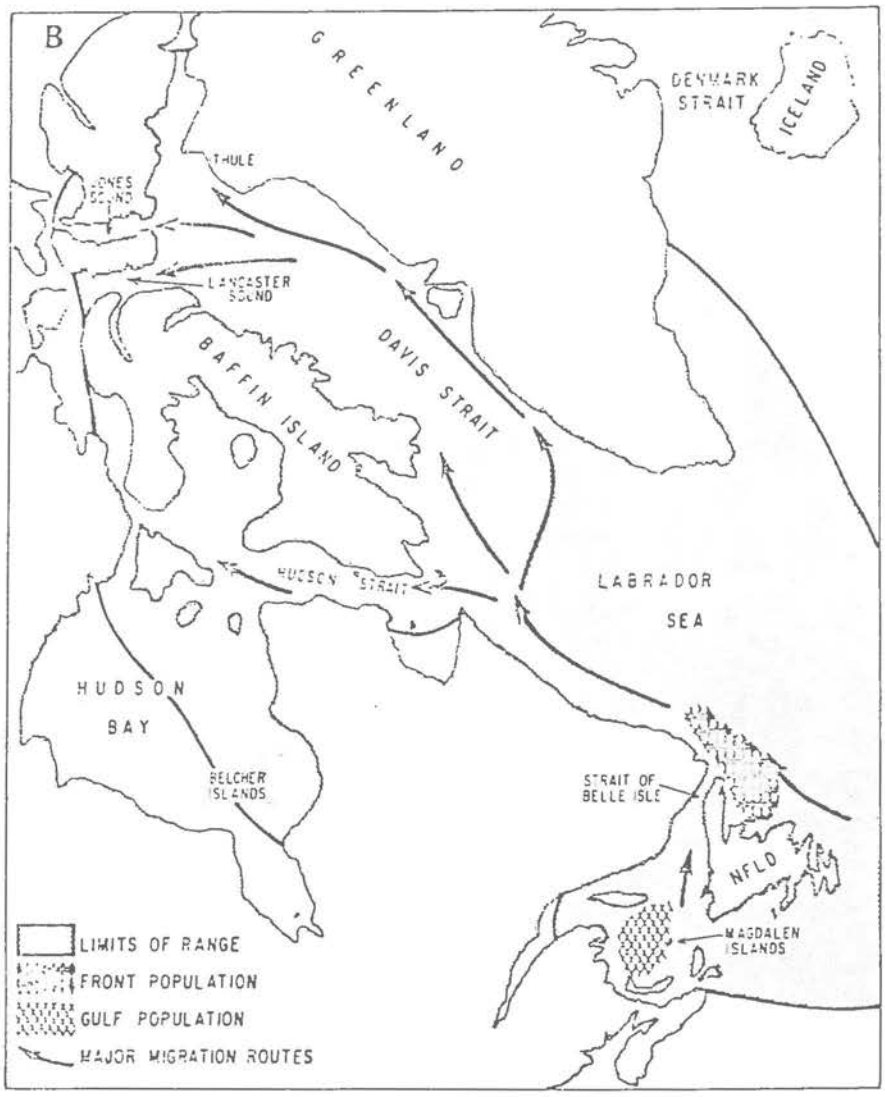
Harp seals are highly gregarious marine mammals, hauling themselves out of the water onto the ice in dense herds to bear their young, to mate and to moult (Fig. 3). They also migrate and feed in loose herds of up to several hundred individuals.

In late September when new Arctic ice is forming, the seals start their journey south along the east and west coasts of Baffin Island and eastward through Hudson Strait. The first migrants reach northern Labrador in mid-to-late October and the Strait of Belle Isle (separating Newfoundland and Labrador) by mid-December. Here the migrating herd separates, about one third of the population going into the Gulf of St. Lawrence and the remainder continuing down the east coast of Newfoundland. During January and February seals disperse widely and feed intensively. Huge amounts of energy in the form of blubber are accumulated during this time. This is particularly important for pregnant females, for they need this energy to support the enormous demands of their rapidly growing offspring during lactation.

Wintering harp seals appear to feed chiefly on capelin, other pelagic fish such as herring and polar cod, and crustacea such as euphausiids, mysids, amphipods and shrimps. Small amounts of bottom-living fish such as redfish, cod, American plaice and Greenland halibut are also eaten.

Pregnant females give birth several days after they have hauled out onto the winter pack ice in late February or early March. In each area the herds are generally concentrated into two main "patches" on the ice. These vary from 20 to 200 square kilometres and may contain as many as 2,000 adult females per square kilometre.

Newborn pups are about 85 cm long, weigh about 11 kg and are yellowish in colour. In about three days the fur turns to a fluffy white from which the pups derive the name "whitecoats" (Fig. 4). Young



harp seals rank among the fastest growing and most precocious of young mammals. They are nursed for about nine days and then abandoned by their mothers. During this period they more than triple their weight on milk which contains up to 45 per cent fat (compared to four per cent for cow's milk). When weaned, pups weigh an average of 33 kg. More than half of this weight is fat in the form of blubber.

During their first week of life pups nurse four or five times a day and wail to indicate to their mothers that they are hungry. It seems astonishing that mothers can find their own pups among so many. They do this by the odour and perhaps the call of the pup.

After the pups are abandoned by their mothers, they begin to lose weight and to moult (i.e. shed) their white coats. Partially moulted pups are called "ragged jackets". After about 18 days this coat is completely shed and is replaced with a short silvery one, flecked with small dark spots along each side and sparsely flecked on the back. The pups are now called "beaters".

As soon as females have finished nursing but before they leave the "whelping patch", they are courted by males which have been waiting nearby in large herds. Mating appears to be promiscuous and may occur either in the water or on the ice. Males reach maturity at seven or eight years of age.

The females come into breeding condition annually about two weeks after their pups are born, when nursing has ended. The gestation period is approximately 11.5 months. However, there is a period of about three months during which the development of the embryo is suspended. This delay in the growth of the embryo serves to ensure that pups are born at the same time each year. Usually only a single pup is born each year, but twins have been recorded. Females generally mature at between four and six years of age.

Each year, beginning in early April, harp seals moult. Adult males and immatures, called "bedlamers"[1], moult first, followed by adult females, which start to moult about the third week of April. During the approximately four weeks of moulting, harp seals rarely feed and as a result lose more than 20 per cent of their fat. After they have moulted, adults and immatures migrate to their summer feeding grounds in the Arctic, thus completing their annual cycle.

While the older animals are moulting, beaters begin to feed, mainly on small crustaceans and small fish. They actively seek the ice and gradually move northwards, reaching west Greenland in early to mid-June where they spend the summer.

Economics

It was the commercial demand for harp seal oil and skins in the late 18th century that gave rise to the sealing industry. By 1850 the annual seal hunt was worth between $1.0 and $1.25 million to Newfoundland. At that time much of this revenue came from the sale of oil, an odourless, tasteless, clear liquid obtained by rendering (melting down) the thick layer of fat attached to the skin. Harp seal oil became valued as a fuel for lamps, a cooking oil, and a lubricant.

Today, fur and leather, oil and meat are the principal products of the hunt, representing approximately 76 per cent, 10 per cent, and 14 per cent, respectively, of the income derived by Canadian sealers. The value added to Atlantic Canada's economy in 1982 was estimated at $10 to $12 million. This included revenues to sealers in the neighbourhood of $500,000 derived from the sale of carcasses and flippers for food, mainly in Newfoundland.

History of Exploitation

The harp seal is the basis of a traditional sealing industry in Newfoundland and the Gulf, which was well established by the early 18th century. At that time the manning of sealing stations was given as the major reason for breaking the ban on the colonization of Newfoundland. Initially seals were captured in nets set from shore, a practice which continues today in parts of Newfoundland, along the North Shore of Quebec and in southern Labrador. By the late 18th century Newfoundland fishermen owned 2,000 nets and earned half of their annual income from the sale of oil and skins.

The first step toward the development of a commercial offshore harvest was the participation in 1794 of the first wooden sailing ship to hunt seals. The schooner sealing fleet was not significant until the early years of the 19th century, but between 1825 and 1860, the heyday of the seal hunt, more than 300 schooners were sailing from St. John's and Conception Bay with crews exceeding 12,000 men. Eleven times during this period, catches of greater than 500,000 pelts were landed, the maximum being 744,000 in 1832. These catches were mainly young harp seals, but also included adults and immatures and a small number of hooded seals.

In 1863 a second advance in hunting technology occurred when steamers were used for the first time. The number of steam-powered sealing ships increased rapidly to 25 in 1880 and by 1911 all offshore sealing ships were steam-powered. The final revolution in sealing methods came in 1906 when the first steel-hulled ship, the S.S. ADVENTURE, was fitted for the hunt (Fig. 5).

Although the large-vessel hunt in March is well known, smaller vessels are also used to hunt seals. "Landsmen" in small boats and larger vessels up to 20 m in length (longliners) from the Magdalen Islands, the North Shore of Quebec, and Newfoundland take pups and older seals from late December to May. Harp seals are also taken in the Canadian Arctic and along the coast of west Greenland from June to August. About 45 per cent of the total allowable catch of harp seals is currently taken by the landsmen and Arctic hunts.

Fig. 3. Moulting harp seals located east of Belle Isle, Newfoundland in April, 1981.

[1] The term "bedlamer" comes from the Basque and Breton settlers who took up residence along the Strait of Belle Isle in the 15th and 16th centuries. They were fascinated by the unusual curiosity of the young seals and called them "Bêtes de la mer", Animals of the Sea. English fishermen corrupted this phrase into the term "bedlamer".)

Fig. 4. Harp seal whitecoat, approximately seven days of age.

Despite the replacement of sailing ships with steam-powered vessels, catches of seals in the Northwest Atlantic declined substantially towards the latter part of the 19th century, averaging about 341,000 between 1863 and 1894. Beginning in 1895 harp seal catches were recorded separately and continued to decline, averaging 249,000 between 1895 and 1911, and 159,000 between 1912 and 1940.

In 1938, the large Norwegian sealing ships began to hunt the Northwest Atlantic population. Following the Second World War, during which little sealing occurred, the Norwegian fleet returned and gradually increased. By 1949 this resulted in a doubling of catching effort. Although mainly a Canadian and Norwegian industry, ships under the registry of Denmark, France, the United States, and the Soviet Union occasionally participated in the Atlantic coast hunt.

Annual catches of harp seals by ships from 1949 to 1961 averaged 185,000 young and 70,000 adults and bedlamers. In addition, the catch by landsmen from Cape Breton Island, Quebec, Newfoundland, Labrador, and West Greenland was approximately 55,000 annually. The total catch averaged 310,000 seals. Between 1961 and 1970, annual catches averaged 287,000 animals. Under quota management, introduced in 1971, harp catches for the decade 1971-1981 averaged 172,000 animals of which about 137,000 were pups.

The large catches of harp seals in the post-war years and the increased proportion of the catch comprised of older seals resulted in a marked decline in population size and pup production. Although historical data are inadequate to accurately assess population size prior to 1950, it is evident that the reduction in stock size between 1950 and 1970 was approximately 50 percent, or from about 2.5 to 3.0 million animals in 1950 to about 1.5 million seals age one year and older in 1970.

Research and Management

Research to determine the size of the harp seal population and the effect of existing catches on trends in population size began in the early 1950s. Since then a number of assessment methods have been used. All require certain assumptions, and it is not always possible or practical to test whether these are justified. However, this is a common problem in the estimation of abundance and productivity of most animal species and is not unique to harp seals.

The earliest method used to estimate harp seal abundance was aerial survey. Initially, normal daylight film was used to photograph the seals, but the white pups were often invisible against their background of snow. In the 1970s it was discovered that the fur of whitecoats absorbs ultra-violet radiation. Thus, in an ultra-violet photograph, pups produce a black image against the white background of the surrounding snow and ice.

A second system used to estimate the population is the survival index method. Annual studies of the age composition of seals killed while migrating show that the level of survival of young seals varies inversely with the level of catch. This method cannot provide an estimate for a single year — only an average estimate for a period of years. The method assumes that pup production during the period in question remains constant; if production is changing, then the estimates of production will be biased. However, this bias is generally small.

Mark-recapture methods have also been used to estimate pup production. In this method, a large number of whitecoats in each whelping patch are marked with coloured tags. Some time later — usually April or May of the same year — beaters are taken during the landsmen's hunt. Some of these beaters are marked and some are not. By considering the ratio of marked beaters to total beater catch, and knowing

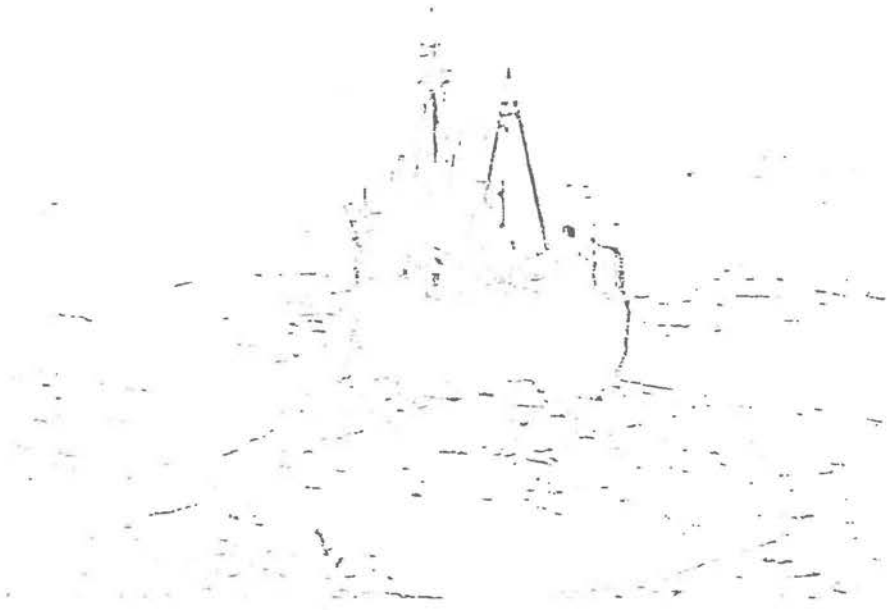
the number of whitecoats initially marked, it is possible to determine the number of whitecoats born.

Computer models are also used to estimate population size and the number of seals that can be harvested from a population of a given size if it is to maintain its present level of abundance. These models use: the age composition of the catch; the age structure of the population; proportion of pregnant females at each age; and rate of natural mortality. These models enable the reconstruction of trends in abundance since 1950 and allow short-term predictions about the future size of the population, given a stated level of harvest.

It is important to recognize that it is difficult to give precise and accurate estimates of population size and pup production. All of these systems have their weaknesses, but taken collectively they provide a reasonable basis for making management decisions.

Canadian scientists conducted the first attempts at stock assessment in 1950 and 1951. From aerial surveys, pup production in the Gulf and at the Front was estimated as 645,000 young. When further estimates were made in 1959 and 1960 revealing only 315,000, it was evident a decline in the population had occurred.

Fig. 5. Modern steel-hulled sealing vessel used in the harvest of harp seals.



Regulations were first imposed on the harp seal hunt in 1961 when a closing date of May 5 was introduced.

In 1963 the closing date was changed to April 30 in an attempt to protect adult females in moulting concentrations. In 1964 and 1965, more significant conservation measures were taken. These included protection of adult seals in breeding patches, a catch limit of 50,000 seals in the Gulf of St. Lawrence (effectively stopping Norwegian sealing in this area), and the banning of the use of aircraft which had been introduced in 1962. In 1966, females were protected on whelping patches.

Commercial sealing, at Canada's request, was placed under the deliberation of the International Commission for the Northwest Atlantic Fisheries (ICNAF) in 1966. The following year, scientists of the ICNAF seal assessment working group reported that the harp seal population had sustained a marked decline since 1950. Accordingly in 1968, opening dates were established and the hunt shortened, with a closing date of April 25. However, these regulations had little effect on limiting the numbers of seals harvested.

Effective management began in 1971, when the first catch quota (245,000 seals) was imposed. This move was taken as a result of substantial and sustained decline in the population. In 1972 the quota was reduced to 150,000, of which 120,000 were to be taken by large vessels, with an allotment of 30,000 animals to landsmen. Ship-based sealing was also banned in the Gulf in 1972. From 1972 to 1975 the quota remained at 150,000 seals.

Results of several stock assessments in 1975 disagreed, one suggesting that the quota could be raised to 200,000 and another suggesting a range of quotas from 90,000 to 127,000. As a result, in 1976, the quota was set at 127,000; however, because of the unregulated landsmen's hunt, the actual kill exceeded 165,000. In 1976 scientific advisers to ICNAF reviewed new analyses which indicated that the seal population had been increasing since 1972. Accordingly, the quota was raised to 160,000 with an allotment of 10,000 for the Arctic summer harvests. In 1978 this was increased to 170,000 plus an Arctic allotment of 10,000. From 1978 to 1981 the quota remained at this level. Landsmen were regulated by quota beginning in 1977. Total catches from 1978 to 1980 averaged 176,000

Fig. 6. Female harp seal with white coat ready to nurse.

seals, including the Arctic catch in Canada and at west Greenland.

Recent data indicate that pup production is in the neighbourhood of 475,000 animals, with an associated population of animals one year and older of about 2.0 million seals. Due to uncertainties in the data, these estimates cannot be considered firm. Nevertheless, there is sufficient evidence to show that the population is not endangered by the existing levels of harvest.

The management of the harp seal has improved considerably in recent years. Further study of the marine ecosystem and research into the interactions between harp seals and other species is now underway. Considerable effort must be devoted to multispecies interactions if harp seals are to be managed as one of the principal predators in an ever-changing marine community.

Further Reading

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information

CANADA'S POLICY ON SEALS AND SEALING

The Canadian government's policy on seals and sealing is consistent with its policies on the management of other fishery resources. Seals are considered a natural resource available to be humanely harvested like many other species. The harvesting of this resource is permitted only within the limits of sound conservation principles, taking into account their role in the ecosystem. The government's objective is to gain the maximum socio-economic benefits for Canadians in general and those who depend directly on the resource in particular.

Sealing on Canada's Atlantic coast began before the arrival of the first European explorers. Jacques Cartier found Labrador Indians taking seals in the Strait of Belle Isle in 1534. By the end of the 16th century, Basque, Norman and Breton fishermen made annual expeditions to the Magdalen Islands in the Gulf of St. Lawrence, where seals formed an important part of their catches.

Since that time, wherever seals have occurred on the rugged coasts of Newfoundland and in the Gulf of St. Lawrence, they have formed an important part of the harvested resources of the sea, fundamental to the year-round settlement of some areas. Seal meat, oil, leather and fur remain important items of trade and commerce.

Protection and Conservation of the Species

The harp seal is the world's second most abundant species of seal. Consistent with its policies on the management of other fish and wildlife species, the Government of Canada allows humane harvesting of seals at levels that are sustainable over the long term, based upon principles which ensure the maintenance of adequate breeding populations, and which take into account the relationships between the species and their competitors, predators and prey. The catch of harp seals is restricted to levels which permit the continued increase of the population from its present 1.57 million animals. The interim target established a few years ago was 1.6 million.

Each year, international seal scientists meet in the Scientific Council of the Northwest Atlantic Fisheries Organization (NAFO) to consider the most recent scientific data on seal populations. In November, 1980, advice from this Council indicated that 375,000 seal pups would be born in 1981 and that 234,000 animals could be removed annually and still maintain the present population size over the long term.

Humane Methods

The humane killing of seals is a priority consideration of the Government of Canada. Strict regulations have been established to ensure that seals are harvested with a

minimum of suffering. Studies conducted in Canada and the United States have concluded that the killing techniques practised by Canadian sealers in harvesting whitecoats are as humane as any developed.

The Canadian Government's policy requires every sealer to obtain a licence to participate in the hunt. The Department of Fisheries and Oceans organizes lectures and courses of instruction for sealers. These training courses are prepared in conjunction with experts from societies and agencies concerned with animal care, to ensure that seals are killed in the most humane manner possible, and to assist sealers in producing high quality seal meat and fur.

Canada's policy also supports the presence on the sealing grounds of such independent observers as veterinarians, veterinary pathologists, biologists and humane organization observers, to ensure that regulations on humane killing are observed. Numerous national and international organizations concerned with the humane treatment of animals have sent observers to the seal hunt. Their reports are publicly available.

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Since that time, wherever seals have regularly occurred on the rugged coasts of Newfoundland and in the Gulf of St. Lawrence, they have formed an important part of the harvested resources of the sea, fundamental to the year-round settlement of some areas. Seal meat, oil, leather and fur remain important items of trade and commerce.

Protection and Conservation of the Species

The harp seal is the world's third most abundant species of seal. Consistent with its policies on the management of other fish and wildlife species, the Government of Canada allows humane harvesting of seals at levels that are sustainable over the long term, based upon principles which ensure the maintenance of adequate breeding populations, and which take into account the relationships between the species and their competitors, predators and prey. The catches of harp seals within the last decade have been restricted to levels which have allowed the Northwest Atlantic population to increase from its low point, estimated at slightly over one million animals in the early 70s to the present level estimated to be close to two million. The total world population of harp seals is now estimated at approximately three and one quarter million animals.

Each year, seal specialists of several nations meet in the Scientific Council of the Northwest Atlantic Fisheries Organization (NAFO) to consider the most recent scientific data on seal populations, and to formulate advice to Canada on the scientific management of seal stocks. In 1982, additionally, Canada and the European Economic Community (EEC) Commission addressed a joint request to the International Council for the Exploration of the Sea (ICES) for scientific advice on aspects of the population dynamics and state of seal stocks in the Northwest Atlantic. An Ad Hoc Working Group was set up by ICES to respond to this request, comprising eminent experts from the U.S.A., United Kingdom, Norway, Netherlands, Federal Republic of Germany, Denmark and Canada, including academic scientists. It is significant to note that the harp seal

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pup production figures given for the late 1970's in the opinion of the unanimous report of the ICES Working Group are substantially higher than those which were provided for the same period by NAFO. This is strong evidence that the scientific advice Canada has been receiving has been prudent, and that conservation measures followed since the early 1970's have been effective in increasing the harp seal population. Further, it provides substantive confirmation of the more recent NAFO advice projecting a 1983 population size in excess of 2 million animals. The 1983 total allowable catch in waters within Canadian jurisdiction is 186,000, the same level as 1982, well below the mid-range of the replacement yield and therefore, likely to ensure the continued, gradual increase in population size of this stock.

Although the Ad Hoc Working Group of ICES noted the increased availability of hooded seals - borne out by increasing catches in Greenland and by Norwegian vessels at the Front - it concluded that available data are insufficient to provide sufficiently reliable estimates of stock size, pup production and vital rates to warrant the formulation of a definitive opinion on trends in abundance. In view of the doubts implicit in this advice, and as a precautionary measure, Canada proposed a reduction in the total allowable catch for this species in 1983, to be shared by Canada, Norway and Greenland. In past years the total allowable catch for this species within Canadian waters was set at 15,000 shared by Canada and Norway, with Greenlanders catching an additional 5,000 to 6,000 in the unregulated catch along their coasts.

Humane Methods

The Canadian government is constantly seeking better, and if possible, more humane methods for harvesting seals. Strict regulations have been established to ensure that seals are harvested with a minimum of suffering. Several studies have concluded that the killing techniques practised by Canadian sealers in harvesting whitecoats are as humane as any developed to date.

Tests have been carried out within the last few years, using a firearm developed by a member of the Committee on Seals and Sealing, specifically for use in the harvesting of young seals. Extensive field trials with this weapon scheduled for the 1982 season had to be cancelled early, since it did not quite meet the stringent criteria of efficiency in producing instant brain death. Modifications of the design of the pistol and characteristics of its ammunition carried out by the manufacturer appear to have resolved the problems which became apparent in the field in 1982, and it is planned in 1983 to subject the instrument to rigorous testing. Indications are that it may have advantages over current techniques of stunning; it will, however, have to meet or exceed the level of efficiency and humaneness already attained by the club or hakkapik, before it can be accepted under the regulations as an approved killing instrument.

The Canadian Government's policy requires every commercial sealer to obtain a licence to participate in the hunt. The Department of Fisheries and Oceans organizes lectures and courses of instruction for sealers. These training courses are prepared in conjunction with experts from societies and agencies concerned with animal care, to ensure that seals are killed in the most humane manner possible, and to assist sealers in producing high quality seal meat and skins.

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Canada's policy also supports the presence on the sealing grounds of reasonable numbers of independent observers such as veterinarians, veterinary pathologists, biologists and humane organization observers. Numerous national and international organizations concerned with the humane treatment of animals have sent observers to the seal hunt. The reports of many of these have been made publicly available.

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Information

HISTORICAL AND SOCIOLOGICAL PERSPECTIVES OF SEALING

History of Sealing

Sealing on Canada's Atlantic coast began before the arrival of the first European explorers. Jacques Cartier found Labrador Indians taking seals in the Strait of Belle Isle in 1534. By the end of the 16th century, Basque, Norman and Breton fishermen made annual expeditions to the Magdalen Islands in the Gulf of St. Lawrence, where seals formed an important part of their catch. Records of one such expedition in 1591 indicate that sealing had already been taking place for several years and that the Indians of the mainland (Micmacs, who would canoe across the Gulf from Cape Breton or Prince Edward Island) participated in the hunt and assisted the fishermen.

Wherever seals occurred on the rugged coasts of Newfoundland and the Gulf of St. Lawrence, they formed a very important part of the harvested resources of the sea, fundamental to year-round survival in many of these isolated settlements. Seals provided the early settlers with food and valuable oil, as well as leather and fur for clothing, all of which soon became important items of trade and commerce. The earliest sealing activities were conducted from shore, a practice which continues to this day. Various methods were used, ranging from the shooting or stunning of animals which came out on shore or on the ice, to the capture of free-swimming migrating seals in nets. In some areas, such as the Labrador and Newfoundland coasts, and the Quebec North Shore of the Gulf of St. Lawrence, migrating seals normally pass quite close to shore and can be caught in the water from small boats on their southward migration and on their return to the northern feeding grounds.

In other areas, the ice pans where females give birth, frequently drift ashore or pass close enough for fishermen to be able to get out on the ice, either on foot or with small specially-built ice boats, to harvest some of the nursing or recently-weaned pups. This has been the basis of the traditional hunt in the southern Gulf of St. Lawrence, under ice and weather conditions which can vary greatly from year to year.

Newfoundland has been by far the most important participant in the fishery for the Northwest Atlantic harp seal. Its sailing schooners enabled men to get to the whelping* herds on the ice, and the advent of offshore sealing vessels in the late 18th century (1794) heralded the rise of sealing as a major late-winter occupation.

Sailing schooners were eventually replaced by wooden steamships, which in turn gave way to steel ships strong enough to withstand the tremendous pressures of the ice. Steel ships increased the safety and to some extent the comfort of the sealers, but had no effect on the number of seals taken; the herd was already heavily exploited by the schooner fishery, and the peak catch, recorded in the mid-19th century, was taken by the schooner sealing fleet.

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* Whelping is the act of giving birth.

Since 1949, when Newfoundland became a province of Canada, the Canadian seal hunt has become more widely based. Companies were established in Nova Scotia employing officers and crews from Newfoundland and Nova Scotia. Some of the large vessels which currently take part in the hunt sail from Nova Scotian ports. However, most of Canada's sealers come from the rugged northeast coast of Newfoundland.

Components of the Seal Harvest

The Northwest Atlantic harp seal hunt really includes several different components. A hunt by the native peoples of west Greenland and the Canadian Arctic takes place during the summer months. A hunt by large vessels (more than 20 meters in length and greater than 150 tons displacement) takes animals from whelping and moulting concentrations on the ice of the "Front" area off northeastern Newfoundland, and in the vicinity of the Magdalen Islands in the Gulf of St. Lawrence. The recent increase in the number of strongly-built multi-purpose small vessels (11-20 meters in length) has introduced a new component to the seal fishery which takes principally beaters* and moulting adults throughout the spring months, using traditional gear and approved firearms.

"Landsmen", operating on foot or in small boats among the loose ice pans, harvest primarily white coat and beater pups and some adults in early spring, and their catches account for a substantial portion of the total harvest. A small but locally-important fishery also occurs from December to February along the coasts of Labrador and the Quebec North Shore, as harp seals migrate southward to their whelping grounds, and during the late spring when they migrate northward to their summering areas in the Arctic.

Most sealers come from smaller Atlantic coastal communities scattered over thousands of kilometers of indented coastline along the shores of Newfoundland and Labrador, the Magdalen Islands and the Quebec North Shore. These communities were established in locations selected on the basis of ease of access to the sea in areas where marine resources were abundant. Their success (or failure) depended upon the ability to harvest a variety of species including cod, salmon, capelin, lobsters, and seals as they became seasonably available. This pattern continues to this day and the residents of coastal communities remain closely linked to the natural seasonal succession of species typical of their fishing grounds. In the Canadian Arctic of course, seals have always been the mainstay of the Inuit way of life.

Socio-Economic Considerations

The economy of many small Atlantic coastal communities depends upon a single industry - fishing. Total dependence upon seasonally-available resources results in an employment picture which fluctuates widely from one season to another. Local unemployment rates in certain fishing (and sealing) villages along the northeast coast of Newfoundland and along the shores of the Gulf of St. Lawrence frequently approach 90 per cent in March and April.

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* The term "beater" applies to young which have completely shed their white coat. Shedding is normally completed by the 25th day of age, and the pup at this stage is fully weaned and independent.

The scarcity of alternate employment opportunities in these resource-based communities results in very limited occupational mobility for seal-hunting fishermen. Once their fishing gear is prepared and readied for the next fishing season, there is little to do but to wait out the months which remain, since weather and ice conditions close down other fisheries.

A survey of the commercial hunt carried out in 1980 showed that of the active sealers, 74 per cent were married with an average of 2.9 dependents. The total annual family income figure for the sealers (from all sources) showed that 83 per cent made less than $15,000 in the previous year. The study also showed that the majority of the sealers were fishermen by occupation, or employed in the fisheries-related labour/service sector.

Earnings received from the seal hunt benefitted more than 15,000 individuals, including the households of the sealers and those employed in processing and support industries. These earnings provide an important supplement to the sealers' annual income which, for the most part, is gained through employment in other fisheries-related activities during the summer months. Sealing is even more important to Canada's Inuit.

The significance of the sealing industry and of the much-needed income it produces for the sealers, can only be fully appreciated in the context of the socio-economic environment in which these people live.

The history of sealing is one of hardship and unfortunately, occasional marine disaster. It has been an integral part of the social, economic and cultural heritage of Canada's east coast. The Canadian government is careful to ensure the application of sound conservation principles and humane treatment in the harvesting of seals, as it does to its other renewable marine resources. Management is guided by a determination to achieve "best use" on the basis of broad socio-economic benefit, taking into account the complex interactions among all of the components of the resource base.

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Information

HUMANE ASPECTS OF THE HARP SEAL HUNT

The death of any living creature cannot be made visually or aesthetically appealing. Unfortunately, this fact has been exploited by groups with a vested interest in creating controversy and antipathy about the seal hunt.

Humane Killing

Given that an animal is to be killed, the prime objective of responsible humane organizations and the government regulatory bodies which control the operation, is to ensure that the method of killing is humane and effective. A humane death, whether for the seal or the other domestic and wild animals which our society uses, is defined as one which brings a rapid, efficient death to the animal with the absence or absolute minimum of physical pain or psychological distress.

Methods of Research

Historically, northern fur seals on the Pribilof Islands of the United States, as well as the harp seals off the Canadian Atlantic coast have been harvested by manual stunning (by a sharp blow to the head with a club) followed immediately by exsanguination (bleeding-out). As the skull bones of seals are relatively thin and fragile, the minimum effect which the clubbing technique produces is a deep irreversible unconsciousness, instantaneously rendering the animal insensitive to pain. In the majority of cases, the cranium is entirely crushed, inflicting a swift neurological death. Stunning and exsanguination is the standard humane slaughter method used in the majority of the developed world's abattoirs.

Considerable research has been conducted on the humaneness of alternate techniques for humane killing of seals. Between 1969 and 1972 the United States Government commissioned a number of scientific groups and humane organizations to investigate alternate methods of killing seals. These groups included representatives from the U.S. Department of Agriculture and other government bureaus, the American Academy of Sciences, the Humane Society of the United States, the Virginia Mason Research Centre, the Panel of Euthanasia of the American Veterinary Medical Association and the Battelle Columbus Laboratories. A variety of methods were examined including amongst others, acoustical shock, gas chamber techniques, decapitation, electrocution, gaseous anaesthetics, gunshot, impaction techniques, individual administration of gases, injectable drugs, thermal destruction of brain function, and ultrasonic and laser systems. Prototype devices were developed and tested in the field, utilizing pneumatic compression, pneumatic impaction and bipolar electrocution. None of these methods was found to be as efficient, or more humane than the simple stunning and bleeding-out technique. The club emerged as the best technique for stunning seals on a mass harvest basis, and was judged to be safe, rapid and effective in accomplishing its purpose. Further, gas hypoxia techniques and drug paralysis were found to take five to eight times longer to dispatch animals than the stunning and exsanguination method.

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The clauses respecting humane killing in the Canadian Seal Protection Regulations are more stringent than the regulations governing the humane slaughter of domestic animals in either the United States or Canada. The clubbing/exsanguination technique is used countless times yearly in North American abattoirs to provide the food and hide products demanded by our society which are also the primary products of the harp seal harvest.

Considerable misinformation has been distributed regarding the humane aspects of the Northwest Atlantic harp seal hunt. These statements have produced common misconceptions, for example, that the harp seal dam bereaves the loss of its pup as do dogs or domestic cattle during the first week of the young animal's life. Veterinary and scientific observers have concluded that dam-pup relationships in the seal are predominantly hormonal in nature and cease rapidly with either the weaning or loss of the pup. The commencement date of the vessel hunt at whelping patches is adjusted to ensure that most pups are weaned or close to being weaned before being harvested. With few exceptions, females still nursing their almost independant pup, leave it upon the approach of the sealers.

Observers

The objective of humaneness has received Canadian government attention at the seal hunt for many years, and considerable research by veterinarians, pathologists, biologists and humane organization observers has been directed towards the aspect of humane killing. A review of reports from these scientists and observers at the seal hunt from 1964 to the present reveals substantial agreement that the seal hunt is a basically humane operation. As early as 1969, an observer from the Canadian Federation of Humane Societies, Dr. K. Ronald, concluded from his examination of more than 500 seal carcasses, that the average level of humane killing was very high. In the random examination of 509 seal bodies for crushed skulls (which inflicts a swift neurological death) there was only one "doubtful" instance, indicating a success rate of 99.82 per cent. Extensive postmortem examinations on harp seals and hooded seals carried out by veterinary pathologists in 1971, 1975, 1977, 1979 and 1980 at the Northwest Atlantic hunt have further confirmed the humaneness of the stunning/exsanguination technique in sealing. Following a two-year study, the Humane Practices Committee of the Canadian Veterinary Medical Association concluded that the regulation club or hakkapik, as prescribed in the Fisheries Regulations, constituted an effective humane means of producing unconsciousness and death prior to exsanguination, and recommended that the method be retained.

While there is widespread, qualified agreement on the adequacy of the traditional method using the club or hakkapik as prescribed in the Regulations, the Canadian Government has sponsored research aimed at the development of a safe firearm, specifically designed for the killing of young seals, as a possible eventual substitute for the method currently in use. Preliminary trials during 1979 and 1980 have shown this technique to be acceptable from a humane point of view, and that it may have advantages over stunning, especially from the visual aspect. Extensive field trials with a specially-commissioned prototype firearm, were scheduled for the 1982 hunt. These were cancelled after the first day when it became evident after a few trials that the pistol and special ammunition provided with it, did not uniformly achieve the level of instantaneous brain death set out as a prerequisite. The design of the pistol, and its ammunition have since been altered by the manufacturer and it is

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is intended to test it fully in the field during 1983. In order to be acceptable, the firearm must meet or exceed the level of efficiency and humaneness attained by current approved stunning instruments.

Members of numerous organizations concerned with the humane treatment of animals have observed the seal hunt, including the Canadian Federation of Humane Societies, the Society for the Prevention of Cruelty to Animals, the International Society for the Protection of Animals, the Canadian Veterinary Medical Association, the Ontario Humane Society, the Canadian Audubon Society, the Frankfurt Zoological Society, and the Universities Federation for Animal Welfare. The reports of many of these have been made publicly available.

The Canadian and Norwegian Atlantic sealing operations have been considered predominantly humane for more than two decades, and with the refinement of techniques and the training of sealers, observers from responsible humane organizations and veterinary pathologists generally agree that the whitecoat and hooded seal hunts are conducted in an acceptable manner.

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Information

MANAGEMENT OF THE HARP SEAL HUNT

Canada's policy on the management of seals is consistent with its policies on the management of other living, renewable resources. Humane harvesting is allowed at levels which are sustainable over the long term, based upon sound conservation principles which ensure the maintenance of adequate breeding populations and which take into account the relationships among the species managed and their competitors, predators and prey. The harvest is directed towards the achievement of optimum socio-economic benefits to Canadians in general, and, in particular, to those who depend upon the sea for their subsistence. The catches of harp seals have been restricted to levels chosen to permit the continued increase of the Northwest Atlantic population to an interim target established a few years ago at 1.6 million animals. The success of this cautious approach to management has been borne out by successive annual population estimates which have indicated a gradual increase. The most recent scientific studies place the present population level at about 2 million animals, and bear witness to the evident conservatism of previous estimates.

Sealing Management Advice

Prior to the extension of Canada's fisheries jurisdiction to 200 miles on January 1, 1977, international consultation and negotiation had been necessary for the management of most Canadian marine resources, including seals. Many of these ranged well beyond Canada's old 12-mile fisheries jurisdiction. It was only in the International Commission for the Northwest Atlantic Fisheries (ICNAF) that the required conservation measures could be debated and recommended for most Atlantic coast stocks. In view of the considerable expertise and experience in harp seal population biology available in the ICNAF Standing Committee on Research and Statistics (STACRES), this Committee was also requested to continue to provide scientific advice on the Northwest Atlantic harp seals. ICNAF was succeeded by the Northwest Atlantic Fisheries Organization (NAFO) and recent advice has been provided by the Scientific Council of NAFO.

Scientific advice on the management of the Atlantic seal hunt is provided by Canadian experts in the field of seal biology and population dynamics. Canadian scientists also work closely with their counterparts in Norway and Denmark, and their most recent population data and assessments are annually reviewed by the NAFO Scientific Council.

Canada

A further source of management advice, independent of government, is the Committee on Seals and Sealing (COSS) established in 1971, whose membership includes scientists, veterinarians and executive members of Canadian and international humane societies. This Committee has been requested to examine the economic, sociological, ecological and humanitarian aspects of the seal hunt and to recommend to the Minister of Fisheries and Oceans any changes in the regulations controlling sealing which may be considered necessary.

Sealing Management 1971-1977

From 1967 to 1976, scientific advice for the management of the Atlantic seal hunt was provided by ICNAF. First quotas under the ICNAF Harp Seal and Hooded Seal Protocol were instituted for the 1971 fishery when vessels were limited to 200,000 harp seals and landsmen to 45,000. In 1972, the total allowable catch (TAC) was reduced to 150,000, allocating 120,000 to vessels and allowing for an estimated catch of 30,000 animals by landsmen. This TAC remained in effect from 1972 to 1975.

Scientific analyses prepared late in 1975 contained a very wide range of opinion on the status of the harp seal stocks, due primarily to disagreement on the rate of natural mortality. ICNAF determined that, because of the existing uncertainties, it was prudent to take a conservative approach and, with Canadian support, the TAC for 1976 was reduced to 127,000. Intensive population analyses conducted following the 1976 seal hunt resulted in agreement among scientists in ICNAF/NAFO, that the harp seal annual natural mortality is approximately 10 per cent. Based on the information provided by these analyses, the 1977 TAC was increased to 170,000, in consultation with the European Economic Community (representing Greenland/Denmark which also harvests this species), and including for the first time an allowance of 10,000 for the projected catch by northern native peoples. Both the Committee on Seals and Sealing and the ICNAF Scientific Committee supported increases in the TAC for 1977.

Inshore catch levels are affected by the widely fluctuating accessibility of seals to landsmen from year to year; hence, their catches were not initially placed under quota. Catches of seals in the four-year period from 1971 to 1974 were consistently below the amounts forecast as their allowance under the TAC. In 1975 and 1976 however, climatic and ice-drift conditions, combined with the increased mobility of inshore sealers due to expanded use of small vessels (generally 11-20 meters in length), made it possible for landsmen to catch more seals than had been anticipated for this sector of the hunt. Consequently, the total catch of seals in these two years was somewhat in excess of the quotas established. In 1977, inshore operations were placed under quota and the proportion of the TAC allocated to these sealers was increased substantially from the unregulated estimate of 30,000 of previous years to a controlled quota of 63,000.

Sub-allocations of this 63,000 quota were designated to various areas throughout the Gulf of St. Lawrence and the northeast shore of Newfoundland to ensure a fair distribution of the landings.

A further conservation measure introduced in 1977 limited the number of adult harp seals taken by restricting the catch by large vessels, in areas other than whelping patches, to five per cent of their total catch (this, in addition to the ban introduced in 1964 prohibiting the killing of any adult in breeding or nursery areas). The rationale for this restriction is that adults of breeding age exert far more influence on the overall productivity of the population than do sub-adults which have yet to live through several years of natural mortality. It is thus preferable, by far, from a conservation point of view in the management of any biological resource, to have exploitation based principally upon the harvesting of offspring rather than of parents. The Northwest Atlantic harp seal herd has been managed on the basis of a harvesting ratio comprising roughly 80 per cent young of the year and 20 per cent animals aged one year or more. Other components of the hunt, including the Inuit hunt in the Arctic, account for the bulk of the catch of older seals, since these are the animals which are principally available to them.

Sealing Management 1978-1981

Scientific advice received for the 1978 sealing season indicated an anticipated production of 309,000 - 347,000 pups (Gulf and Front areas combined), which would permit a sustainable yield of 227,000 - 245,000 animals. In line with the stated policy of the Government of Canada to allow the continued increase in the harp seal, the TAC was conservatively set at 180,000. This included an allowance of 10,000 for the hunt by northern aboriginal peoples, mainly in Greenland, and an allocation of 170,000 covering all components of the regulated hunt within the Canadian management zone.

The TACs for 1979 and 1980 remained unchanged at 180,000. However, in 1980, a distinct allowance of 1,800 was identified as the anticipated catch level in the Canadian Arctic, on the basis of average catches of previous years. This amount was relinquished on a pro-rated basis by all components of the regulated commercial hunt by Canadian sealers. The Greenland allowance was set at 10,000.

In 1981, the Canadian Arctic allowance stood at 1,800, while the sum of allocations to all commercial components in areas within Canadian jurisdiction came to 168,200, making an unchanged overall total of 170,000 for Canada. The EEC forecast a catch of 13,000 for Greenland.

Throughout these years the TACs, quotas and allocations were established on the basis of scientific advice received from the Scientific Council of NAFO. Annual studies and assessments provide estimates of population size, pup production, and sustainable[1] and replacement[2] yields. Consistent

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[1]Sustainable yield: the maximum harvest allowable of a given population if it is to maintain its present level over the long term.

[2]Replacement yield: the maximum harvest allowable in a given year, if the population level at the year's end is to remain the same as it was at the beginning. In a population in which there is a predominance of juvenile animals, (as in the case of the harp seal) the replacement yield is lower than the sustainable yield. The two values are the same in a population which is in equilibrium.

with Canada's policy of allowing the population to continue increasing at a gradual, controlled rate, the TACs were annually set at levels well below replacement yields indicated by the Scientific Council.

The vagaries of weather and ice conditions, and often unpredictable ice drift, inevitably affect the availability of seals within different sectors of the hunt. The ability with which allocations can be attained, however, tends to average out over the years. Total catches from 1977 to 1980 were consistently below the established quota, notwithstanding a yearly increase in the catches under the Arctic allowance.

An exceptional combination of temperature and weather anomalies occurred in 1981 which produced conditions in certain whelping areas that can only be described as chaotic, not only for the seals but for sealers as well. Unusual ice conditions and distribution resulted in catches within the Canadian Arctic component which was close to 10 times the allowance forecast for this sector. Similarly, some of the more mobile components of the landsmen sector ran out of control due to several factors: an exceptionally large number of landsmen were able to participate in the hunt in small vessels; these vessels were able to reach areas with dense concentrations of seals; many of these vessels had inadequate reporting capabilities. On the other hand, the large vessel operation was within its allocation. The net result was an overrun of slightly more than 30,000 above the quota of 170,000 harp seals for all areas within Canadian jurisdiction. About 20,000 were attributable to a portion of the landsmen component of the commercial hunt. However, this figure is well below the under-attainment of quotas registered in the period 1977 - 1980 by the regulated, commercial component of Canada's sealing industry.

The extraordinary events of 1981 brought to light deficiencies in the regulations. A new policy and new regulations were introduced for the 1982 season, designed to prevent the recurrence of a similar situation, even under the most improbable conditions of weather and ice distribution.

To dispel confusion on the status of the seal herds, Canada and the EEC in 1982 jointly referred the population question to the International Council for the Exploration of the Sea (ICES). ICES was formed in 1902 as a multinational, independent body of experts providing information to its 18 member governments to aid in the understanding and management of marine resources.

The ICES report, submitted in October 1982, was prepared by scientists from five European countries, Canada, and the U.S.A.

ICES rigorously reviewed 23 studies by scientists from the U.S.A., U.K., Denmark, Norway and Canada and concluded that the number of harp seals had increased from 1.2-1.6 million in the late 1960's, to 1.5-2.0 million in the late 1970's. The quoted ranges allowed for all possible sources of error in estimation. The ICES estimate of the number of seals is even higher than that on which Canada based its seal hunt management decisions in the 1970's.

Sealing Management 1982-1983

At its November 1981 meeting, the Scientific Committee of NAFO concluded, on the basis of new data acquired during the year, in the context of a large-scale tagging experiment carried out during 1977, 1978, 1979 and 1980, that pup production in recent years had been underestimated. Based upon these data, the total 1981 population of animals aged one year and more in the Northwest Atlantic was estimated to be between 2.04 and 2.15 million. It was estimated this would produce close to 500,000 pups in 1982, and that this level of production could support a catch of 239,000 or more, without causing a drop in the population level at year's end.

In setting the quotas for 1982, it was decided that no major changes should be made until the 1981 study was subjected to further critical review. Consequently, the level of the total allowable catch in waters under Canadian jurisdiction was adjusted to 186,000, representing a slight increase (9%) over the levels prevailing from 1978 to 1980. The bulk of this increase was assigned to the catch in northern waters by Canada's native population, bringing their allowance to 11,000 compared with 1,800 in previous years. The regulated commercial component of the Canadian sealing industry was allocated 151,000 (up from 145,700 in 1981, or 1,000 over their 1979 level, in compensation for the amounts they relinquished in 1980 and 1981 to accommodate increases in the Canadian Arctic and in the allocation to Norwegian large vessels on the Front). The allocation to the Norwegian fleet in 1982 was 24,000, compared with 22,500 in 1981. It was anticipated that the catch by natives of Greenland would be close to 13,000 as forecast for 1981. The allowable catch for 1983 has been set at the same level as 1982.

Notes of Interest

In the 1950s, when harp seal populations were at a higher level, scientists had observed that the incidence of fighting wounds was higher, and poor condition in moulting males was much more prevalent than at present. Heavy parasite burdens were also noted, typical of those prevalent in overcrowded populations, which probably also contributed substantially to the generally sub-optimal condition of males and females of all ages. Subsequent thinning has improved the condition of the harp seal population as a whole.

Harp seals are estimated to consume 1.5 metric tons of food per animal annually. At a current population size estimated to be about 2 million animals, the harp seal population consumes more food annually than the Canadian catch of fish in the Northwest Atlantic, an amount roughly equal to or in excess of the total catch of all fish species by all countries in the Northwest Atlantic. Harp seals are thus a very significant predatory component of the North Atlantic ecosystem.

In the period 1971-1976 TACs were established annually, assigning fixed quotas to the large vessel sealing operation, and setting aside an allowance for the expected catch by aboriginal people, landsmen and small boat components. The TACs were not reached during four of these years, and exceeded in two, producing a total overrun of 1.4 per cent.

In 1977, landsmen and small boat sealing were brought under strict quota management, assigning sub-allocations to these groups, making it possible under normal circumstances to close down the fisheries in various areas before the TAC was reached. This procedure resulted in a regulated catch representing an underkill of 4.6 per cent over the period 1977-1980. The overkill within the landsmen and small boat components, which resulted from the unusual ice conditions in 1981, equals roughly two-thirds of the unattained quotas of the previous four years.

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Information

HARP SEAL POPULATION ASSESSMENT

The precise assessment of population size is difficult to accomplish in the case of most species of animals. However, several techniques are available which can provide approximations. The accuracy may depend on the characteristics, natural history and distribution or migratory patterns of the species. Some of these are indirect and involve biomathematical analyses of samples and statistics collected either at random in the population studied, or from the commercial catch. Others depend upon direct counts and observations of the population itself, in those cases where the entire population congregates within a limited, well circumscribed area.

Five general population assessment techniques have been used to estimate the size of the Northwest Atlantic harp seal population, during resource assessment meetings on seals conducted in the Northwest Atlantic Fisheries Organization (NAFO) Scientific Council within the last several years. These include cohort, survival index, catch and effort, and tag/recapture analyses involving more or less complex mathematical modelling. Aerial photography of whelping patches has also been used, including ultra-violet photography in which the white pups show up as dark spots on the background of white snow and ice. Other detailed studies have been carried out providing information on parameters of importance in the modelling process such as, fertility rates and growth rates; the influence of population density on population dynamics; rates of maturation and fertility for different population sizes; natural mortality rates; overall migratory patterns; migrating patterns and mixing of the Gulf and Front herds; the bioenergetics of breeding females; and the extent of genetic variability between breeding herds, to mention a few.

Each assessment technique has its inherent strengths, weaknesses and biases. Much publicity has attended the relatively new technique of U-V aerial photography, largely due to the popular misconception that by this means, an accurate count could easily be made of the entire production of white-coat pups, in any given year. Unfortunately, the method is complicated by several factors, some of the more serious being that: whelping does not occur simultaneously in any given area; within each area, there normally are several discrete whelping patches which can be widely separated; weather and cloud cover during late winter result in highly unpredictable flying conditions; a significant proportion of the pups may seek shelter in ice-ridge lairs making them invisible to the camera, and necessitating extensive ground-truthing. The basic problem is that of locating all important whelping patches and photographing them within an adequately short time frame, before they drift, or before the weather breaks.

Canada

Assessment of Population Size and Pup Production

Each of the five population assessment techniques has been considered in the annual scientific advisory meetings on seals held by ICNAF and more recently, by NAFO, since 1977. These meetings of the Scientific Council of NAFO (formerly ICNAF) provide the Government of Canada with basic information on population size, production, replacement[1] and sustainable[2] yields, and population trends, upon which the level of the Total Allowable Catch (TAC) is based. The independent evaluations of total pup production provided by each of these have been in substantial agreement with one another, and weighted averages of these were used to calculate the best estimates of production on a year-to-year basis.

A large-scale harp seal tagging program carried out in 1977, 1978, 1979, and 1980, at the Front and in the Gulf of St. Lawrence, and the resultant returns, led to new evaluations presented at the November 1981 meeting of the NAFO Scientific Council. The analysis indicated that the level of production, (hence population size) during the late 1970's was in fact in the higher range of confidence limits postulated in previous studies, hence substantially above the best estimates provided by the latter. Production during the late 1970's was calculated to be in the order of 450,000 to 475,000 pups. The total population of harp seals aged one year and older, in the Northwest Atlantic was estimated for 1981 to be about two million animals, and projections indicated these would produce approximately 500,000 pups in 1982, slightly more in 1983. Replacement yields of this population, for 1982, were estimated at 285,000 and 239,000 animals, on the basis of two different sets of assumptions dealing with age and mortality rates.

It therefore became evident that the Northwest Atlantic harp seal population is substantially more robust than had been considered on the basis of best estimates of previous years.

To dispel confusion on the status of the seal herds, Canada and the European Economic Community (EEC) jointly referred the question to the International Council for the Exploration of the Sea (ICES). ICES was formed in 1902 as an intergovernmental, independent body of experts providing information to its 18 member governments to aid in the understanding of the seas and marine ecosystems, and management of marine resources.

The ICES report submitted in October, 1982, was prepared by scientists from five European countries, Canada and the U.S.A.

1 Replacement yield: the maximum harvest allowable in a given year, if the population level at the year's end is to remain the same as it was at the beginning. In a population in which there is a predominance of juvenile animals, (as in the case of the harp seal) the replacement yield is lower than the substainable yield. The two values are the same in a population which is in equilibrium.

2 Sustainable yield: the maximum harvest allowable of a given population if it is to maintain its present level over the long term.

ICES rigorously reviewed 23 studies by scientists from the U.S.A., U.K., Denmark, Norway and Canada and concluded that the number of harp seals increased from 1.2-1.6 million in the late 1960's, to 1.5-2.0 million in the late 1970's. The quoted ranges allowed for all possible sources of error in estimation. The ICES estimate of the number of seals in the late 1970's is higher than that on which Canada based its seal hunt management decisions during this period.

For 1983, the total allowable catch of harp seals in waters within Canadian jurisdiction remains the same as in 1982, at 186,000. This comprises an allowance of 11,000 for the native hunters of Arctic Canada, an allocation of 151,000 to the various components of the commercial hunt by Canadian sealers at the Front and in the Gulf, and an allocation of 24,000 to Norwegian large vessels operating in the Front area.

Research on harp seals is continuing in 1983.

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The Hooded Seal

Canada

The Hooded Seal

The Hooded or Bladdernose Seal (*Cystophora cristata*) is a large member of the hair seal family. While not the most numerous, it is individually the most prized quarry of the sealer among the North Atlantic ice floes.

Description

Hooded seal adults are large and fierce-looking seals coloured with large black blotches on a grey background (Figs. 1,2). Males reach about 3 m in length and 400 kg in weight, females about 2.4 m and 270 kg. This sexual dimorphism tells us that we can expect a polygynous animal. One may often in fact find what appears to be a mated pair at the icefields in spring, but also often a female and pup surrounded at a distance by from one to seven males waiting to mate with her. The male has a remarkable proboscis (Fig. 2) which he alternately inflates with air and allows to collapse, evidently a feature used in display to other males. Additionally an orange-red nasal septum may inflate, balloon-like, out of one or other nostril. The skull is massive with formidable incisors and canines and peg-like post-canine teeth (Fig. 3). On the ice, the adults may make short lunges, but are no hazard to a reasonably active person who is careful not to trip as he retreats!

Figure 1. Adult female hooded seal and blueback pup.

Life History

Hooded seals, like harp seals, whelp in early spring on the pack ice. Unlike harp seals, which whelp at slightly different dates in different regions according to the onset of spring, hooded seals whelp in the second half of March, wherever they occur, with a peak about March 17. They whelp either in loose concentrations (patches) or in scattered families. The pup, the prized "blueback" of commerce, is a beautiful animal, its hair coat a lustrous blue-black on the back and a creamy white on the belly (Fig. 1), and weighs at birth about 20 kg. This coat, unlike the temporary white coat of the newborn harp seal, is the permanent coat of the first year. The hooded seal's foetal hair coat or *lanugo* is shed before birth. Apparently a loose hair coat shed *in utero* could interfere with breathing at birth, for it is swallowed by the late foetus and passed into the embryonic sac, so that one finds it on the ice in pellets 3 cm in diameter, about the size of a silver dollar piece.

The blueback, born on short-lived pack ice even later (in the Canadian icefields) than the whitecoat harp seal, has an extremely rapid suckling period, apparently no more than about eight days long. The female then deserts it, and single bluebacks can be met with in late March or early April before they too leave the pack ice for the water.

Distribution and Migration

Some tens of thousands of hooded seals whelp off northeastern Newfoundland and southern Labrador, and about a thousand in the Gulf of St. Lawrence (Fig. 4). Pups have been tagged in this region, mostly in the Gulf because there is now no sealing there for hooded seals. They have been recaptured from shore fisheries around extreme southwest and off southeast Greenland between March and August at ages from one to six years (Fig. 4). A moulting patch of hooded seals has long been known to form in July and August on the "Storis" of Denmark Strait which drifts south and west around Kap Farvel. There was a hunt for these seals by ships from Norway until 1961.

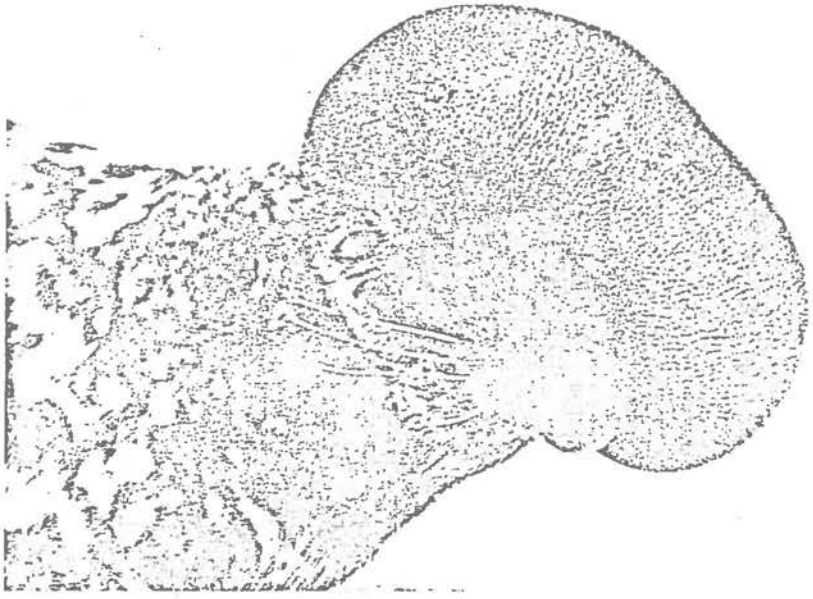
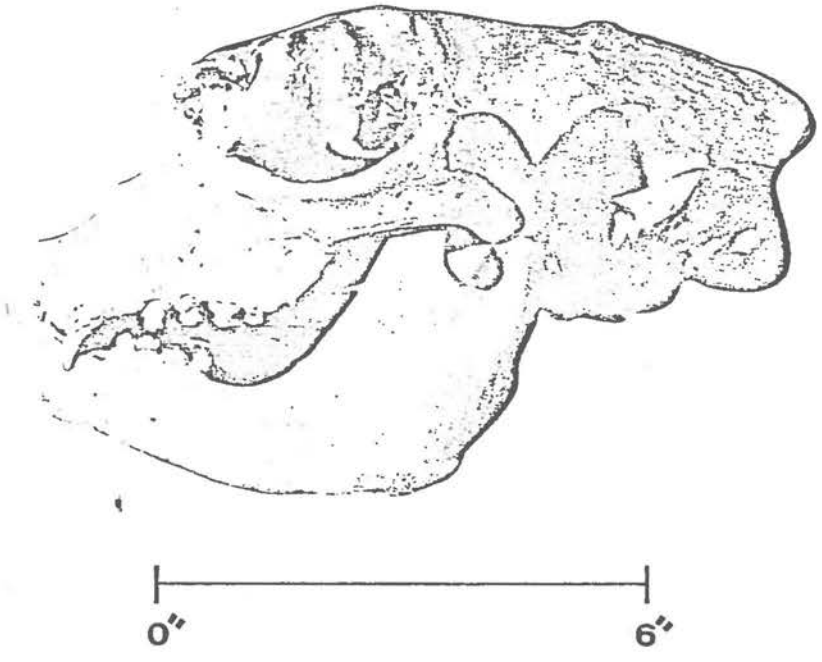


Figure 2. Adult male hooded seal with inflated proboscis.

Figure 3. Side view of skull and jaw of adult male hooded seal.



Besides whelping in the Newfoundland region, hooded seals, again together with harp seals, whelp on the ice around Jan Mayen Island (lat. 71°N, 8°W). Rather surprisingly, tags put on here have not been picked up from the hunts in south Greenland and Denmark Strait. But tags put on in Denmark Strait have been returned from Newfoundland, which confirms the relationship of these two areas of hooded seal distribution.

A third concentration of whelping hooded seals occurs at about 64°N on the pack ice in Davis Strait, about midway between Baffin Island and west Greenland. This patch, known to whalers in the 19th century, was rediscovered in 1974 from aerial reconnaissance by Canadian researchers, and has been photographed from the air in order to gain an estimate of numbers (about 10,000 pups). In March 1984 a major research program was mounted by Canadian and Danish researchers on hooded seals. Aircraft were chartered to census whelping patches of hooded seals in the Gulf, on the Front, and in Davis Strait. Ships equipped with helicopters were chartered to go to Davis Strait and the Front, and a land-based helicopter in the Gulf, in order to determine the sequence of whelping in time (in order to interpret the aerial census), to tag hooded seal pups, and in Davis Strait, to collect a sample of adult females to study their age frequency and reproductive rate. For this a special Greenlandic permit was obtained, since the whelping patch in Davis Strait is protected from sealing. Results, now being worked up, will greatly increase our knowledge of hooded seal numbers and biology.

Hooded seals show a great tendency to wander. After they leave the pack ice in spring most young animals move north, but animals in their first summer frequently remain in the Gulf or estuary of the St. Lawrence, and may move up river as far as Québec, Montreal, and even to the locks at Ste. Anne de Bellevue which lead to the Ottawa River. A few individuals wander south, having reached as far as Cape Canaveral, Florida, and in Europe as far south as Portugal. Although hooded

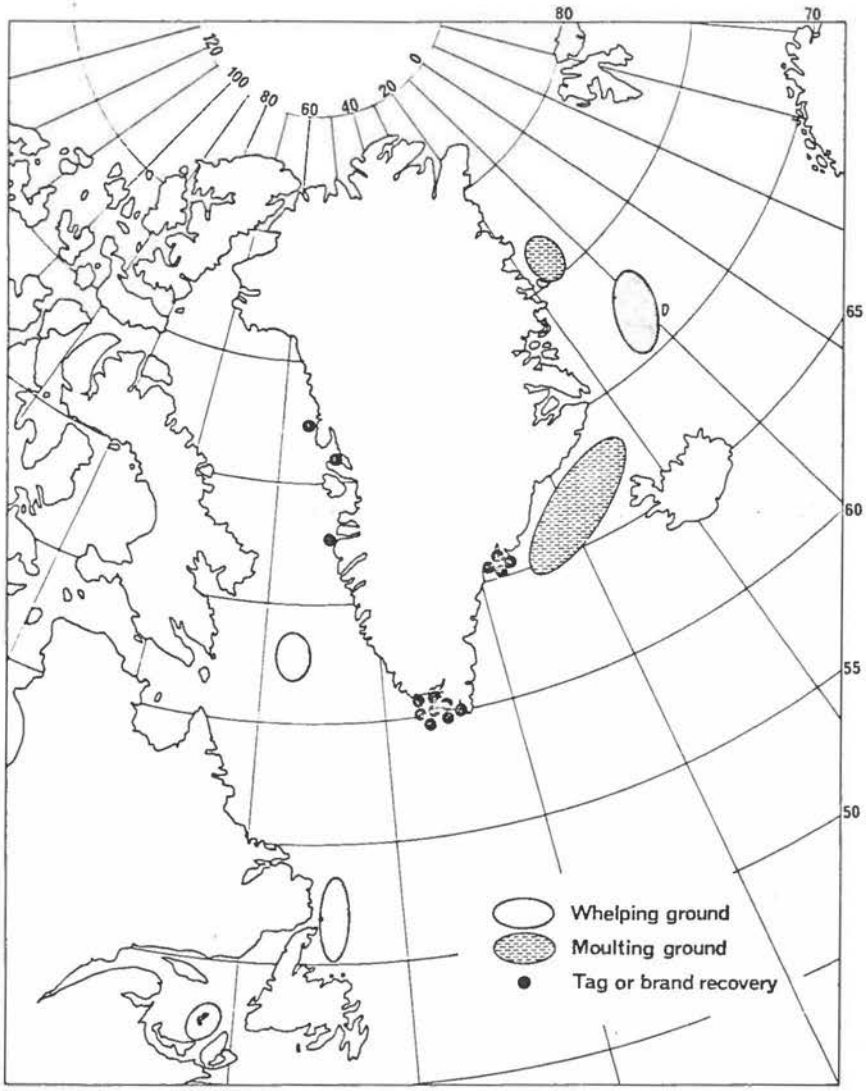


Figure 4. Whelping and moulting grounds of hooded seals and sites of recovery of hooded seals marked around Newfoundland.

seals are much scarcer than harp seals in the Gulf of St. Lawrence, their wandering behaviour is much more pronounced. Taking into account this wandering tendency together with the uniform whelping season and a lack of evidence of stock discrimination shown from body and skull measurement, one could expect a good deal of mixing between different whelping groups of hooded seals. So far, however, limited tagging has not demonstrated such mixing. The recent large-scale tagging described above will give much better information.

Growth

Hooded seals grow rapidly, females reaching sexual maturity and whelping between three and seven years, and mostly at four to five years. Males mature at rather older ages, near 10 years, as typical of polygynous species. Information on age is derived from sectioning the canine teeth, which show very regular layering in both the dentine and thick cementum (Fig. 5), and has been confirmed from two tagged females which returned to whelp in the Gulf of St. Lawrence at four and five years of age.

Feeding

Hooded seals live over deep water and dive to considerable depths to feed on the spiny redfish *Sebastes marinus* and Greenland halibut *Reinhardtius hippoglossoides*, as well as squids. This fact explains their scarcity in the Gulf of St. Lawrence, which has only a single deep channel, and absence from the Barents Sea, in both of which areas the shallower-feeding harp seals are common.

Economics

Hooded seals supply about half the seal catch (currently about 10,000 animals) to Norwegian and Russian ships at the West Ice, near Jan Mayen Island. They provide about 10 per cent of the catch in terms of pelts (in 1982, 12,000 animals) to Canadian and Norwegian ships and Canadian small craft and landsmen at the icefields

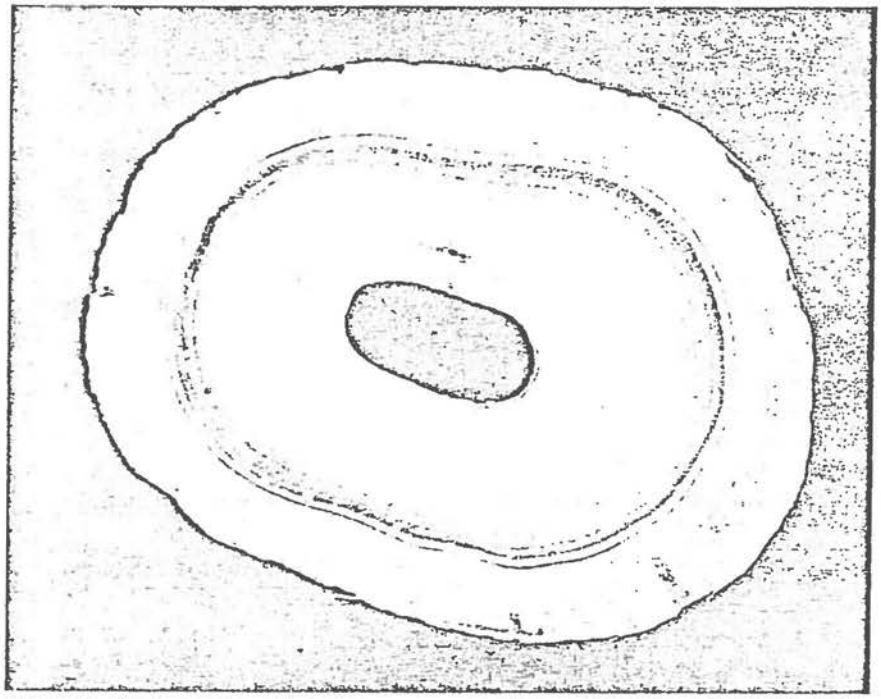


Figure 5. Cross section of canine tooth of hooded seal showing growth layers in inner dentine and outer cementum layers.

northeast of Newfoundland. They provide a catch of about 5,500 animals to Greenlanders, mostly in the region between Julianehaab in the southwest and Angmagssalik in the southeast. The catch at the Canadian icefields now mostly consists of pups, the catch of adults being set at 5 per cent of the total in order to protect the adult females. The Greenlandic catch is mostly of animals aged two to six years.

Conservation

Since not a great deal has been known about stock size, restrictions on catch have been precautionary. Up to 1960, there was a catch of moulting hooded seals in Denmark Strait in July and August (together with Greenland sharks *Somniosus microcephalus*, caught for their liver oil). The ending of this hunt by Norway in 1961 removed the damaging twice-a-year hunting on the stocks. A steady rise in catches of hooded seals at South Greenland since this time, under a constant effort by hunters, suggest that the stock whelping at Newfoundland has benefitted. In 1983, a direct census of the Newfoundland whelping stock was attempted, but results were incomplete with at least 5,000 pups counted in two out of three patches. However, during the 1960s, catches of young hooded seals fluctuated greatly from year to year. Subsequent sampling of females after full recruitment (at ages six years and older) allowed comparison of the numerical strength of the year-classes that had been caught at these very different levels. Plotting catch against year-class strength allowed an estimate to be made of the number of pups born, on the assumption that most of the variation in recruitment was due to the catch. The figure obtained for the 1960s was about 33,000 pups. Since 1975, there has been a quota of 15,000 hooded seals at the Newfoundland ice fields, reduced to 12,000 in 1982 and 6,000 in 1983. Due to progressive tightening of regulations reducing the take of adult females in recent years, most of this catch is of pups.

Full information on catching of hooded seals at the West Ice is not available, but quotas have been reduced in recent years, from 34,500 for Norwegian ships in 1976 to 16,700 young in 1980. The quota for Soviet ships in 1976 was 5,500 hooded seals. In this region also, the permitted catch of adult animals has been reduced to a low percentage of the total.

Further knowledge of hooded seal biology has required an international research effort between sealing nations. A meeting to pool existing knowledge was held in Norway in November 1983, and the joint Canadian-Danish research program in March 1984 marked a major step forward in research achieved.

Further Reading:

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