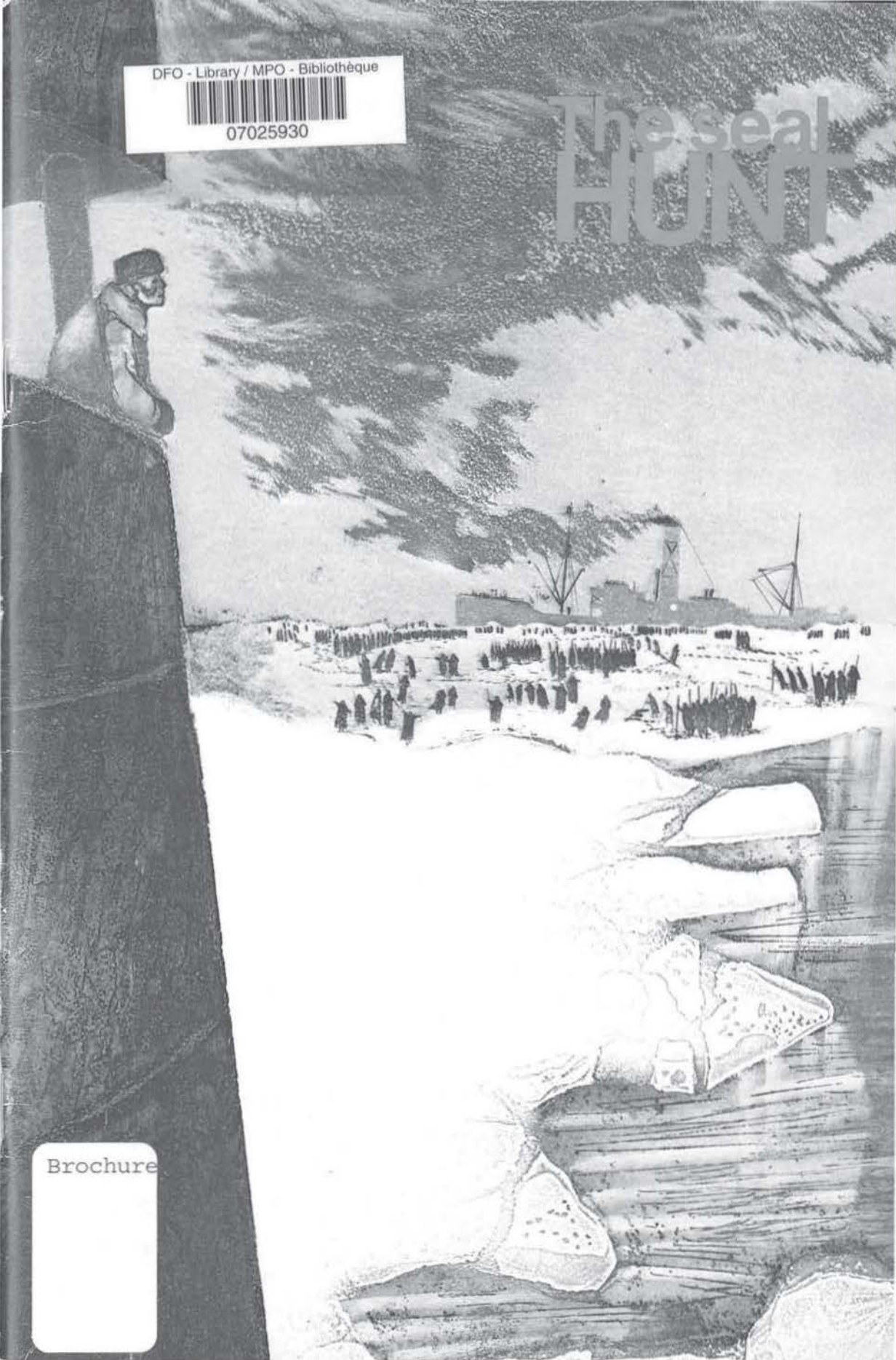


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# The seal HUNT



Brochure

# The Seal Hunt

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## Contents

5	The Seal Hunt
6	Harp Seals
11	Hooded Seals
13	Management
15	Seals in the Ecosystem
16	Humane Killing
18	Economic Value
20	Canadian Sealing Policy
22	Public Information
23	Suggested Reading
24	Glossary



## The Seal Hunt

Sealing on Canada's Atlantic coast began long before the arrival of the first European explorers. Indeed, Jacques Cartier found Labrador Indians taking seals in the Strait of Belle Isle in 1534. Shore sealing by Europeans in Newfoundland probably began soon after the discovery of the island and continues to the present day. At first there was a fishery which captured migrating seals in nets. Later, schooners enabled the men to get to the "whelping" (breeding) herds on the ice and it was the influx of these vessels, beginning late in the 18th century, which heralded the rise of sealing as a major late-winter occupation.

In time, the schooners were replaced by steamers and these by steel ships strong enough to withstand the tremendous pressures of the ice. It is interesting that the herd was already heavily exploited by the schooner fishery so that the new ships served to increase the comfort and safety of the sealers rather than to increase the number of seals taken; this number reached its peak in the mid-19th century.

After Newfoundland became a province of Canada in 1949, the Canadian seal hunt became more widely based. Companies were established in Nova Scotia, employing officers and crews from Newfoundland and Nova Scotia, and many of the large vessels which currently take part in the hunt sail from Nova Scotian ports. However, most of Canada's sealers, past and present, on big ships and small, come from the rugged northeast coast of Newfoundland.

The Northwest Atlantic "seal hunt" really includes many different hunts.

There is a hunt by the peoples of west Greenland and the Canadian arctic islands which takes place during the summer months. There is a hunt by large vessels which take animals from whelping and moulting concentrations at the so-called "Front" off northeastern Newfoundland and there is hunting by "landsmen" who operate on foot or from small boats and use a variety of gear to take seals. Nets are employed during the open water season, particularly along the North Shore of Quebec and the northeast coast of Newfoundland. Later, the hunters go among loose ice floes to hunt with bats or rifles. This operation is conducted mainly in Newfoundland and the Magdalen Islands, but occasionally from Prince Edward Island, New Brunswick and Cape Breton. With the northwards retreat of the melting ice, there is hunting of the swimming seals as they begin their passage to higher latitudes.

The history of sealing is one filled with tales of bravery, of hardship, and of disaster. It has become part of the economic and cultural heritage of Canada's east coast.

# Harp Seals

## Distribution and Migration

The harp seal is a social and highly migratory species which occurs in the arctic and sub-arctic waters of the North Atlantic Ocean. There are three main herds which we can refer to by their breeding areas: the White Sea or eastern herd; the Jan Mayen or central herd; and the western herd which is found off eastern Canada and which we will discuss in this article.

The western herd is divided into two sub-populations; one of these breeds on heavy arctic ice at the "Front", and the other, the "Gulf" herd, breeds on ice formed in the Gulf of St. Lawrence in the winter months. It is the ice-fields which are the scene of the biggest and most famous hunt, for it is here that the seals leave the water to breed in the spring of the year.

As the ice on Canada's Atlantic coast disappears in the spring, the animals migrate northwards. They reach west Greenland but tend to pass rapidly on to colder waters further north and west. They are abundant in the Thule area of Greenland, in Jones and Lancaster Sounds, on the east coast of Baffin Island, and in Hudson Strait through which they range into northern Hudson Bay. Young of the year have also been found in James Bay during the summer months.

After a summer of feeding in the far north, the seals head southwards in advance of the arctic pack ice, appearing at Newfoundland and in the Gulf of St. Lawrence by December and January. It is at the end of February and early in March that the whelping patches form up on ice in the Gulf of St. Lawrence west of the Magdalen Islands

and off Labrador.

## Life History

To better understand the problems of managing the hunt, we must first look at the life of the harp seal.

In the winter months, when the seals are found at the southern limits of their range, they are feeding intensively, the pregnant females becoming particularly fat in preparation for the demands of nursing their young.

The two Northwest Atlantic harp seal herds have slightly different times of whelping. The "Gulf" pups are born February 25 to March 10, while whelping in the "Front" herd is slightly later. The females whelp at some distance from the margins of the large ice fields, in rough hummocky ice which gives some shelter to the pups and through which holes are kept open for access to the sea.

The newborn pup has a yellowish coat which turns white during its first three days. Thereafter, to an age of about two and a half weeks, the newborn sports the famous "whitecoat". During this period, the pup suckles a rich milk and rapidly gains weight; born at 15 lbs. (7 kg.), it will weigh 60-70 lbs. (27-32 kg.) in 16-18 days.

After nursing is complete, the females abandon their pups, mate with the males, and feed heavily for several weeks, prior to moulting.

The young start to lose their infant hair once the females leave, becoming "ragged-jackets". When fully moulted to a soft spotted grey coat, they are named "beaters". At an age of four weeks, these beaters begin to feed. From then until the following spring,

they will have a solitary lifestyle.

During their first spring, the one to two month old beaters stay with the melting ice as it drifts southwards. They then swim north to encounter more ice floes, and repeat the process until June when they move on to their summer feeding grounds off the southwest coast of Greenland.

It is noteworthy that the young are capable of swimming such great distances at only four weeks of age so that early breakup of the ice is no major hazard to survival. By contrast, ice rafting, which occurs when winds crush the ice heavily against the land, can be a lethal hazard to the young and their mothers.

While the young of the year are feeding and drifting about, the older harp seals are sociably moulting on the ice, "bedlamers" (immatures) and adult males starting first, females later.

Mating has already occurred, and it is interesting to note here the unusual reproductive phenomenon of delayed implantation; development of a new embryo will not start in the female harp seal until eleven weeks after mating. The benefit of this mechanism is that mating can take place when the seals are congregated on the ice floes, with whelping timed to coincide with optimum conditions of ice and feeding in the following spring. Harp seals are long-lived animals, reaching ages of thirty years or more.

### **Population Status**

For most animals, be they fish, birds, mammals or other species, it is extremely difficult to actually count the population, and there are few species

for which such counts have been accomplished. However, as harp seals gather in great concentrations of whelping, this has led people to attempt to make population estimates from aerial surveys.

First such attempts in Canada were made in 1950. The idea was to locate the various patches, then fly across them, photographing strips at known bearings and altitude. From these photographs, the density of seals could be calculated to provide an estimate of the total number of seals in the entire area.

As with all surveys, there are attendant problems. Altitude control must be precise or the scale of the photographs will become inconsistent. The uneven spread of animals over the ice makes it difficult to estimate the total population accurately by photographing only part of it. The census has to be taken before the hunt begins and thus before all of the females have whelped. The ratio of adult males to females on the ice at any time is unknown, and studies in the Soviet Union have indicated that the proportion of females on the ice varies over the day and with cloud cover and the age of the young. Because of these factors, counts of adult seals in whelping patches may not give an accurate estimation either of the adult population or of pup production. Aerial surveys of moulting patches are fraught with similar difficulties. Thus, while we are able to photograph large seal concentrations, it is difficult to interpret the meaning of the photographs in relation to population size.

The normal photographic techniques

noted above have been used to count darker, older seals on the ice; it is difficult to distinguish the white coat of the pup against a white background. However, it has recently been found that the pup's white coat absorbs ultra-violet radiation while the snow on which it rests reflects much of this radiation. Thus an ultra-violet photograph of a white pup on snow produces a black image. Since the pups are born over a fairly short span of time and nearly all remain on the ice for the first two or three weeks of life, there should thus be a brief period when almost all of the young are on the ice simultaneously. This suggests a method of counting the pups.

It is theoretically possible to estimate the pup production in any one year through aerial surveys using the ultra-violet photographic technique. This promising technique was tried in 1975 and, on the basis of the results of this first survey, some authors suggested a 95 per cent chance that pup production was between 54,683 and 257,602\*. However, the figure given as a best estimate for total production on the Front was less than the number of pups actually killed there and most seal scientists think that over 300,000 pups were produced in 1975.

This does not imply that the method is not of potential value in the estimation of pup production. What is important is that all whelping concentrations are

completely photographed and that there is accompanying ice-level observation so that the numbers of pups seen in the photographs can be checked against those actually occurring on the ice. This is because pups can be hidden in rough and rafted ice and thus not appear in the photographs. We must also know the percentage of pups which have been born when the survey is conducted since, if whelping is not complete, the total pup production will be underestimated. Researchers intend to attempt a complete ultra-violet aerial photographic survey of the pups in 1977 to see if such a direct estimate of total pup production can be obtained. Counting the numbers of pups produced will allow us to make periodic checks against the numbers which we can calculate through our population analyses. Pup production is only one of many factors to be considered in these analyses.

Because of the difficulties in direct estimation of population size, several indirect methods have been applied, as is the standard practice for other animal species. In populations which are hunted or fished, we have two factors which add to the population; these are growth of individual animals and the birth of young. There are two factors which act to reduce the population, these being natural deaths (as from disease and predation) and deaths from fishing or hunting activities. As few seals move between eastern and western Atlantic populations, such movements do not add to or subtract from the population in a significant way.

We obtain detailed information on growth by counting layers in the seals' teeth. By calculating the percentage of

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\*This "confidence interval" does not incorporate possible error in the estimation of the geographical extent of the herds, the proportion of animals whelped, or the fact that some pups may have been hidden in rough ice.



Detail from "Two Scouts from the S. S. Eagle"

seals mature at each age and studying the pregnancy rate, we are able to estimate the addition of young to the population. Mortality rates can be calculated by studying the ages of animals in the catch and the hunting effort. Based upon calculations of these rates, we are able to analyze the status of the stocks and predict trends in population size which will occur under different management regimes.

We can use the ages of seals in the catch to compare the relative survival of pups born in different years. Since the number of pups harvested varies from year to year, this gives us a means of checking our predictions. Population biology is a highly technical field and those who wish to pursue it should consult the scientific papers which contain the analyses (see Suggested Reading).

Based upon such analyses in 1976, the Scientific Advisers on seals to the International Commission for the Northwest Atlantic Fisheries (ICNAF) were in almost unanimous agreement that the population of harp seals is currently increasing, and has been since 1972-73. Most of the analyses suggest that a total catch in the order of 190,000 to 215,000 would allow the population to stabilize at its current level, while lower catches would allow it to increase. Assuming that the nature of the fishery would remain as in the past few years (i.e. a fixed quota would be assigned to the large vessel operation and the catch by landsmen and native peoples in the North would be variable), the Scientific Advisers recommended a Total Allowable Catch (TAC) of 170,000. This would allow the seal

population to increase slowly from its present level of about 1.2 million individuals, not including pups, towards the level of about 1.6 million which they calculate would produce the maximum sustainable yield (MSY).

# Hooded Seals

The hooded seal, or bladdernose, belongs to the same hair-seal family as does the harp and it also inhabits the drifting pack ice of the North Atlantic. There are some interesting ecological differences between the two species. For instance, the hooded seal dives more deeply and feeds on larger food items such as the Arctic Squid and redfish. It is a less abundant species and is usually found on heavier ice to the seaward side of the breeding harp seals on the Front.

## Distribution and Migration

The greatest concentration of whelping hooded seals is on the Jan Mayen pack ice. Smaller numbers breed at the Front and a small fraction in the Gulf of St. Lawrence. More recently, a large whelping concentration was rediscovered in Davis Strait. This population, formerly known to 19th century whalers, was found by Canadian long-range military aircraft. There is evidence from marking and an exact correspondence in breeding dates that the hooded seals breeding near Newfoundland are an offshoot from the main northern herds; both groups moult during the summer, primarily in the Denmark Strait east of Greenland. The numbers at Newfoundland are considered to vary with the climatic cycle, being greater during cold periods.

## Life History

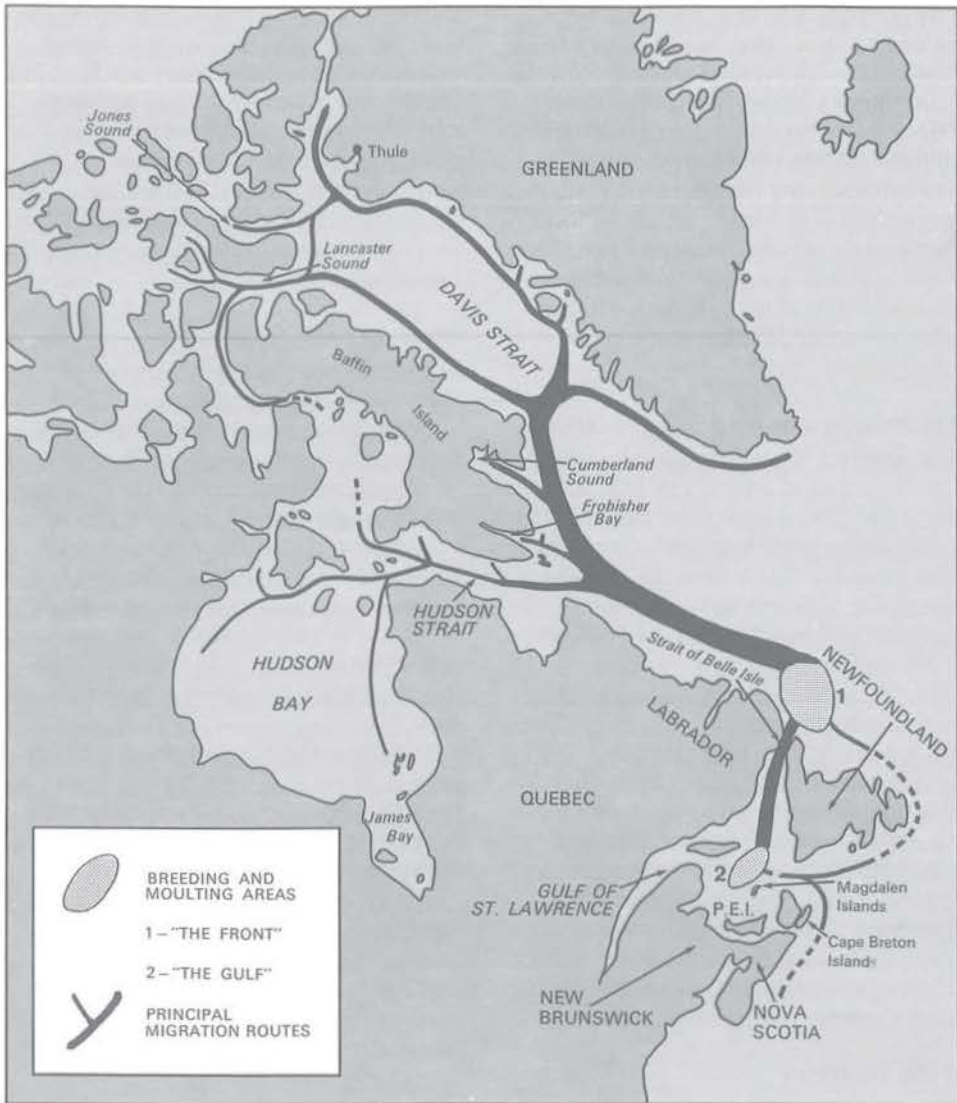
The hooded seal lives about 25 years and females mature when they are between three and five years old. The species breeds on heavy ice in the spring of the year and moulting occurs on pack ice about three months after

the reproductive season; this contrasts with the situation in harp seals which moult very soon after breeding. Hooded seals occur in family groups and are much more scattered than harps, requiring more individual hunting. The young have already shed their white coats before birth and are milk-fed for only 12 days, an even shorter period than the harps.

## Population Status

If it is difficult to do a total count of harps, it is considerably more difficult to accomplish this for hoods. This is because they are more scattered on the whelping grounds, their births extend over a greater period, and the young "bluebacks" enter the water within a few days of being born. Thus, only rough visual estimates can be made and these are more useful in considering relationships among populations than in accurately calculating population size.

The most recent estimate of sustainable yield for the Front herd is more than 20,000 animals which includes a harvest of both pups and adults. This is far higher than the more conservative quota of 15,000 which has been in effect in recent years. A cooperative international program is planned for 1977 to undertake a very detailed analysis of all Northwest Atlantic hooded seal data, similar to the analysis done for harp seals in 1976.



Breeding and moulting areas, and principal migration routes of the harp seal.

## Management

Scientific advice on the management of the Atlantic seal hunt is provided by the Department's experts in the fields of seal biology and population dynamics. Canadian scientists also work closely with their counterparts in Norway and Denmark. There is a further source of management advice which is independent of government departments.

In 1971, the Government appointed an independent Committee on Seals and Sealing (COSS) 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 Minister any changes in the regulations which may be considered necessary.

Members of the Committee are: Chairman, Prof. Keith Ronald, Dean of the College of Biological Sciences, University of Guelph; Mr. T.I. Hughes, General Manager, Ontario Humane Society, Toronto; Mr. Trevor H. Scott, Executive Director, International Society for the Protection of Animals, London, England; Dr. H. Rowsell, Executive Secretary, Canadian Council on Animal Care, University of Ottawa; Mr. Kjell Henriksen, a fishing industry executive and Canadian member of ICNAF Panel A (Seals); and Prof. H.D. Fisher, Dept. of Zoology, University of British Columbia, Vancouver.

Since 1967, management of the Atlantic seal hunt has been under the aegis of ICNAF. First quotas under the ICNAF Harp Seal and Hood 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 TAC was reduced to 150,000, allocating 120,000 to vessels and 30,000 to landsmen. This TAC remained in effect through the 1975 season.

Scientific analyses prepared late in 1975 contained a very wide range of opinion on the status of the stocks; this was mostly because of disagreement on the rate of natural mortality. While the Scientific Advisers did not agree that a reduction in the TAC was warranted, the Commission determined that, because of the existing uncertainties, it was prudent to take a conservative approach; with Canadian support, the TAC for 1976 was accordingly reduced to 127,000. Intense analyses conducted since the 1976 hunt have resulted in agreement among the scientists that the average natural mortality rate is 11 per cent, much lower than some had earlier suggested. Both the Committee on Seals and Sealing and the Scientific Advisers to ICNAF Panel A recommended increases in the TAC for 1977. This has accordingly been done.

TAC's set in previous years were for the Front and Gulf only and did not include catches at Greenland and in the Canadian arctic. The equivalent figure for 1977 is 160,000, slightly higher than that in effect for the period 1972 to 1975. (The actual TAC is 170,000 when we include catches at Greenland and in the Canadian arctic). Catches in the four-year period 1971 to 1974 were consistently below the TAC, a fact which has received little mention. However, the catch in the past two years has exceeded the TAC, a

fact which has received considerable publicity.

The reason for the recent higher landings relates to the inshore components of the industry. The management procedure which has been followed over the past few years has been to designate a fixed quota for the large vessel operation and to provide an "allowance" for the landsmen's catch without controlling the level of this catch. The reason for adopting this method was that the availability of seals to landsmen varies tremendously from year to year, depending upon such factors as ice conditions and the availability of the seals in the near-shore area.

However, with the increasing mobility of the inshore operators through expanded use of small vessels (generally 35-65 ft.) (11-20 m.), it was felt desirable this year to modify our management regime. Accordingly, the share of the TAC allocated to the inshore operations was increased substantially from the 30,000 of previous years to 63,000 for 1977. In only one year (1976) since helicopters were banned in the 1960's, have landsmen achieved this high a catch. Thus, without any further regulation, it is unlikely that the figure of 63,000 would be exceeded. Nevertheless, this total will be brought under control. Suballotments will be designated by area so as to allow a fair distribution of the landings. This will be done in a flexible fashion on the basis of developments during the sealing season, since availability of seals in different areas varies so much from year to year.

In addition, further consideration has been given to the methods by which

such allocations may be taken. Shore-hunters leaving from the Magdalen Islands in 1976 took only 40 seals compared with, for instance, 14,661 in 1974. For 1977, on a trial basis, the Government is thus permitting the Magdalen Islanders to harvest a part of their allotment from vessels larger than the sixty-five foot (20 m.) limit imposed in recent years.

Large vessels harvesting on the Front will take 97,000 seals, the same as in 1976. Canada's share of these increases from 54,333 in 1976 to 62,000 in 1977 while Norway will take 35,000, down from 44,667.

A further conservation measure introduced for the 1977 hunt, is that large vessels will be allowed to take only those harp seals born in 1977, with a 5% allowance for older animals. The prohibition against killing adult harp seals on the breeding patches will also be continued. These steps will accelerate the rate of increase in the population.

For 1977, the TAC of hooded seals will be the same as in 1976, following recommendations made by the Scientific Advisers. However, the allocations have been changed. In 1976, 9,000 seals were allocated to Norway and 6,000 to Canada. For 1977, 6,000 are allocated to Norway and the Canadian fleet will take up to 6,000 by March 29. Beginning on March 30, the remaining 3,000 seals will be available to either country.

A very important conservation measure adopted for 1977 provides that the kill of adult female hoods will be restricted to less than 10% of the total catch. This compares with 20% in 1976

## Seals in the Ecosystem

when the proportion was not regulated. The scientists have determined that this will allow the hooded seal population to increase fairly quickly.

Over the past decades, international consultation and negotiation have been necessary to the management of most of our marine resources, not only seals, since the resources range well beyond Canada's old 12-mile fisheries jurisdiction. It was only in an international forum such as ICNAF that necessary conservation measures could be taken.

With the extension of Canada's fisheries jurisdiction to 200 miles on January 1, 1977, and similar steps by many other countries, the regime for fisheries management changes. Canada took the position that, since 1977 would be considered a year of transition, Canada would again employ the ICNAF forum; ICNAF scientific advisers would make their recommendations to the Commission on TAC's and other management steps. Following receipt of recommendations from ICNAF, the Canadian Government would then determine regulations to be enforced in Canada's 200-mile zone in 1977. If the arrangements made at ICNAF were acceptable to Canada, they would in turn be incorporated into Canadian fisheries regulations. This arrangement has proved effective for seals and Canada has adopted the ICNAF recommendations for management of the 1977 seal hunt.

There is evidence that food availability could be a limiting factor for harp seal populations. In the early 1950's, when harp seal populations were at a higher level, scientists observed many apparent fighting wounds and generally poor condition in moulting males. The population has been thinned since that time and a much improved condition has been reported in moulting animals. The seals are also maturing at younger ages, indicating faster growth which may relate to decreased competition for food.

Generally, the size of food items eaten by a seal increases as it grows. Older harp seals are able to dive to depths of 250 meters while younger animals must feed at shallower levels. Young seals and nursing females eat tiny animals found near the surface waters at the edge of the ice while older seals will eat mid-water fish, and bottom-living shrimps and fish. The most important fish, by weight, eaten by seals in the Northwest Atlantic is the capelin. At current harp seal population levels, annual consumption of capelin has been variously estimated in the order of 300,000 to 500,000 metric tons, most of which is taken in the area off Newfoundland. A similar amount of capelin may be eaten by the great whales. The dependence of a vast biomass of cod, sea-birds, seals and whales on capelin as a forage fish will necessitate the construction of very complex models incorporating data on feeding and growth, and birth and death rates of the various species to predict the impact of exploiting these species on the other species in the system. Scientists consider that the use of such

## Humane Killing

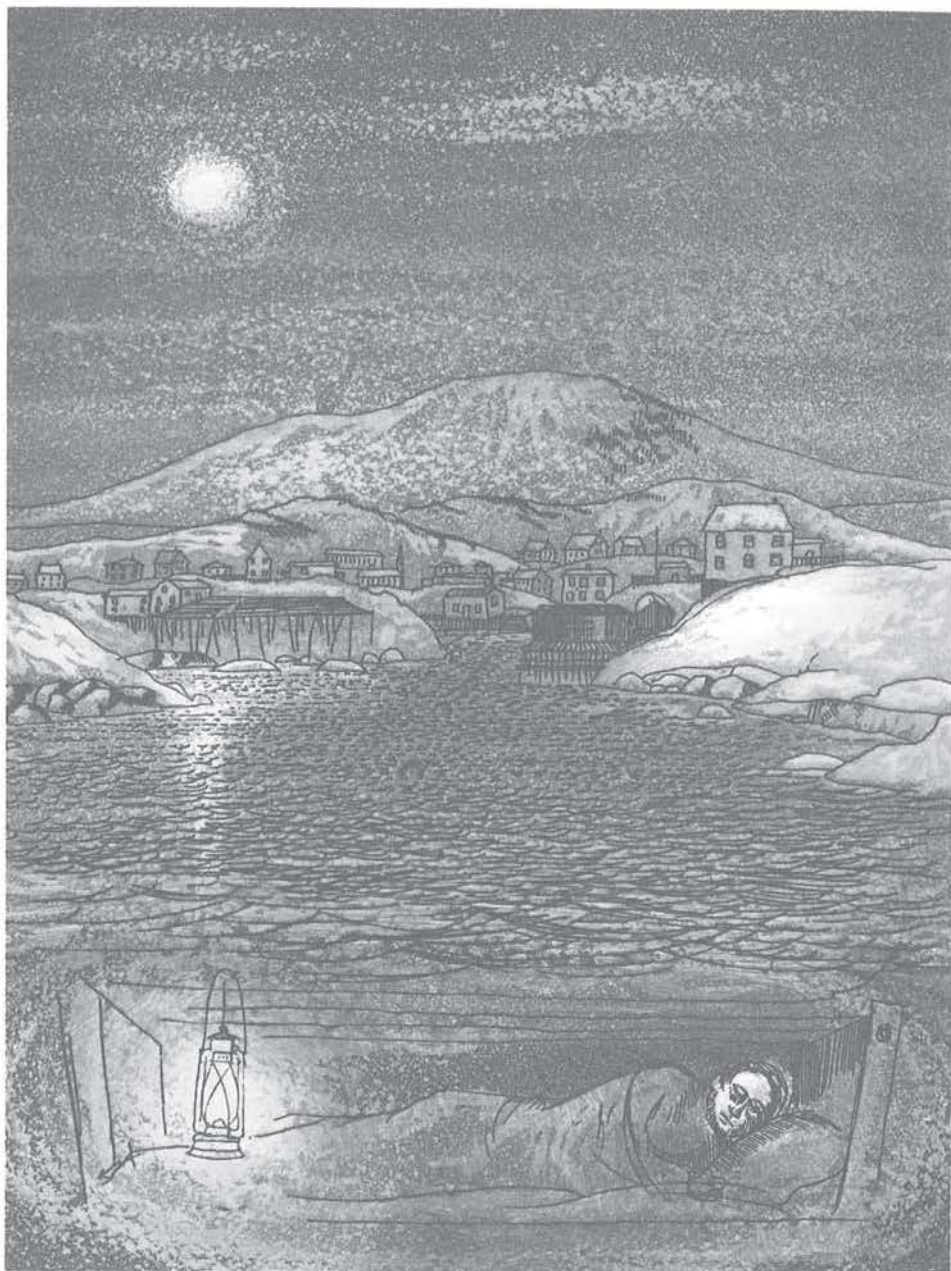
models to predict changes in the level of one species from changes in the level of another will require biological and environmental data which may take some years to obtain. This exciting and complex aspect of fisheries management is becoming the subject of increasing research by the Department.

Over the past decade, the issue of killing methods has been a topic of debate. Accordingly, considerable research and field observation have been carried out by trained veterinarians and scientists. The prime question that must be addressed is whether the method for killing is humane, i.e. whether it brings a rapid, painless death to the animal, with the absence of psychological distress or fear.

A variety of harvesting methods have been evaluated—guns, drugs, carbon dioxide and concussion bolts. The most humane method which has been found for the killing of seal pups is clubbing with a hardwood bat; this either kills the seal outright, or puts it into a state of deep irreversible unconsciousness. Clubbing is the method used for taking seals in other countries, such as for fur seals in the United States. Veterinarians have found that the females generally do not show signs of bereavement at the loss of their pups as do dogs and many other animals.

In 1976, a Norwegian instrument, the “hakapik” (equivalent to the Newfoundland gaff) was permitted on the Front. Veterinary experts have found it to be a more effective killing agent than the bat, and it has an added safety advantage on the treacherous ice floes where sealers can use it to aid their own rescue when they fall into the icy water.

Lectures are given by fisheries officers to explain the regulations and methods of humane killing. Brochures on the matter are also distributed by the Department. On the ice, sealers must wear their Government-issued sealer's badge so that they can easily be identified by the fisheries officers; these



Sealer's Dream: Home

## Economic value

officers are empowered to summarily remove any individual from the hunt who uses improper killing methods.

Shooting of hooded seals is permitted only in hours of adequate daylight to ensure optimum visibility for marksmen using rifles.

Veterinarians and representatives of responsible humane societies regularly examine the killing methods employed in the field and have found that, with rare exceptions, killing is conducted in a very humane fashion. Organizations which have sent observers to the seal hunt have included such groups as the Canadian Federation of Humane Societies, the Society for the Prevention of Cruelty to Animals, the International Society for the Protection of Animals, the Ontario Humane Society, the Canadian Audubon Society and other societies and independent veterinarians. Their reports are publicly available.

Sealing cannot be considered in isolation from the social and economic milieu in which it is pursued. Canada's east coast populations are scattered over thousands of miles of heavily indented shoreline. This was not a chance event. People settled where they had greatest access to resources—the resources of the sea. The early settlers harvested seals, lobster, cod, salmon and other species on a seasonal basis as they were available. This tradition continues and allows coastal people to retain the cultural values of a resource-based rural life. The majority of active sealers are located in the northern half of Newfoundland and in southern Labrador. Here the availability of seals is more dependable than in areas such as the Magdalen Islands and southwestern Newfoundland where sealing is ever an uncertain proposition because of the vagaries of the ice. Even in these latter areas, however, sealing can give a welcome boost to the local economies. Sealing is pursued at that time of year when the weather prevents residents from engaging in other fishing activities and unemployment rates often soar over 90% on a local basis. The \$3,600,000 which the hunt contributed to the Atlantic economy over a three-month period in 1976 thus had a valued impact.

In 1976, land-based sealers who operated on foot or from boats of under 35 feet (11 m.) in length totalled over 4,000 people who spent an average of three weeks in sealing activities to land half a million dollars worth of pelts and over \$100,000 worth of carcass meat.

In recent years, Newfoundland fishermen have increasingly returned to the method of using small vessels in the

35-65 foot (11-20 m.) range. In 1976, 800 men were employed on almost 200 such vessels, most of which operated from Newfoundland. About half of these vessels were active sealers and spent an average of 34 days in hunting. Their pelts had a landed value of slightly over half a million dollars and they received a substantial revenue of over \$200,000 for carcasses and flippers.

Seven large Canadian vessels participated in the 1976 hunt at the Front; this fleet accommodated 189 sealers, selected from 10 times that number of applicants. A berth on a sealing expedition remains in high demand. Crew shares averaged \$1,800 per sealer for pelts with an additional \$500 received from the sale of carcasses and flippers, the profits of which are not shared by the vessel. Thus, the average offshore sealer received about \$2,300 for his month's work. The total receipts for large vessels were approximately \$1.1 million.

Local buyers provided employment to an estimated 150 people for a three-week period during the sealing season. In return, they received a percentage of the graded value of the pelts and oil which added another \$50,000 to the economy. First processing of the Canadian catch was then done in the Atlantic Region. The processing plants employed about 45 people for a period of two months and expended almost half a million dollars.

Three canneries purchased over 300,000 lbs. (135,000 kg.) of meat at 15-18¢/lb. (33-40¢/kg.). The canning operations employed 65 people during the March to May period and the companies spent over \$100,000 on this

production run. In addition to the 10,000 seals used for canning, it is conservatively estimated that 20,000 carcasses may have been used for domestic consumption, and not necessarily sold through commercial outlets. Seal flippers remain a delicacy in Newfoundland where they reach the retail market for upwards of \$2 each.

An economic survey of the sealing industry has recently been conducted and is now being analyzed for publication. The foregoing notes merely present a broad-brush picture. It should be realized at the outset, however, that the dollars and cents do not tell a full story. Sealing is an enterprise with an air of adventure, pursued in a hostile environment which tests the mettle of its participants. It is part of a cultural heritage.

# Canadian Sealing Policy

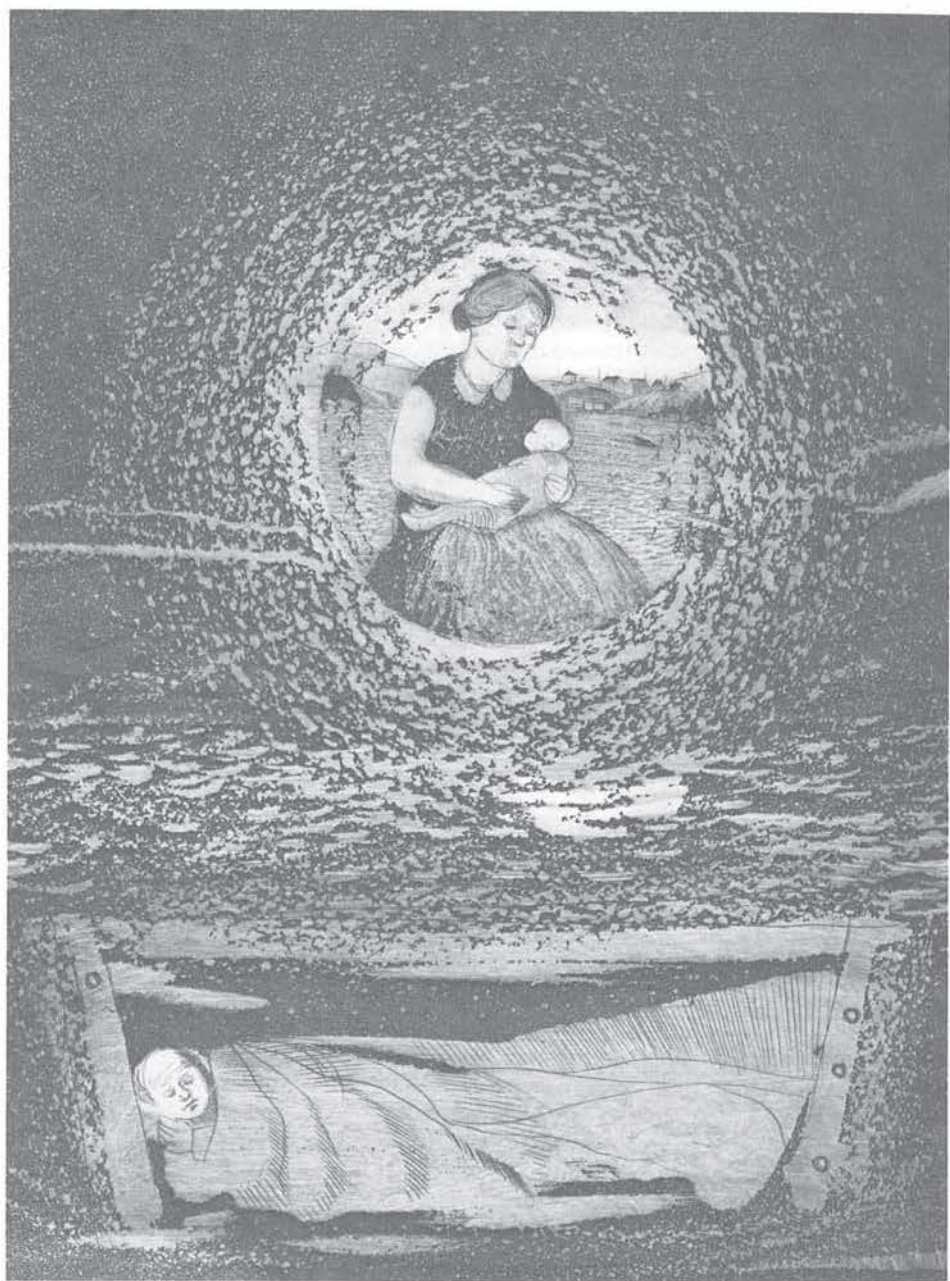
Determination of catch quotas and other regulatory measures depend upon the objectives of management. Achievement of consensus in this regard is more difficult for seals than for most species. There are those people who feel that, on moral or aesthetic grounds, seals should not be killed. If such a policy were followed, this would eventually result in a very large seal population, particularly for harp seals. Since seals eat a considerable volume of fish of present or potential commercial value, and several seal species carry parasitic worms, the larvae of which are transmitted to fish and spoil their value, an argument could be advanced from the fishing industry that seal populations should be reduced to low levels. For an industry based on sealing, it would be in the long-term interest to seek an intermediate position where a large sustained yield could be taken economically for the indefinite future.

Canada's policy in seal management is consistent with its policies in the management of other living marine resources—the resources are harvested in a humane fashion, at levels which will permit a continuing sustained yield, based upon sound conservation principles which ensure the survival of the stocks, and which take into account the relationships among species as competitors, predators and prey.

Unrestrained growth of major predators such as seals and whales would be expected to decrease the average health and vigour of individuals in their populations and would also bring their populations more into competition with man's fishing operations. Canada's policy is thus to take a balanced ecosystem ap-

proach and to harvest the interacting species so as to optimize man's yield from the entire complex, at the same time seeking to assure conservation of all wild species.

The objectives of fisheries policy must take social and economic realities into account and it is only through the application of wise conservation practice that our overall objectives can be achieved. Fisheries management is a complicated science and there are no simple answers. There are no magic formulae for determining at which level a stock should be maintained. For instance, while the concept of maximum sustainable yield (MSY) has been very useful in the development of fisheries science, there is no reason why it should automatically be taken as the chosen objective of fisheries management. On this matter, biologists, economists, conservation groups, and policy-makers are in agreement. There may be instances where we choose to maintain stocks at levels far above or below those producing maximum sustainable yield. The strategy being followed with the harp seal population is to allow the population to continue its slow increase over the next few years and at the same time to intensify studies on the biology of seals and their interactions with other marine life.



Sealer's Dream: Family

## Public Information

Reasoned opinion must be informed opinion. Accordingly, it is the policy of the Department to ensure that all information on conservation and humane killing is available to the public at large. When such information is available, responsible groups can take responsible positions in the light of careful study.

In October, 1976, the Department requested permission of each of the authors of 1976 ICNAF seal Research Documents to allow public release of their preliminary research manuscripts before formal scientific publication. All authors, including those from Denmark, Norway and Canadian universities, as well as those working for the Department, agreed. The documents, the Report of the Scientific Advisers to ICNAF Panel A (Seals), and the minutes of the ICNAF negotiations have all been made public. Indeed, the Research Documents were mailed to groups which had expressed interest in them as soon as they could be duplicated. Within a week of the completion of deliberations held at ICNAF, a meeting was convened in Ottawa (December 16, 1976) to which these groups were invited. On this occasion, Departmental officials outlined their management plans for the 1977 hunt. In addition to reports noted above, the Minister directed that recommendations made to him by his advisory Committee on Seals and Sealing be made public along with his letter of response to the recommendations. All scientific data and recommendations available to the Government are thus available to the general public.

On the basis of their evaluation of this material, it is significant that the Department was publicly commended

on its management of the seal hunt, both with regard to conservation and humane harvesting practices, by representatives of several humane and conservation organizations which have no vested interest in either sealing or anti-sealing activities.

## Suggested Reading

There is a vast number of papers on the biology and management of seals. The references listed below include recent pertinent material on the status of the harp and hooded seal populations and on humane killing methods, with some historical material on the hunt. In dealing with current management practice, it is important to deal with the most up-to-date information.

Through arrangements with the Department, the Minister's advisory Committee on Seals and Sealing has prepared a detailed bibliography on seals and sealing and distributes reports on a request basis. Their address is: Committee on Seals and Sealing, 8064 Yonge Street, Thornhill, Ontario. Information is also available from the Department's own Information Branch (Fisheries and Marine Service, 580 Booth Street, Ottawa).

**Benjaminson, 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.

\_\_\_\_\_ **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.

**Rowell, 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. 19:555-561.

\_\_\_\_\_ **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.

# Glossary

- Whitecoat** —a newborn harp seal up to an age of about 1 week to 10 days prior to loss of the soft white fur which it has at birth.
- Ragged-jacket** —a young harp seal undergoing its first moult from a whitecoat to a beater, beginning at an age of about 12 days to 2 weeks.
- Beater** —a young harp seal in its first year of life which has completed its first moult to a soft spotted grey coat at an age of about 3 or 4 weeks.
- Bedlamer** —a juvenile harp seal from about 1 to 5 years of age which has a spotted coat. In the early years of sexual maturity the distinctive saddle—or harp-shaped markings of the adult gradually develop.
- Blueback** —a new-born hooded seal which has a darkish blue fast-fur, having shed its first coat prior to being born.
- Harp seal** —a hair seal known by the Latin name *Pagophilus groenlandicus*.
- Hooded seal** —a hair seal known by the Latin name *Cystophora cristata*.
- Maximum sustainable yield**—the average number or weight of animals which can be taken from a population on a continuing basis. This generally implies keeping the population relatively stable at a level somewhere in the order of half its size before exploitation began.
- Whelping** —the act of birth in a seal.

