



*Photo: Fouke Fur Company*

Bull and cow, with pups in the background, St. Paul Island.

# PRIBILOF FUR SEALS

By G. C. L. Bertram\*

**T**HIS article is based on a visit to the Pribilof Islands during the summer of 1949. I flew in to St. Paul Island at the beginning of July and returned in mid-August. While at the islands I was the guest of the United States Fish and Wildlife Service. My visit was made possible by a grant from the Arctic Institute of North America<sup>1</sup> and was also sponsored by the University of Alaska. To these three bodies I am deeply grateful. In a more personal way I wish to thank very warmly those many people who were so helpful and hospitable to me, mentioning in particular Victor B. Scheffer and Karl W. Kenyon.

## HISTORY OF THE PRIBILOF HERD

The story of the discovery, exploitation, and eventual conservation of the fur seal herd of the Pribilof Islands has been described in detail elsewhere. I shall therefore give a brief summary only.

The herd of fur seals at the Pribilof Islands was discovered in 1786 by a Russian expedition. The islands were uninhabited at that time but soon Aleuts were established on the two main islands, St. Paul and St. George, to work in the sealing industry which started immediately. For the next ninety years the seals and the immigrant Aleuts suffered various vicissitudes, but in general the management of the seals was perhaps more enlightened than that of the men. However, after 1876, when the United States acquired the Pribilofs through the Alaska purchase, the lot of the human inhabitants became more desirable than that of the seals. Pelagic sealing developed, the animals being killed on the high seas irrespective of season, sex, or condition. Very many were wounded or killed but sank before they could be recovered and the wastage was extreme. By the end of the first decade of the present century the herd had diminished from its former several millions to something less than a total of 200,000 survivors.

In 1911 an international convention was signed under which the participants (Great Britain, Japan, Russia, and the United States) agreed to prevent pelagic sealing by their own nationals. The convention covered the less important Japanese Kaihoto and other islands and the Russian Commander Islands as well as the herd at the Pribilof Islands. In return for relinquishing the rights of pelagic sealing, each government received a percentage of the annual crop. The convention was terminated 23 October 1941 by the withdrawal of Japan. At present, under a

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<sup>1</sup>With funds provided by the U.S. Office of Naval Research.



Small isolated harem.

provisional agreement between Canada and the United States, the product of the Pribilof herd is divided between the two governments, 20 per cent being Canada's share and 80 per cent that of the United States which is responsible for the management of the herd. Thus Canada receives one-fifth of the annual harvest of skins in payment for the loss of earlier opportunities for sealing, but supports none of the direct costs of production. Soon new negotiations will have to be undertaken to prolong the rational and excellent state of affairs which has governed the Pribilof herd since 1911.

#### BIOLOGICAL BASIS FOR EXPLOITATION

No mammal in the wild state lends itself more conveniently to rational exploitation than the fur seal. Because the animal is highly polygamous, one bull being sufficient to serve up to one hundred cows, and the sexes are born in equal numbers, a large surplus of males is removable without any damage whatever to the breeding potentialities of the herd. Linked with this polygamy is a great disparity in size of the sexes, the adult bull weighing approximately five times as much as the cow. Conveniently, the younger males tend to haul out during the breeding season despite the fact that their smaller size and the habit of the species makes it quite impossible for them to exert their sexual powers until they are several years older than the age at which the cows first become pregnant. It is therefore not difficult to harvest a large

proportion of these young surplus males whose skins are at their prime and unscarred by adult fighting.

For many years the herd of fur seals at the Pribilof Islands has been carefully cropped in this manner, the annual harvest now being about 70,000 skins. It affords to the world the finest example of the rational exploitation of any wild stock of animals.

#### *Comparison with other marine mammal fisheries*

Particular comparison may be made with the stock of southern elephant seal at South Georgia where, under the auspices of the British Colonial Office since 1908, the herd has increased greatly under rational harvesting. There, also, a highly polygamous species is the basis of the operations but the harvest consists of a large proportion of the adult males for their blubber oil. The inclemency of the surrounding seas and the distance from centres of population are sufficient protection from pelagic slaughter so that territorial sovereignty alone is sufficient for control.

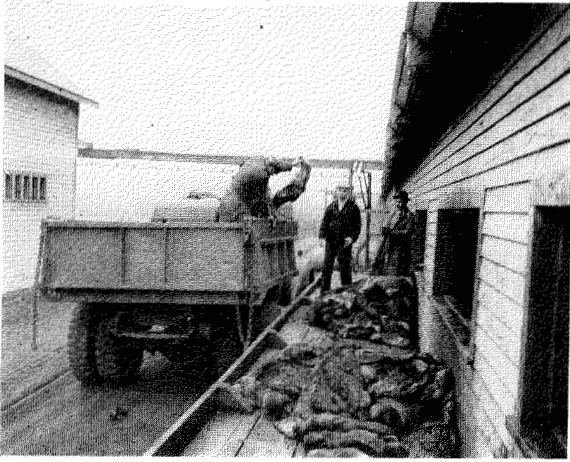
In contrast, an International Whaling Commission has been necessary to control the world's whaling effort. Here, apart from other regulations, an annual over-all quota of oil is set and the season is ended when that total (at present 16,000 blue whale units) has been taken. Necessity for speed now makes for efficiency of operation but it has yet to be seen whether the quota exceeds the rational harvest from a depleted stock.

Another interesting contrast is the present state of the harp seal stock of the North Atlantic. The Newfoundland section of the seal population is of most importance, both in size and need for action. Here is a great fishery of long standing where the animals are killed on the ice beyond territorial jurisdiction in a manner entirely irrational from the conservation point of view. The people of Canada (Newfoundland) and Norway are most concerned. Although basic scientific knowledge of the fishery is not as complete as is desirable, the time is ripe for international and rational control by treaty, difficult as that may be to attain.

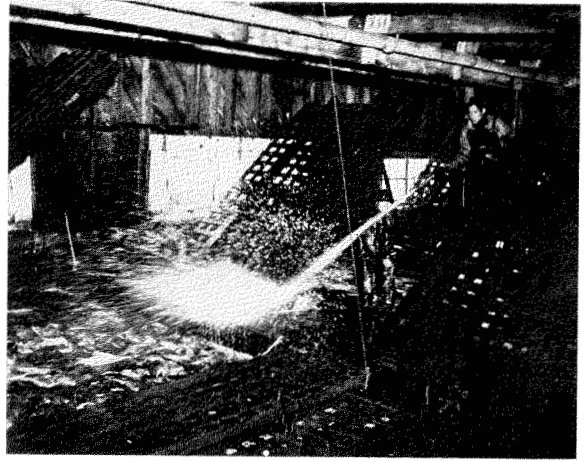
#### PRESENT REGIME AT THE PRIBILOF ISLANDS

After the signing of the 1911 convention the depleted herd was given a complete rest from exploitation for several years. Since then a highly successful regime has been maintained. Here is an example of a very close working combination between government and its own appointed operator. The United States Government, as represented by the Fish and Wildlife Service, is responsible for the well-being both of the island Aleuts (a few hundred) and of the fur seals.

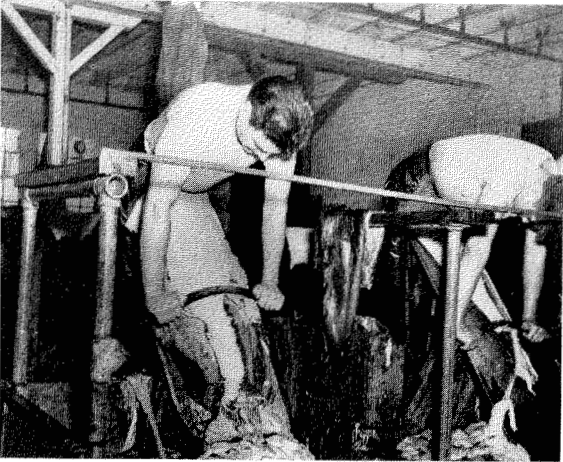
The government itself harvests the crop. The officials in charge of the islands, together with the island Aleuts, who are legally wards of government, drive, select, and club the appropriate number of young



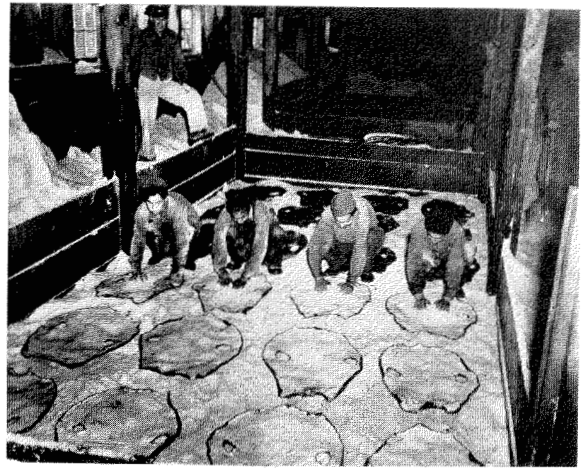
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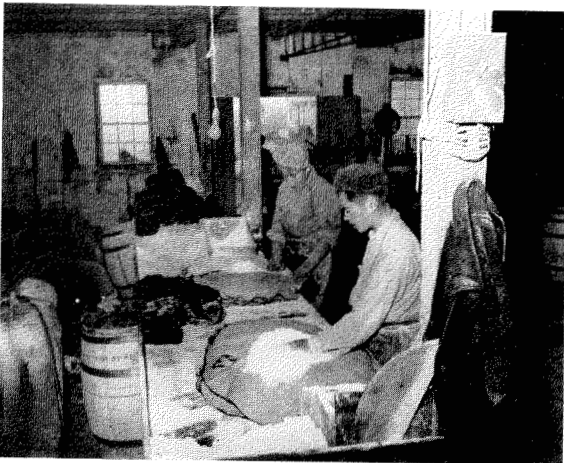
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Processing of sealskins on St. Paul Island.

1. Unloading and counting at Tank House
2. Washing and tanking
3. Blubbering
4. Salting down
5. Barrelling

*Photos: Fouke Fur Company*

males during the annual sealing season (essentially from June 18 to July 27). As the killing gang is at work others, with machine-like organization, stick, split, and strip the animals, a process which can be completed by a team within the minute. The skins are then trucked the few miles to the village where, still warm and within two hours of death, they are counted out by government and counted in by the Fouke Fur Company of St. Louis, Missouri, the highly efficient appointed operator, whose duty it is to process the skins and handle them until they are put on public auction to government account.

Each summer the company brings to the islands a score or so of workers from St. Louis to take charge of the operations and to perform the highly skilled work of blubbering the skins. In addition, about one hundred Aleuts are brought as hired labour from the Aleutian Chain. Each skin must pass through many processes before it reaches the market in its finished superlative quality. Major processes, after washing and blubbering, include salting, barrelling, transport to St. Louis, more washing, removal of the guard hairs, and dyeing.

The relationship between government and its operator is extremely close and well organized. Great care and detail are involved throughout the operation, every seal killed being measured and recorded by government. Selection is such that more than three-quarters of the total animals harvested are between 41 and 45 inches in length, the official limits of the three year old male class. The marking system of skins by the agent is so detailed that any skin sold at final auction can be traced back to the day of death at a particular rookery.

The annual production now runs at about 70,000 skins and that figure may fairly be suggested as the annual crop in future. The value of the finished skins averages about \$70.00 each at final auction at St. Louis. Four-fifths of the harvest comes from St. Paul Island, one-fifth from St. George Island. On St. Paul a by-products plant treats all the carcasses to provide blubber oil and a carcass meal. The sale price of the by-products from each seal totals roughly \$1.50.

#### FUTURE OUTLOOK AND PROBLEMS

Having briefly described the history of the Pribilof fur seal herd and its present regime, I should now like to consider certain points of policy and some of the problems involved, as well as the effect of the herd on the interests of others. The task is not easy, and in writing this I am both very sensible of the privilege of being permitted to work on the islands, and appreciative of the beneficence and quality of the administration no less than of the kindness and talents of the administrators and biologists.



Part of the Northeast Point Rookery, St. Paul Island; the platform and towers on the left are used in making the annual computation.

The primary objectives of the United States Government and of the Fur Seal Convention of 1911 have been splendidly fulfilled. There has been a more than tenfold increase in the herd in less than forty years and the present size and value of the fur seal herd are very real tributes to the wisdom, resourcefulness, and skill of the management. Throughout the world there is no equal achievement in the successful detailed management of any wild stock of animals. The Pribilof fur seal herd is a shining example to those dealing with conservation problems.

#### *Computation*

It is claimed, and I believe it to be true, that from the richly vegetated hillock overlooking the Northeast Point rookery on St. Paul Island more



large mammals can be seen than from any other point on earth. Feelings of wonder and satisfaction are derived from the sight of the closely packed myriad seals, particularly when it is realized that here is the outcome of a well-found international convention

Week-old pup.

in combination with the organization of an able national administration. However, the sight suggests the question: How many seals are there in the herd? This question raises one of the leading problems, that of computation.

For obvious reasons enumeration of the herd is desirable, and for nearly forty years an annual computation of the herd has been made and published. This computation, which was started in 1912 and has been continued with increasing refinements to the present time, purports to show the composition of the herd analyzed into about a dozen standard classes, from pup to harem bull. In the earlier years it was based on the number of pups and the number of harem bulls, both of which could be counted with fair accuracy because of the depleted state of the herd at that time. Then efficient management began to pay its dividend in increased numbers. Since 1922 no complete counts of pups have been possible, and the only objective counts made have been those of apparent harem bulls at a particular date each year. Certain mortality figures, notably those of pups in the first year of life, which were probably nearly correct twenty-five years ago, have been used in all subsequent computations. The mortality of pups on land is known to have increased greatly in recent years, but this information is not yet applied in making the computation, which has long been a purely administrative responsibility.

The result has been that the annually published computation, despite small textual disclaimers, has suggested to the world a knowledge of the composition of the herd which goes far beyond what is proven. The fact is that successful management has produced a herd so large that it cannot be counted by any method so far devised. Likewise, continued computation over the years has produced an ever-increasing total for the herd which, though perhaps satisfying to an interested public, has increasingly made biologists uneasy. There has been little attempt so far to make the public realize that even the best managed stocks of animals will reach a ceiling in their numbers eventually and that the annual harvest will also reach stability or near it.



Cow nursing pup.





Looking east on St. George Island.

*Photo: Fouke Fur Company*

That the Pribilof herd probably came to its ceiling during or before the last decade is moderately clear to biologists. The killable animals have obviously not continued to increase in availability and the kill has levelled off at about 70,000 per year. Even official policy does not yet seem altogether to have absorbed this biological inevitability.

There are many practical problems in estimating the numbers of a herd of several million animals close-packed in their great breeding rookeries. Several methods have been and are being attempted: harem bulls may be counted and a figure for an average harem applied; all pups may be counted on an assumed typical small area bearing some estimated proportion to the whole; calculations may be made upon the recovery in the kill of animals marked as pups (with numbered hog ear-tags on the fore flipper); photographic methods may be applied, on those rare occasions when the clouds part, with cameras in aircraft or suspended from anchored meteorological balloons.

The net result so far is a brave display of ingenuity and effort but no method of reaching a satisfactory figure for the herd. So close-packed are the few great rookeries, so great are the size differences between newborn pups and aged harem bulls, so continuous the confusion and movement of cows and young males to and from the sea, indeed so fantastic the crowding and biologically ordained commotion, that no one can do better than say that probably there are between two and four million animals in the herd.

#### *Biological knowledge*

Apart from the basic problem of numbers, fundamental biological information on the fur seal is less than would be expected from the time, money, interest, and effort which have been devoted to the Pribilof seals since their discovery in 1786. It is not true, as is sometimes thought, that there is little more to be learnt of the biology and bionomics of the herd. Great opportunity exists for increase of biological knowledge and detailed investigations are now being made by Victor Scheffer, biologist in charge, and his assistant, Karl Kenyon.

So far research on the fur seal has been mainly spasmodic and limited in scope. It was not until 1940, when the U.S. Bureau of Fisheries and the U.S. Bureau of Biological Survey were combined as the new U.S. Fish and Wildlife Service, that a long-term program of research was started. In this year, for the first time, mammalogists from within the managing agency set foot on the Pribilof Islands. There seems to be an insufficient appreciation of the position at the policy-making level. Lack of fundamental knowledge of this herd, or of any other wildlife resource, is comparable to a factory without adequate fire insurance. The biologists are well aware of the position and are doing their best to remedy it.

Here are four examples of the present inadequacy of fundamental information:

1. The average expectation of life for either sex is not known.
2. The average number of pups born to each cow in a lifetime is not known.
3. The proportion of adult cows which fail to become pregnant in any one year is not known.
4. The optimum size of the breeding reserve of males is not known.

In the absence of such data all estimates of the theoretical rational yield of the herd are seriously deficient. So far the herd has been managed, and managed successfully, mainly by common sense. The question now is whether it could be managed better still through the application of specialized knowledge.

The scope for detailed biological investigation is thus still great. Mass observation is gradually giving place to greater study of the individual. Soon most interesting results will be obtained by someone who, with paint splashes or otherwise, marks individual adults and subjects them to continuous observation during their time ashore. Much will be learnt.

Apart from acquiring a general appreciation of the position of the seal herd, its census problem, its utilization, and other rather general matters, my personal and specialized research was an attempted analysis of the age composition of the female population. Through a variety of circumstances, the most important being a reluctance to disturb the rookeries, the female population has been less studied than might have been expected. A full analysis of the female population will remain as a long-term study but I hope that my work in 1949, based mainly on conclusions to be drawn from ovaries and teeth, may provide both a further step and a stimulus.

### *Repercussions*

It is now being realized that the successful regrowth of a great herd of fur seals, from less than 200,000 to more than ten times that number in forty years, does not take place in a geographical or ecological vacuum. Repercussions are inevitable, and reactions, some not favourable to the seals, are aroused. Japan was becoming restive as long ago as 1926.

Those now chiefly concerned are the great fisheries interests of Alaska and British Columbia which regard the seals as competitors for the ocean's bounty of fish. They become apprehensive at the publicized, if exaggerated, ever-increasing total of the herd. They are stimulated by the over-simplified and magnified tale of coastwise migrations of great packs of voracious seals heading northwards in the spring to the passes of the Aleutian Chain.

The amount of food consumed annually by the Pribilof fur seals is prodigious, but its precise composition is as inadequately known as is the off-season distribution of the seals over the North Pacific and the precise areas from which the food is taken. What is known of the food of the fur seals is based on small samples killed at a distance from the Pribilof Islands. At the islands all seals come ashore with empty stomachs, a result of quick digestion and of feeding at a distance. In general the diet consists of fish and squids (Cephalopoda) in varying proportions. At certain times the fish are mostly herrings, but, in general, the more valuable commercial fish have so far been found to form only a small proportion of the diet. The eating of squids by seals is important since the squids are predators of fish: in this instance the seals are helpful to the fishermen.

It is highly desirable that the fisheries interests should acquire a more comprehensive and balanced appreciation of the fact that both the seal industry and the fisheries are factors in the economy of the ocean. To achieve this, education based on further background knowledge is necessary. Prolonged lack of a wider appreciation makes the ground fertile for political pressure from the fisheries with risk of precipitate action.

Primary attention seems now to be required along three lines. The first is the continued pursuit of the background biological data upon which all else should ultimately depend, a pursuit in which Canada might wish to help more boldly. Second is the need for new publicity, not in the popular field, but for the outside scientist, the administrator and the fisheries executive, who would welcome an authoritative account of the seal herd, including its history, administrative story, census problem, and accumulated biological data. Of added interest would be a chapter on the story of human advancement at the islands by one versed in development problems over a wide field. Thirdly come the conferences and the planning for the future at the national and the international levels. One can give no higher praise than sincerely to hope that planning and agreement for the future may be as beneficent and rational as have been the administration and conservation of the herd during the last forty years.

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