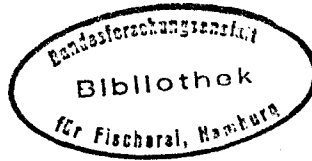


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OCCURRENCES OF BEARDED SEALS (*ERIGNATHUS BARBATUS* ERXLEBEN, 1777) AND RINGED SEAL (*PHOCA HISPIDA* SCHREBER, 1775) IN ICELANDIC WATERS, IN THE PERIOD 1990-1994, WITH NOTES ON THEIR FOOD

by

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Abstract

In this paper are published new findings about the occurrences of bearded seals (*Erignathus barbatus*) and ringed seals (*Phoca hispida*) in Icelandic waters. The animals, which were investigated, have either been entangled in fishing-gear or shot by local hunters, in the period of 1990-94. Most of the animals are from the Northwest-Coast, North-Coast and East-Coast of Iceland. The ringed seals were mainly caught during the spring and early summer, but the bearded seals were mostly caught in wintertime. The great majority of the bearded seals visiting the Icelandic coast are young immature animals, but the ringed seals are sub-adults and adults.

The food item found in the only one ringed seal sample, that included stomach, were cod (*Gadus morhua*), sculpin (*Myoxocephalus scorpius*) and remains of invertebrates. In the only one bearded seal stomach sample, were found remains of 38 long rough dab (*Hippoglossoides platessoides*), 1 squid (*Todarodes sagittatus*), 1 Norway pout (*Trisopterus esmarki*), 1 skate (*Raja sp.*) and rests of bivalves and gastropods.

Introduction

In this paper are published new findings about the occurrences of ringed seals (*Phoca hispida*) and bearded seals (*Erignathus barbatus*) in Icelandic waters. These animals have either been entangled in fishing gear or shot by local hunters, in the period of 1990-94. Some of the bearded seals even got caught in bottom trawls, presumably in deep water. Information about food remains found in the stomachs of one seal of each species, the only stomach samples obtained, are also mentioned and are discussed in relation to other information about the food of ringed seals.

Material and methods

Whole animals or samples of the lower jaws, stomachs and sex-organs; ovaries and testes, were obtained from local fisherman and seal-hunters. Together with information about date, place and catching method, these samples make the database this paper is based on.

Age of animals were determined by counting of growth-layers in the cementum, of a thin-section (0.5-0.7 mm) of the canine tooth cut traverse with a low speed saw close to the base of the teeth, with use of binocular dissecting microscope with 6X to 50X magnification and transmitted light (Laws 1962). Sex and maturity were determined by investigating the samples of uteri and testes from the animals.

Stomachs were cut open and the content washed through sieves with 0.3 mm mesh-size. All recognisable food remains were taken to further investigation. Otoliths, fish-bones, carapaces and shells were all identified to species or species-groups.

Results

Bearded seals

Far most of the bearded seals were caught off the North-Coast, the East-Coast and the West-Coast (Figure 1).

Bearded seals were mainly caught in the wintertime. Eight of the total 16 animals caught are from the period November to January, with a predominance of December. Others were mainly caught in the period March-June.

Pups and one year-old animals were dominating in the catch. The oldest seals caught were 3 years old (Table 1).

Only one bearded seal's stomach were obtained. In it were found remains of 38 long rough dab (*Hippoglossoides platessoides*), 1 squid (*Todarodes sagittatus*), 1 Norway pout (*Trisopterus esmarki*), 1 skate (*Raja sp.*) and remains of bivalves and gastropods.

Ringed seal

Only four samples were obtained from ringed seals, with only one sample including stomach. The seals were caught off the North-Coast, the East-Coast and the West-Coast (Figure 1), during April to December. They were of both sexes, and from 3 to 18 years of age (Table 2).

In the only one stomach with food remains, were found; cod (*Gadus morhua*), sculpin (*Myoxocephalus scorpius*) and remains of invertebrates. The stomach was from animal caught in December.

Discussion

The findings presented here are based on samples of seals from fisherman and seal hunters. The information can therefore be biased in this respects. Of course, seal can only become entangled in gill-nets when such kind of fishing is operated. In Icelandic waters fishing with gill-nets for lumpsuckers (*Cyclopterus lumpus*) is mostly operated during early spring and summer. Also seal hunters only catch seals when weather is favourable, so they catch seals mostly during summer and autumn. Occurrences of seals during the winter could go unnoticed, due to less hunting and fishing effort with gill nets. However the information, from this investigation, is in many respects similar that can be obtained from old chronicles (annals), from those times when people were on the look-out for seals, because they were important for subsistence and their furs were valuable; used in shoes or sold. This strengthens the findings of this investigation in our opinion.

In old annals there are records of good catches of ringed seals, in the years of 1700-1725, when many ringed seals were slain on sea-ice in Eyjafjörður, North-Iceland. In the year 1896 there seems to have been a real invasion of ringed seals to Öxarfjörður North-east-Iceland (Björn Guðmundsson 1944).

Occurrences of ringed seals and especially bearded seals seem to have been much rarer, than visits of harp seals and hooded seals. This is still the case (Erlingur Hauksson and Valur Bogason 1995a & 1995b). Only occasionally do they show up. According to annals, the ringed seals came to the North-Coast after mid-winter and stayed until spring. -Just recently a few ringed seals were caught in Eyjafjörður North-Iceland (March 1995). They were most abundant off the North-Coast, but visited also the East- and West-Coast (Erlingur Hauksson 1982).

The bearded seals visited most frequently the Northwest part of the country, but went to other parts of the coast as well (Bjarni Sæmundsson 1932). According to our newest findings they still do that (Table 1).

The Icelandic scientist Jónbjörn Pálsson (1977) investigated the stomach content of 9 ringed seals from the coast of Iceland in 1976. He found the dominating food species in percentage by weight to be capelin (*Mallotus villosus*), gadoids and crustaceans.

Acknowledgements

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Tables

Table 1. Occurrences of bearded seals (*Erignathus barbatus*) off the coast of Iceland, in the period of 1990-94; IM immature (see Figure 1 for locations of catching sites).

Catching site	Year	Coastal area	Month	Sex	Age	Maturity
Eskifjörður	1990	East	Dec.	Male	3	IM
Skagaströnd	1992	North	Jan.	Male	3	IM
Siglufjörður	1992	N-East	Apr.	?	1	IM
Hælavík	1992	N-West	May	Male	1	IM
?	1992	N-West	Nov.	?	0	IM
Skjálfandi	1993	N-East	March	Female	1	IM
Krossvík	1993	N-West	Apr.	Female	1	IM
Hornvík	1993	N-West	Apr.	?	1	IM
Hali	1993	N-West	Dec.	?	0	IM
Hali	1993	N-West	Dec.	?	0	IM
Kópanesgrunn	1993	N-West	Dec.	Female	0	IM
Seyðisfjörður	1993	East	Dec.	?	0	IM
Seyðisfjörður	1993	East	Dec.	Male	0	IM
Arnafjörður	1994	N-West	March	Female	?	?
Drangar	1994	N-West	May	?	0	IM
Víkingavatn	1994	N-East	Aug.	?	0	IM

Table 2. Occurrence of ringed seals (*Phoca hispida*) off the coast of Iceland, in the period 1990-94; IM immature and M mature (see Figure 1 for locations of catching sites).

Catching site	Year	Coastal area	Month	Sex	Age	Maturity
Strandir	1991	N-West	June	?	3	IM
Eskifjörður	1990	East	Dec.	?	?	?
Skjálfandi	1994	N-East	Aug.	Male	6	?
Húnaflói	1993	N-West	Apr.	Female	18	M

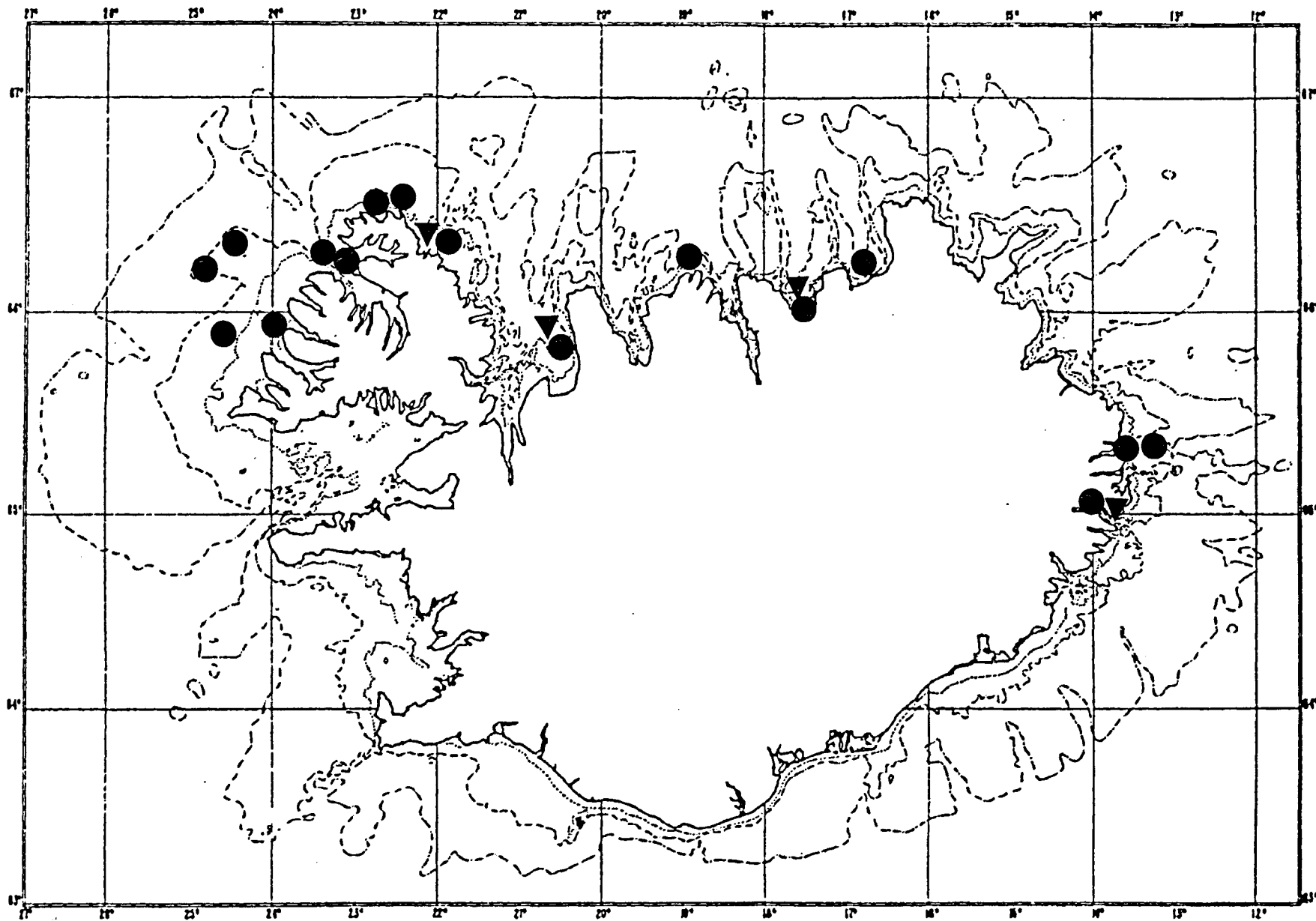


Figure 1. Catching sites of bearded (*Erignathus barbatus*) (●) and ringed seals (*Phoca hispida*) (▼) caught off the coast of Iceland in the period 1990-94. Each dot represents one seal.