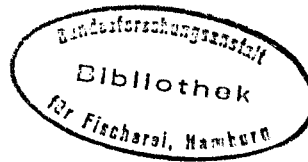


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**OCCURRENCES OF HARP SEALS (*PHOCA GROENLANDICA*
ERXLEBEN, 1777) IN ICELANDIC WATERS, IN THE PERIOD
1990-1994**

by

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Abstract

In this paper are published new findings about the frequency of visits of harp seals (*Phoca groenlandica*) to Icelandic waters. The animals, which were obtained, have either been entangled in gill-nets for lumpsuckers (*Cyclopterus lumpus*) or cod (*Gadus morhua*) or shot by local hunters, in the period of 1990-94. Most of the animals are from the North-Coast of Iceland. They were mainly caught during the spring and early summer. The majority are young harp seals; pups and one year old animals, are dominating in the catch. Males are a little more abundant than females. There seems to be an increase, in the frequency of visits of harp seals in Icelandic waters, from the year 1990 to 1994.

Harp seals seem now to be more numerous off the North-Coast of Iceland than about a decade ago. However they are probably not as numerous at recent times than in earlier times, especially in years of heavy land-ice and polar-ice, which drifted to the coast of Iceland regularly in the 18th and 19th century. In such circumstances, one could talk about real seal-invasions, but that has not happened in Icelandic waters in later years.

Introduction

In this paper new findings about the occurrences of harp seals (*Phoca groenlandica*) in Icelandic waters are published. These animals have either been entangled in gill-nets of fishermen, fishing for lumpsuckers (*Cyclopterus lumpus*) or cod (*Gadus morhua*), or shot by local hunters, in the period of 1990-94.

Material and methods

Whole animals or samples from the seals, consisting of the lower jaws, stomachs and sex-organs, 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 dentine, of a thin-section (0.5-0.7 mm) of the canine tooth cut traverse with a low speed saw just below the enamel cap, with use of binocular dissecting microscope with 6X to 50X magnification and transmitted light (Bowen et al. 1983; Lawson et al. 1992). Sex of animals was determined by investigating the sex organs.

Results

Majority of the animals were caught off the North-Coast (Figure 1). Only few animals were obtained from the East-Coast and the West-Coast. Only one record of harp seal came from the South-Coast.

Harp seals were mainly caught in May. The months of early spring, March and April, and the summer-month June are in second and third place (Figure 2).

Pups and one year old animals are dominating. They visit the coast of Iceland much more frequently than older animals (Figure 3). Animals older than two years were rarely caught.

More males than females were caught (Table 1). The proportion of males is however much lower than we found in case of the hooded seals, where it is mainly males who get caught in Icelandic waters (Erlingur Hauksson and Valur Bogason 1995a).

There are annual variations in occurrences of harp seals. Much fewer harp seals were caught in the years 1990-92 than in the years 1993-94 (Table 2).

Discussion

The findings that are presented here are based on samples of seals from fisherman and seal hunters, as mentioned earlier. The information can therefore be biased. Of course seal can only become entangled in gill-nets when such kind of fishing is operated. In Icelandic waters fishing with gill-nets in shallow waters is mostly operated during early spring and summer. 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 therefore go unnoticed. 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 as food and their furs were valuable; e.g. used in shoes. This strengthens the findings of this investigation in our opinion.

In these annals we have records of good catches of harp seals, which seem to be the most dominant vagrant seal species in earlier times. In the year of 1718, many harp seals were slain on sea-ice off the Northeast-Coast. In the year of 1817 on the other

hand many harp seals were taken off the Northwest-Coast. Two years later were thousands of harp seals taken in the north-eastern and eastern parts of the country. Next winter were good catch in the North and Northwest. In the year 1821 were about 500 harp seals caught in Grímsey (Björn Guðmundsson 1944; Lúðvík Kristjánsson 1980).

In recent times harp seals seem to occur close to the coast of Iceland in the winter-time, but seem to be absent from the coast during the late summer and autumn. At earlier times it was most usual that harp seals visited the North-Coast. They came in the wintertime and stayed until April or May, or even June in some coastal areas. They also occurred off the East-Coast and Northwest-Coast. There is also a evidence for, that they regularly hauled out on the South-Coast (Ragnar Stefánsson† pers. inf.; Björn Guðmundsson 1944; Lúðvík Kristjánsson 1980). This picture of the visits of harp seals in earlier times, is therefore quite similar to that of today.

The information from this study indicates that harp seal pups and young animals visit the coast of Iceland mainly after the breeding time is over and when they have moulted. The breeding time of the Jan Mayen or Greenland Sea population is in March, mating is shortly afterwards and moulting occurs in the month of April (King 1964). The visit of harp seals to the coast coincides well with the spawning migration of the capelin (*Mallotus villosus*) stock to the coast of Iceland. The capelin is closer to the shore in the spring than in the late summer and autumn (Hjálmar Vilhjálmsson 1994). The capelin seem to be a important food of harp seals in Icelandic waters (Erlingur Hauksson and Valur Bogason 1995b).

The occurrence of harp seals in Icelandic waters varies somewhat through time. During the period 1750-1790, harp seals seem to be much rarer, than the decade afterwards. Some kind of maximum occurred, in the period 1800-1825. In the middle of the nineteenth century there is a minimum, but afterwards there is an increase again with a maximum in the period of 1910-1925. After this time, a downward trend starts and catching of harp seals is very little in the year of 1942 (Björn Guðmundsson 1944).

After the second World War, hunting for harp seals in Icelandic waters was not operated. Probably due to fewer seals, but also due to a change in life-style of the people in the farming districts, which made sealing not as important for livelihood as before. During the years of the second World War, abundance of harp seal increased off the North-Coast. This did, however, not lead to any increase in sealing, because at that time no home market was for the seal-products in Iceland (Guðmundur Þorsteinsson 1964).

In those years when harp seal catches are high, the ice-edge is usually close to the coast for 1 month or more (Páll Berghórsson 1969). The only exception from this rule is the period 1750-60, when sea-ice is close to shore for over 4 month in the North, but in spite of that seal catches are low.

In later years, number of harp seals in Icelandic waters seems to have increased. They are more numerous in 1993 and 1994, than the periods of 1990-92 and 1981-84 (Erlingur Hauksson 1986).

Contrary to the hooded seal the harp seals visiting the Icelandic coast seem to be pups and sub-adults (Erlingur Hauksson and Valur Bogason 1995a). They also seem to have a different age-distribution than the harp seals caught in Norwegian Waters during the seal invasion in the years 1987 and 1988 (Haug et al. 1991).

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Tables

Table 1. Sex-ratio of harp seals (*Phoca groenlandica*) caught off the coast of Iceland in the period 1990-94.

Sex	Number of animals	Percentage
Females	24	42.1%
Males	33	57.9%

Table 2. Occurrence of harp seals (*Phoca groenlandica*) off the coast of Iceland in different years, in the period 1990-94.

Year	Number of harp seals caught
1990	1
1991	0
1992	26
1993	78
1994	78

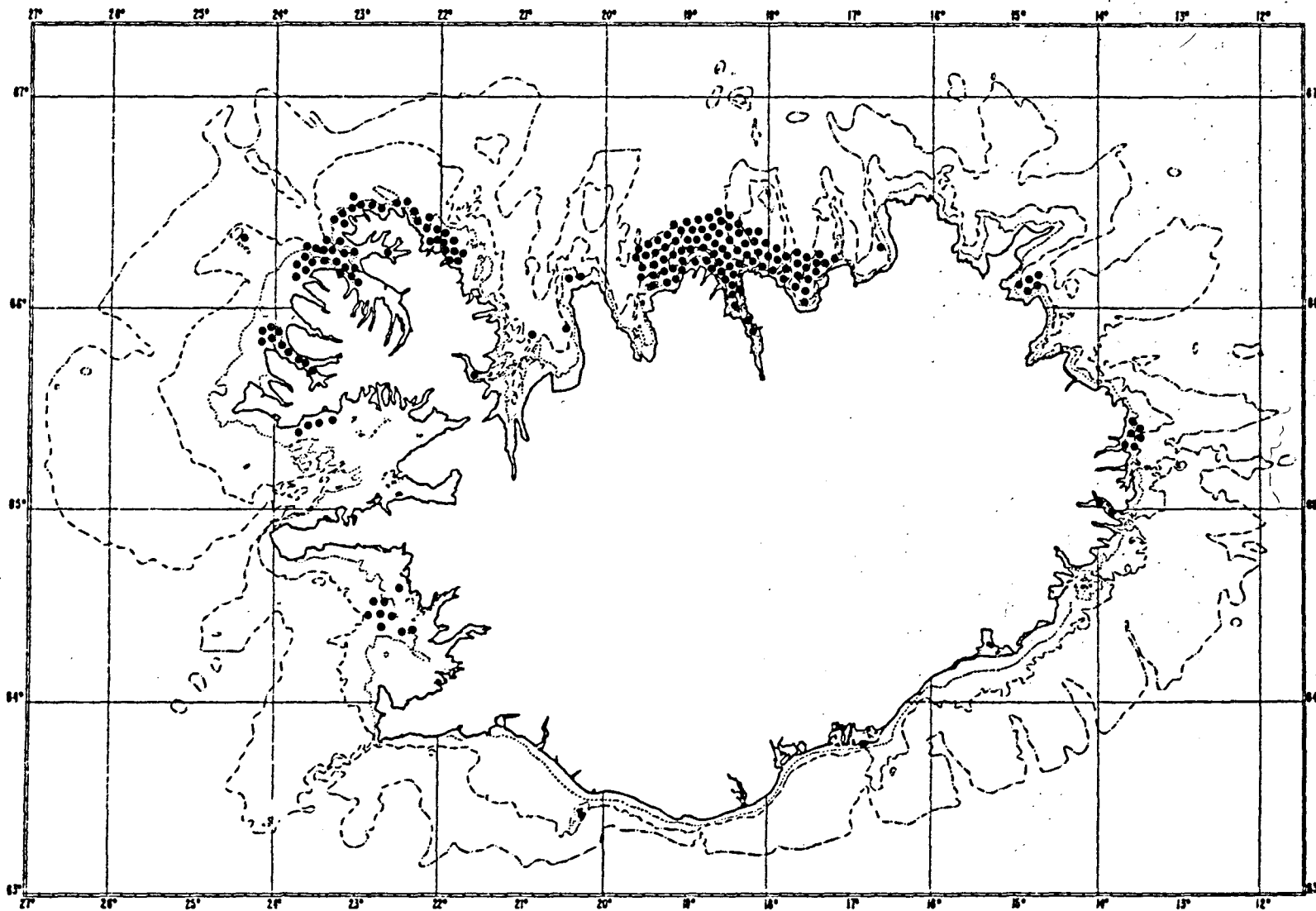


Figure 1. Catch locations of harp seals (*Phoca groenlandica*) off the coast of Iceland in the period 1990-94.

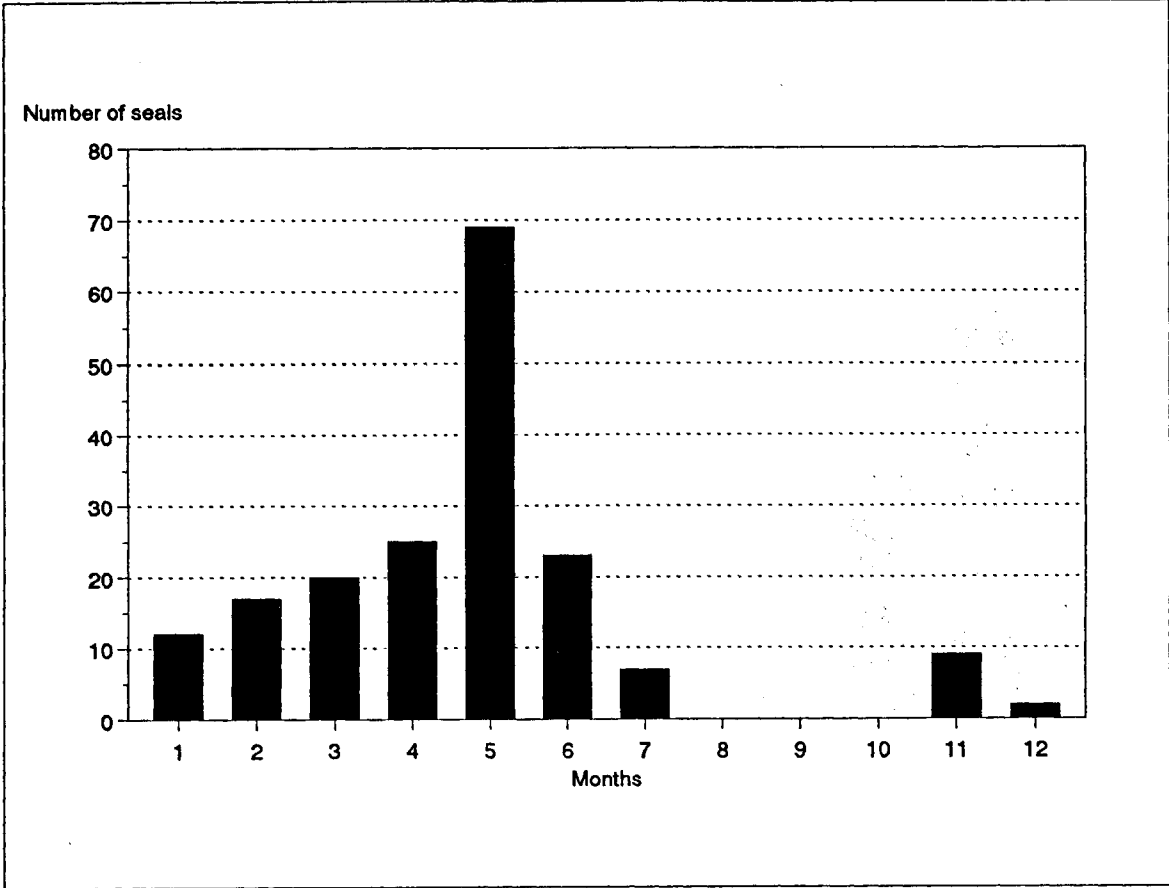


Figure 2. Distribution of the months of capture for harp seals (*Phoca groenlandica*) caught off the coast of Iceland, in the period of 1990-94.

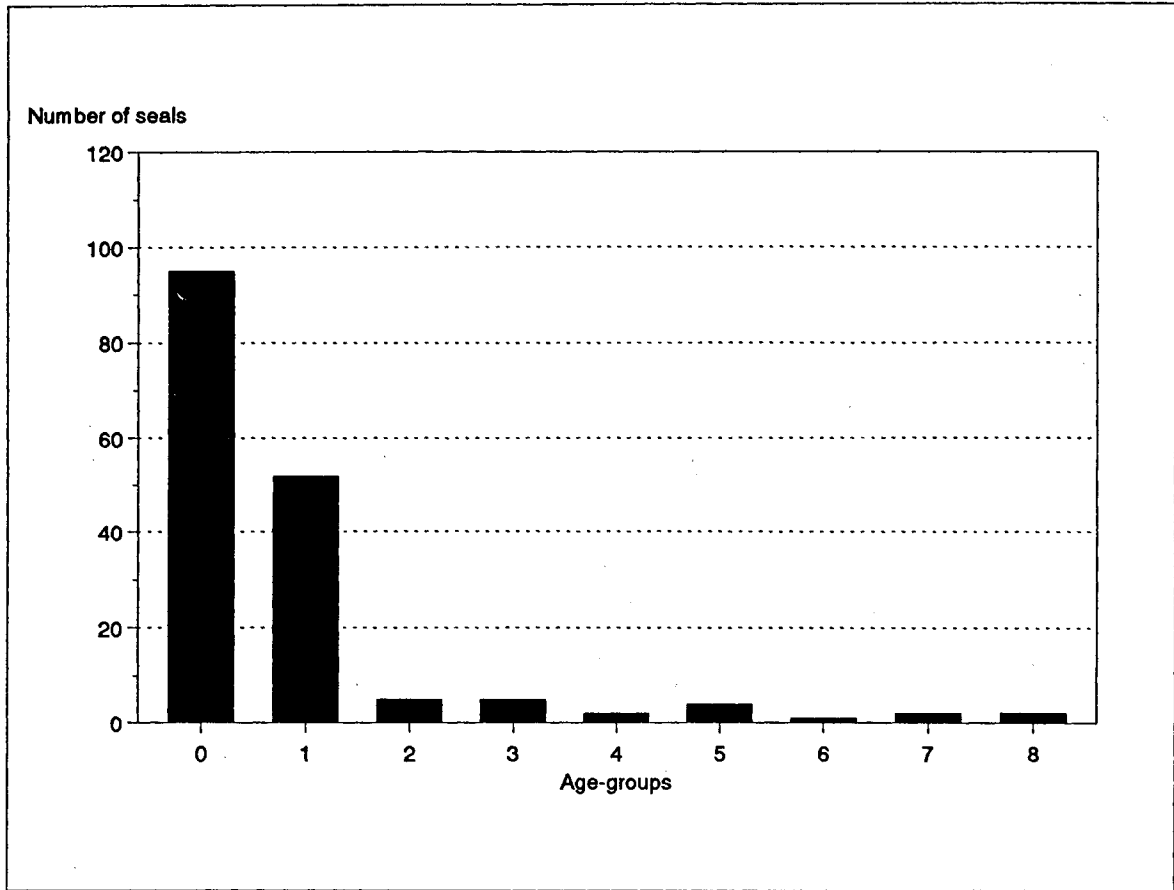


Figure 3. Age-distribution of harp seals (*Phoca groenlandica*) caught off the coast of Iceland, in the period of 1990-94.