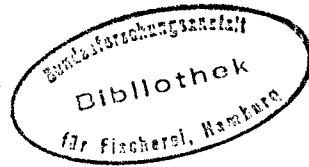


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FOOD OF HOODED SEALS (*CYSTOPHORA CRISTATA* ERXLEBEN, 1777) CAUGHT IN ICELANDIC WATERS, IN THE PERIOD 1990-1994

by

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Abstract

In this paper, is published information about food of hooded seals (*Cystophora cristata*), in Icelandic waters. Most of the animals, investigated, were obtained from local hunters, in the period of 1990-94. Majority of the animals are from the North-Cost of Iceland, caught in spring and early summer. Adult males are dominating in the sample of the hooded seals.

The main food items found in the stomachs are; redfish (*Sebastes sp.*), cod (*Gadus morhua*) and shrimps *Pandalus sp.* The cods eaten by hooded seals are mostly of the age-groups III to V.

Introduction

In this paper, is published information about food of hooded seals (*Cystophora cristata*), in Icelandic waters. Most of the animals, which were investigated, were shot by local hunters, in the period of 1990-94.

Food and feeding habits of hooded seals in North-eastern-Atlantic has been extensively studied (Kapel 1994). This is the first paper dealing with food and feeding of hooded seals in Icelandic waters.

Material and methods

Whole animals or samples of the lower jaw, stomachs and sex-organs, were obtained from local fisher and seal-hunters. Totally were 62 stomachs collected, of which 15 were without food remains. Most of the empty stomachs were from the winter and early spring (Table 1).

Ages 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, near the base of the tooth with use of binocular dissecting microscope with 6X to 50X magnification and transmitted light (Laws 1962). Sex of animals was determined by investigating their sex organs.

Majority of the hooded seals obtained, were adult males, older than six years. Only five females hooded seals were collected, which were mostly pups (Table 2).

Food remains in the stomachs were studied by cutting the stomach open, and washing its content through a fine sieve (0.3 mm mesh-size). Otoliths and bones of fishes and carapaces and shells from invertebrates (beaks from squid), were identified either to species or species groups. Ages of codfishes were read from growth layers in the otoliths, collected from the stomachs, under a binocular dissecting microscope with 6X to 50X magnification and light from above. We were unable to age the redfish, and the length distribution of the redfish in the food is not available yet, because information of otoliths, fish-length and -weight relationship for redfish, is still lacking for Icelandic waters.

Results

Hooded seals visit the coast of Iceland to feed. Only 24% of the stomachs are without food remains. The main feeding season seems to be in the summer and autumn, when nearly all stomachs are with foods (Table 1). Adult males and immature animals seem to visit the coast to feed more frequently than adult females (Table 2).

Far the most common items in the food, in %-occurrence, are redfish (*Sebastes sp.*), cods (*Gadus morhua*) and the shrimp *Pandalus sp.* Next in line are long rough dab (*Hippoglossoides plasseoides*), haddock (*Melanogrammus aeglefinus*), saithe (*Pollachius virens*) and squids (*Todarodes sagittatus*) (Figure 1).

Hooded seals in Icelandic waters feed mainly on fish of commercial size. The ages of the gadoids eaten are from 1 to 6 years, but the majority of the fish is older than 3 years (Table 3). In case of the cod, hooded seals feed mainly on age-class III, IV and V (Figure 2).

Discussion

Percentage of occurrence over-emphasises small items in the food, so small food items such as shrimps may get to much weight, and squid and fishes to little weight. It is better to use percentage by weight or energy values (Pierce and Boyle 1991). However to obtain such values we need information about, the otoliths size and other hard-parts, and weights' relationships for each food-species. Such information is still not at hand for fish and invertebrates of Icelandic waters.

It is not the scope of this paper to analyse the food of hooded seals in the North-eastern-Atlantic. Any comparison of the diet of hooded seal in Icelandic waters, with the diet elsewhere in the Atlantic, is hardly possible. The sample size in this study is small and collected animals are dominated by males. Majority of the samples are also from Skjálfandi, where the hooded seals seem to aggregate in the summer (Erlingur Hauksson and Valur Bogason 1995). However it seems, that in Icelandic waters, hooded seals feed much more on redfish and cod, than in the Davis Strait - Baffin Bay region of the North-Atlantic. There their food is more dominated by capelin and Greenland halibut (*Reinhardtius hippoglossoides*) (Kapel 1994).

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Tables

Table 1. Seasonal distribution of the stomach samples of hooded seals (*Cystophora cristata*), with and without food-remains.

Seasons	Stomachs with food	Stomachs without food	Total
Nov. - Mar	2	4	6
Apr. - June	10	11	21
July - Oct.	35	0	35

Table 2. Age and sex distribution of hooded seals (*Cystophora cristata*) with food-remains in theirs stomachs.

Age of animals	Females	Males	Sex un- known	Total
0	3	1	0	4
1 - 5	0	15	2	17
6 and older	2	35	0	37

Table 3. Distribution of age-classes, of gadoids in the food of hooded seals (*Cystophora cristata*), in Icelandic waters. The numbers in the table are original figures; numbers of fish.

Fish-species	Age-classes							
	O	I	II	III	IV	V	VI	VII
Cod	0	6	2	11	26	19	4	0
Saithe	0	2	0	0	0	1	1	0
Haddock	0	0	0	6	3	4	0	0

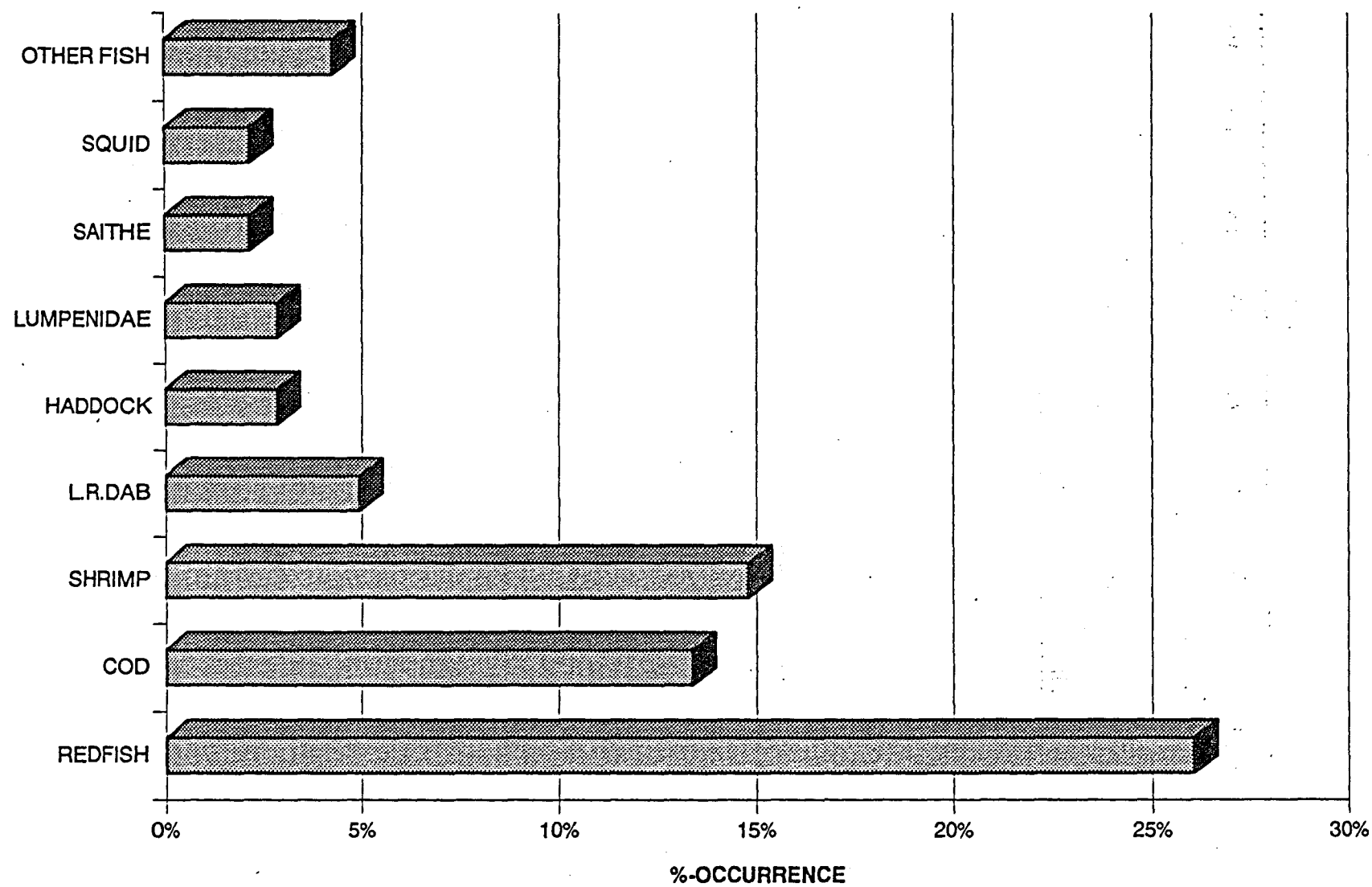


Figure 1. Percentage-occurrence of each food-species, in the stomachs of hooded seals (*Cystophora cristata*), in Icelandic waters.

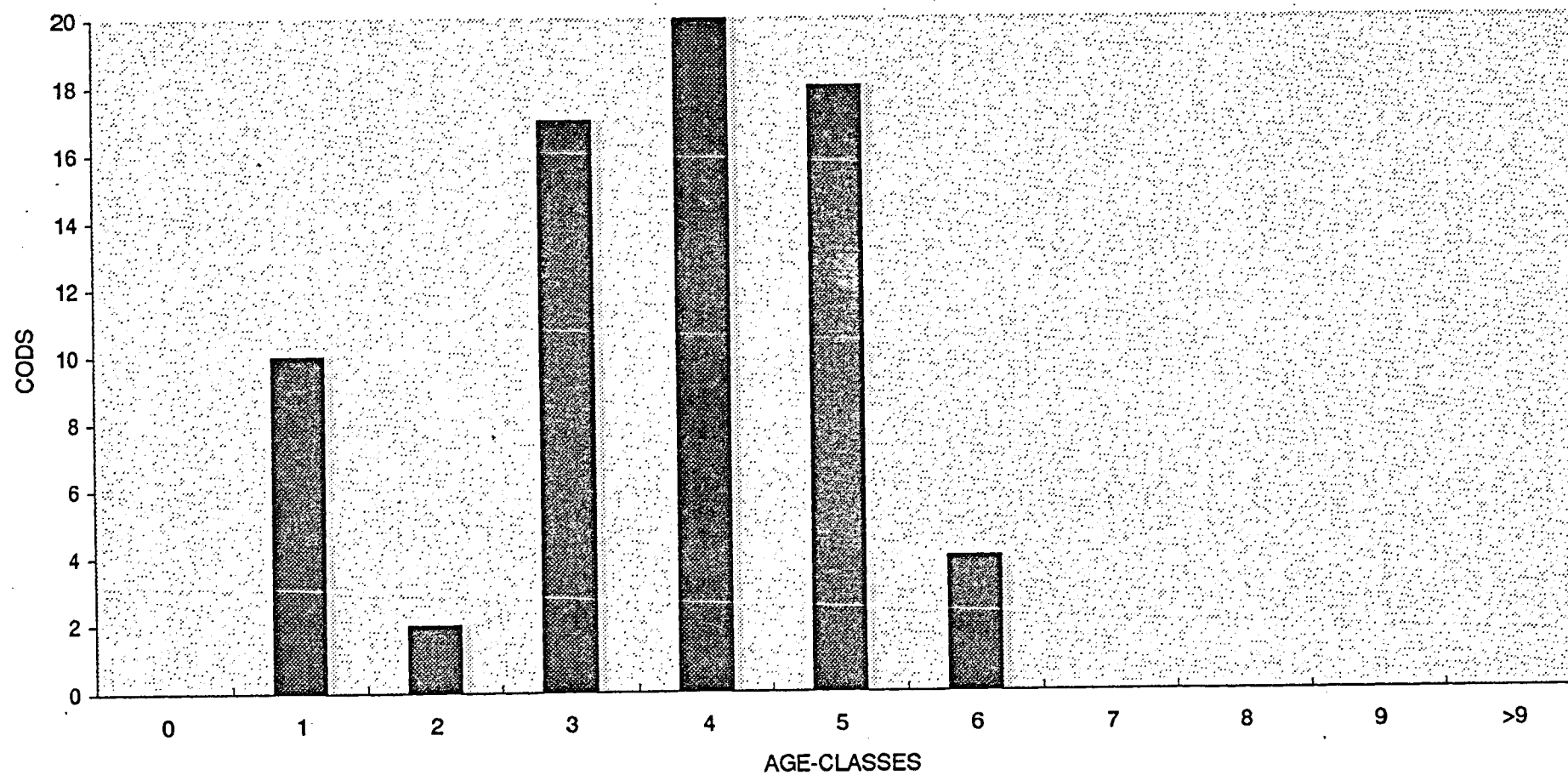


Figure 2. Distribution of the age-groups of cod eaten by the hooded seals caught of the coast of Iceland, in the period of 1990-94.