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Observations on ringed seal (Pusa hispida) in Northwest Greenland at the time of break-up of the ice

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Abstract

During the time of break-up of the ice, field work on the movements of the ringed seal (Pusa hispida) was performed. The investigations were carried out in the northern part of the Upernavik district, and the southernmost part of the Thule district, Northwest Greenland.

The seals prefer certain categories of the drifting ice, which results in a movement of the seals to the north as the ice withdraws.

It is proposed that not only a need for a substratum on which to haul out, but also some other reason explain the attraction of the ice, most likely availability of food.

Résumé

Pendant la période ou la glace brise une étude sur le terrain a été faite sur les mouvements du phoque marbré (Pusa hispida). Les investigations ont été exécutées dans le nord du district d'Upernavik et tout dans le sud du district de Thule, au Nord-ouest du Groenland.

Les phoques préferent certaines catégories des glaces flottantes dont résulte un mouvement des phoques vers le nord, a mesure que la glace fond,

On propose que non seulement le besoin des phoques de se trouver de temps en temps sur une base solide mais aussi un autre motif expliquent l'attrait de la glace, selon toute probabilité la présence d'aliment.

Introduction

In the years 1974 to 1977 the Danish Natural Science Research Council arranged for investigations of the populations of the Ringed Seal in Greenland (Grant No. 521/9-3).

It was decided to confine the investigations to the northern part of the Upernavik district, Northwest Greenland. This area was chosen mainly because the ringed seal is very common in this area, and still plays a very important part in the local economy.

During field work on the number of seals hauling up, several hunters were interviewed. They claimed that the number of seals to be found in the district changes considerably from one season of the year to another.

To get an impression of the size of the fluctuations, it was decided to follow the course of events during and under the break-up of the ice when the seals were said to disappear and to try to make observations on their return in the autumn. (See ICES C.M. 1977/N:16).

Methods

The observations on the seals were performed from a 36' cutter, normally used for hunting purposes, and it took place in the period from 18/6 to 6/8 1976.

The observations started as soon as it was possible to sail to the ice-edge near the settlement of Kraulshavn, which served as a base for the author in the countings of seals hauling out.

The cutter proceeded northwards as the ice broke up; the whole work being done in the area between the approximate latitudes of 73°N and $75^{\circ}30'$N. During the whole trip observations on the seals and the ice were performed by means of binoculars (9 x 35). In an attempt to follow the course of the drifting ice-floes, numbered flags were placed on them. All observations were timed and recorded on a small tape recorder.

Besides the author the crew consisted of the owner of the boat and of one or two more hunters. From 18/6 to 25/6 B.sc. Finn Larsen assisted in the observations as well.

Results of the countings

There was a connexion between the character of the ice and the number of seals observed. In water with no or very little ice, we could sail for hours without seing any seals. In an attempt to systematize observations on this, the following procedure was followed.

The different categories of ice-cover were divided into 16 classes according to the density and the size of the floes. For all categories the number of seals observed both in the water and on the ice-floes were calculated and divided by the total number of hours of observation in the specific category of ice. The results are shown on tables nos 1 and 2.

Although seals hauling out give the clearest picture, the tendency seems to be somewhat the same concerning seals in the water. Quite open water at least is obviously of very little attraction to the seals. The use of mean values to describe the situations conceals the fact that very high local concentrations would occur with no obvious reason.

The classification will of course be somewhat subjective, but nevertheless it is quite clear that some categories of ice are more attractive to the seals than others, the big floes and a combination of big and medium floes being the most preferred.

Movements of the ice

Unfortunately the number of sightings of the individual flags placed on the floes were few. Two or three sightings, however, could usually be made, and from this it appears that most of the floes drifting away from the ice-edge move north and west, though exceptions were observed to this.

It appears from the observations that icebergs and floes do not always follow the same course due to the fact that the wind and the stream effect the two sorts of ice differently.

The reason why the sightings were few may first of all be that the floes are rapidly breaking along their edge, making the position of a flag unsafe even if it is placed several hundred meters from the edge of the floe. Another reason may be that often we left the floe-marked area for a week or so in order to observe elsewhere or to bunker in Upernavik. At the time of return we suppose that the floes have drifted too far away for us to relocate them.

In order to prevent the ice from melting around the flags due to the heat of the sun, the stakes were wrapped in aluminium foil, which proved effective for the purpose.

Discussion

Conditions during the break-up of the ice caused the masses of ice to move to the north. Not only do the floes drift northwards, but the remaining ice in the deepest fjords rapidly melts, this effect proceeding from south to north. Thus the preference shown to certain categories of ice makes the seals move from south to north.

Although it showed up that perhaps most of the seals hauling out on the floes had not yet completed their moult (cleared up by hunting some of the indiviudals and by information from the hunters), the need for a substratum to haul out is not likely to be the whole explanation to the findings. Most of the seals shot in the water close to the floes had their moult completed and their stomachs filled. Often the contents of the stomach were decomposed to different degrees which shows that they had been in the water for some time, and that the reason for this was not that we had scared them down from the floes.

A special survey in some of the fjords after most or all of the ice had disappeared confirmed the opinion of the hunters that most ringed seals leave these areas except for a few, probably old individuals. Melting ice in the latest stages seems to have nearly as little attraction as open water.

It is proposed that the floes are followed by the ringed seal not only because of the need of some of the individuals for a substratum on which to haul out, but also for some other reason. It is suspected, but still not examined, thatsthis reason may be the availability of larger amounts of food than elsewhere.

	big (one or more km ø)	big + medium	medium (down to app. 50 m ø)	small (mostly 2-10 m ø)	pieces of glacier ice
rather dense (more than about 6/10)	- (1)	3.4 (78) (23)	- (1)	- (9)	- (1)
more dispersed (app. 5/10-2/10)	13.8 (180) (13)	11.8 (509) (43)	0.9 (8) (9)	0.2 (3) (13)	- (6)
very dispersed or nearly ice-free (1/10 or less)	13.0 (39) (3)	3.9 (169) (43)	- (4)	- (9)	- (7)

TABLE 1

Numbers of seals hauling out seen per hour in different categories of ice. Numbers in brackets refer to the numbers of seals and the time spent in hours.

	big (one or more km ø)	big + medium	medium (down to app. 50 m ø)	small (mostly 2-10 m ø)	pieces of glacier ice
rather dense (more than about 6/10)	1.0 (1) (1)	1.5 (34) (23)	1.0 (1) (1)	1.8 (16) (9)	1.0 (1) (1)
more dispersed (app. 5/10-2/10)	1.7 (22) (13)	2.7 (117) (43)	1.0 (9) (9)	0.1 (1) (13)	1.0 (6) (6)
very dispersed or nearly ice-free (1/10 or less)	1.3 (4) (3)	1.9 (81) (43)	2.0 (8) (4)	- (9)	1.0 (7) (7)

open water 0.16, (30), (183)

TABLE 2

Numbers of seals seen in the water per hour in different categories of ice and in open water.