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AGE ANALYSIS OF HOODED SEALS IN NORTHWEST GREENLAND

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ABSTRACT

Data on 210 hooded seals caught in Northwest Greenland 1973 and 1974 show that the main part of the catch takes place between late July and late September, that catches are dominated by males, and that young animals (age groups 0-4) are relatively weakly represented. The relations between hooded seals occurring in West Greenland and the various breeding stocks are discussed.

Hunting of Hooded Seals in Northwest Greenland.

As outlined in a previous paper (Kapel, 1972) the main part of the Greenland catch of hooded seals is taken in South Greenland from late April to mid-June. Also in the Angmagssalik district of Southeast Greenland hooded seals are taken in rather high numbers, especially in July and August immediately after the moult in the Denmark Strait.

In Northwest Greenland (70° - 75° N) 200-300 hooded seals are caught annually (Fig. 1). The main part of the catch is carried out from small motorboats from late July to late September as by-catch to the hunting of harp seals and ringed seals. In some areas, and when ice conditions are favourable, a few animals are also taken in late spring and early summer, from boats or at the ice edge.

As a rule hooded seals are shot in water, and as harpoons are now rarely used, losses may be rather high, but information on this subject is scarce and reveals considerable disagreement. In some years hooded seals are met with and shot when lying on ice floes also in Northwest Greenland, like in the Angmagssalik area where this type of hunt is the typical one. In 1974 unusually many hooded seals, some of which still moulting in August-September, were taken under these conditions in Northwest Greenland.

Materials and Methods.

The material of hooded seals collected in Northwest Greenland is shown in Table I, in which also samples from South Greenland and East Greenland are listed.

The number of jaws collected in Northwest Greenland is not large, but compared with the catch figures for 1970 the sampling results are rather satisfactory in 1972-1974, especially for Upernavik district. The relatively large sample in 1974 is partly a result of improved sampling effort, but is probably also due to somewhat larger catches of hooded seals than usual. In the following only the samples from 1973 and 1974 are used, as analyses of previous samples were not available at the time of writing.

In both samples females account for less than 20%. As described in previous papers (Kapel, 1972 and 1974), males also seem to dominate in samples from South Greenland, but females here seem to account for 20-50% of the catches. The samples from East Greenland (Angmagssalik district) are small but indicate a minor surplus of males, only.

It might be argued that the statement of sex is not fully reliable, as it is based mostly on the information given by the hunters on the labels attached to the jaws. It is, however, difficult to explain why this fact should show a clear tendency towards dominance of males, as demonstrated above. Further, it is the impression from field studies, that males do occur more frequent than females in catches. The hunters do not seem to select males during the hunt, and the sex ration found in the samples thus seem to reflect the fact that males occur in greater numbers in the hunting areas - or for some other reason are more vulnerable.

Table II shows the distribution per half-month of the jaws collected in Northwest Greenland 1973 and 1974. It appears that the samples cover the hunting period described above very well.

Although material from other localities and for a longer period of years would be desirable, the samples of hooded seals in 1973 and 1974 are considered sufficient to give a reasonable picture of the composition of the catches in Northwest Greenland.

In the laboratory the canines were extracted from the lower jaws, cut transversely, and the sections examined under microscope. Ageing was done by the author only, and although some sections were examined several times, the results presented below must be considered preliminary, especially what old animals is concerned.

Age analysis.

The results of the age determination of the material collected in 1973 and 1974 appear from Table III and Fig. 2. The two samples are considered comparable and have therefore been pooled together in the columns to the right in the table.

The age analysis shows that youngs of the year account for only 7.6 % of the sample and 1-4 years old animals for 27.6 %. For these young age groups no tendency of decreasing percentages with increasing age was found. Such a tendency can be traced for the following age groups, although the size of the material does not allow for definite conclusions. 5-9 years old animals account for 38.4 % of the sample, older animals for 32.4 %.

The above is also valid as a description of the age composition of males, as these dominate the sample. On the basis of the available material it is not possible to comment on the age composition of females.

Estimation of mortalities is not attempted here, partly because the material is considered too small for this purpose.

Discussion.

Until recently only two breeding areas were known for hooded seals; one in the drift ice off Newfoundland and Labrador (the Front) with a small section in the Gulf of St. Lawrence, the other in the region of Jan Mayen (the West Ice.) Both stocks were thought to moult in the Denmark Strait.

The occurrence of hooded seals in South Greenland in the spring was explained as animals on migration from the breeding areas at the Front to the moulting areas. Recoveries in South Greenland of hooded seals tagged at the Front confirm, that at least some of the seals caught in Greenland come from that area. Analyses of the catch of hooded seals in South Greenland (Kapel 1972 and 1974) show that youngs of the year and 1-2 years old animals occur in very low numbers here.

It has been suggested that young animals might migrate northwards and occur in greater numbers off West Greenland. Until now no recoveries of tagged hooded seals have been recorded from Northwest Greenland.

The present age analysis of hooded seals caught in Northwest Greenland does not confirm the above mentioned theory. Although youngs of the year occur in greater numbers than in the South Greenland catches they still form only a minor part of the catch, and other young animals also seem to be under-represented.

The rediscovery of a third breeding area of hooded seals in the Davis Strait (Sergeant, 1974) may change the view on the occurrence of hooded seals in Greenland on several points.

Possibly, part of the seals caught in South Greenland comes from the breeding patches in the Davis Strait. Further, it is likely that an even greater proportion of the hooded seals occurring along the coast of West Greenland is recruited from that breeding area. This would explain the lack of tag-recoveries from Northwest Greenland.

The analysis of the Greenland catch statistics by Rosendahl (1961) showed that the peak of the catch of hooded seals in Mid-West Greenland (68° - 70° N) occurred in late April and May, in fact a bit earlier than the catch in South Greenland. This was explained as a northward migration of a minor part of the animals from the front stock, the main part of which followed the southern route that brought them to South Greenland in May and June. Considering the discovery of a third whelping area, another explanation seems probable, namely that most hooded seals occurring in Mid-West Greenland and Northwest Greenland do not come from the Front, but are recruited from the Davis Strait stock, provided that this stock is a permanent one and has been so for years.

As mentioned above, a rather small catch of hooded seals in Northwest Greenland takes place in the spring (late May to early June). This may be evidence of a northward migration at this time of the year, and the reason for the relative minor importance of the catch may partly be that the ice conditions as a rule do not allow the hunters to go to the westernmost zone of broken-up ice, partly that the hunters at this time of the year are occupied by a more profitable hunting of ringed seals hauled out on the ice or in cracks in the ice.

Between mid June and late July very few hooded seals are caught in Northwest Greenland, and the main part of the catch taken in August-September are probably seals seeking to coastal feeding areas or on their southward migration.

It might be difficult to demonstrate the origin of the hooded seals caught in Mid-West Greenland, as the catch in this area is now insignificant, but tagging experiments on the Davis Strait whelping patches may throw light on the relationship between this population and the catches in Northwest - and South Greenland.

Another question is where the animals from the Davis Strait stock moult. It is of course possible that they migrate southwards and eastwards around Cape Farewell, but as the location of the breeding patches has remained unknown until recently, it is not impossible that a moulting area exists somewhere in the Baffin Bay area. The hunters of Northwest Greenland report that moulting seals are seen rather often.

The above discussion does not explain the under-representation of females and of young animals in the Northwest Greenland catches. These animals probably spend most of their lives in open water or in drift ice far from the coastal waters, where they are inaccessible to the hunters.

The fact that very few young animals are taken in Greenland means, that the hooded seal pups surviving the kill on the breeding patches are very lightly exploited during the following three years. Probably, less than ^{one} hundred young of the year, about two hundred one year old and less than three hundred 2 year old animals are taken in Greenland. According to Øritsland and Benjaminsen (1973), these yearclasses are not exploited at the front. Very few 3 year old animals are taken in the breeding areas, and the Greenland catch of that yearclass does not exceed three hundred.

At the age of four the females begin to be more heavily exploited on the whelping patches, but the males do not play an important role in that area until they have reached the age of 8, 9 or 10 year.

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Table I. Samples of jaws of hooded seals from Greenland.

Locality	Year						(Catch) (1970.)
	1953	1970	1971	1972	1973	1974	
Kuvdlorssuak, Upv.		-	-	-	-	13	(4)
Kraulshavn , -		-	-	-	14	46	(31)
Tasiussak , -		-	-	29	18	25	(44)
Tugssak , -		-	-	10	15	33	(31)
Augpilagtok , -		-	-	8	8	9	(11)
Prøven , -		-	-	1	-	-	(3)
Igdlorssuit , Umn.		-	3	3	-	-	(5)
K'aersut , -		-	-	16	7	10	(20)
Sarkak , Jak.		-	-	-	-	12	(11)
Northwest Greenland	61	-	3	67	62	148	
South Greenland	50	42	234	214	200	208	
East Greenland	9	66	49	83	66	-	
<u>Females</u>							
	1953	1970	1971	1972	1973	1974	
Upernavik district	.	-	-		4	21	
Umanak -	.	-	-		3	1	
Jakobshavn -	.	-	-	-	-	1	
Northwest Greenland	.	-			7	23	
South Greenland	.	11	111	41	42	75	
East Greenland	.	20	24	34	29	-	
<u>Males</u>							
	1953	1970	1971	1972	1973	1974	
Upernavik district	.	-	-		48	100	
Umanak -	.	-	-		4	9	
Jakobshavn -	.	-	-	-	-	11	
Northwest Greenland	.	-			52	120	
South Greenland	.	31	122	148	110	115	
East Greenland	.	45	25	48	37	-	
<u>% females</u>							
	1953	1970	1971	1972	1973	1974	$(\frac{f \times 100}{f + m})$
Northwest Greenland	.	-			12 %	16 %	
South Greenland	.	26 %	48 %	22 %	28 %	39 %	
East Greenland	.	31 %	49 %	41 %	44 %	-	

Table II. Distribution of samples per half-month, N.W. Greenland.

	May		June		July		Aug.		Sept.		Oct.		γ	Total
	1	2	1	2	1	2	1	2	1	2	1	2		
1974 Upernavik district	-	-	-	-	-	15	25	54	15	9	5	-	3	126
Umanak -	-	-	-	-	-	-	5	5	-	-	-	-	-	10
Jakobshavn -	-	-	-	-	-	-	1	9	2	-	-	-	-	12
1974 N.W. Greenland	-	-	-	-	-	15	31	68	17	9	5	-	3	148
1973 -	-	2	3	-	-	2	21	29	2	2	-	-	1	62

Table III. Age samples of hooded seals in northwest Greenland, 1973 and 1974.

Age	1973				1974				1973 + 1974							
	♀♀	♂♂	nk	total	♀♀	♂♂	nk	total	♀♀	♂♂	nk	total	%	% ♀♀	% ♂♂	% nk
0	1	1		2	4	10		14	5	11		16	7.6	2.4	5.2	
1	1	1		2	2	7		9	3	8		11	5.2	1.4	3.8	
2		1	1	2	1	13		14	1	14	1	16	7.6	0.5	6.7	0.5
3		3		3	3	11	1	15	3	14	1	18	8.6	1.4	6.7	0.5
4		2		2	1	9	1	11	1	11	1	13	6.2	0.5	5.2	0.5
5		6	1	7	1	10	1	12	1	16	2	19	8.9	0.5	7.6	1.0
6		4		4	4	9		13	4	13		17	8.1	1.9	6.2	
7		6		6		8		8		14		14	6.7		6.7	
8		4		4	1	6	1	8	1	10	1	12	5.7	0.5	4.8	0.5
9		1		1		5		5		6		6	2.9		2.9	
10	1	3		4	1	4		5	2	7		9	4.3	1.0	3.3	
11						4		4		4		4	1.9		1.9	
12		3		3	2	2		4	2	5		7	3.3	1.0	2.4	
13		4		4		4		4		8		8	3.8		3.8	
14		3	1	4	1	5		6	1	8	1	10	4.8	0.5	3.8	0.5
15		2		2		1		1		3		3	1.4		1.4	
16		3		3		1		1		4		4	1.9		1.9	
17					1	3		4	1	3		4	1.9	0.5	1.4	
18		2		2		1		1		3		3	1.4		1.4	
19						2		2		2		2	1.0		1.0	
20	1			1		2		2	1	2		3	1.4	0.5	1.0	
21																
22		1		1						1		1	0.5		0.5	
23						1	1	2		1	1	2	1.0		0.5	0.5
24						1		1		1		1	0.5		0.5	
25	1			1	1			1	2			2	1.0	1.0		
26-30	1			1		1		1	1	1		2	1.0	0.5	0.5	
31-35	1	2		3					1	2		3	1.4	0.5	1.0	
Sum	7	52	3	62	23	120	5	148	30	172	8	210	100.0	14.3	81.9	3.8

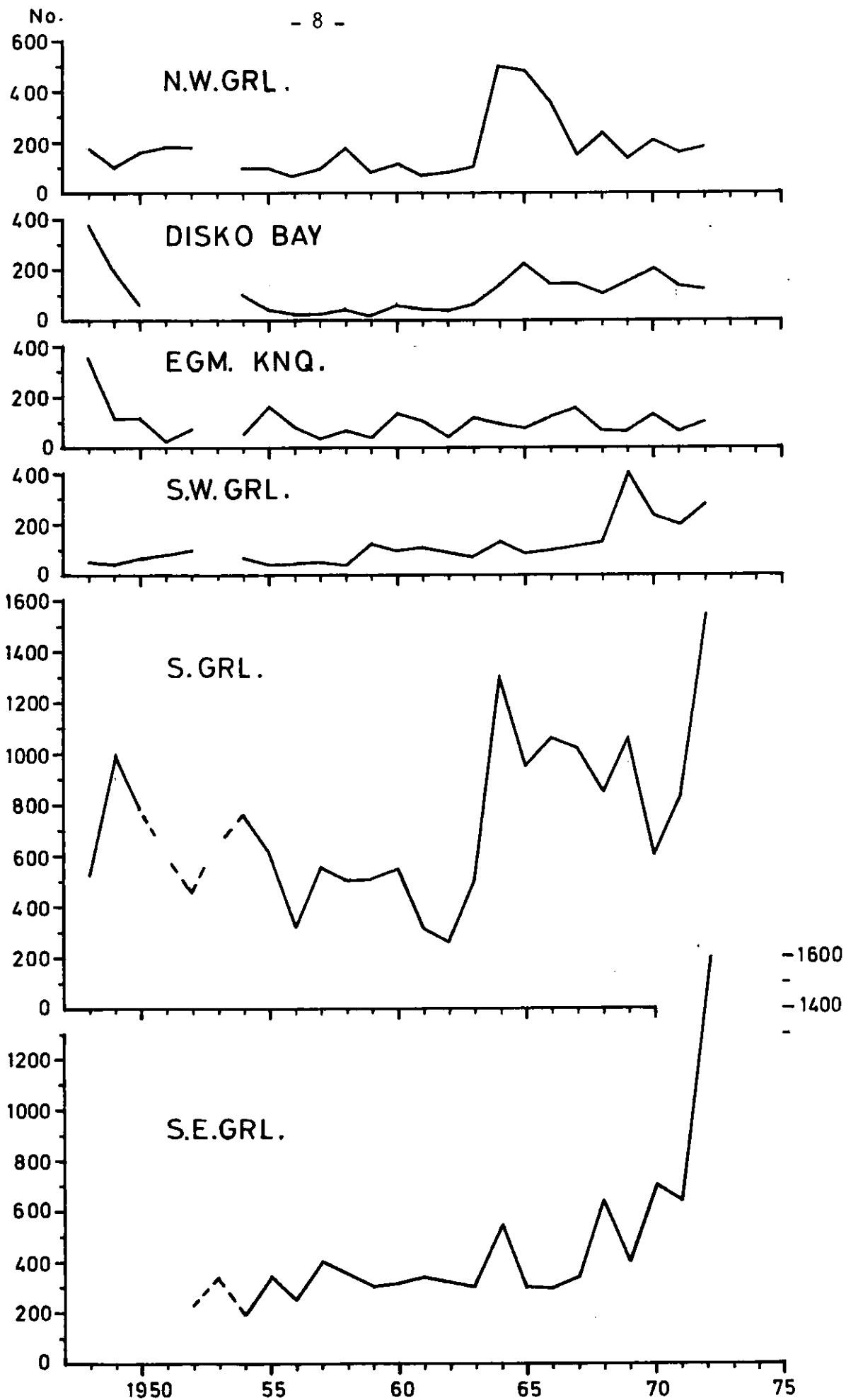


Fig. 1. Catch of hooded seals in Greenland

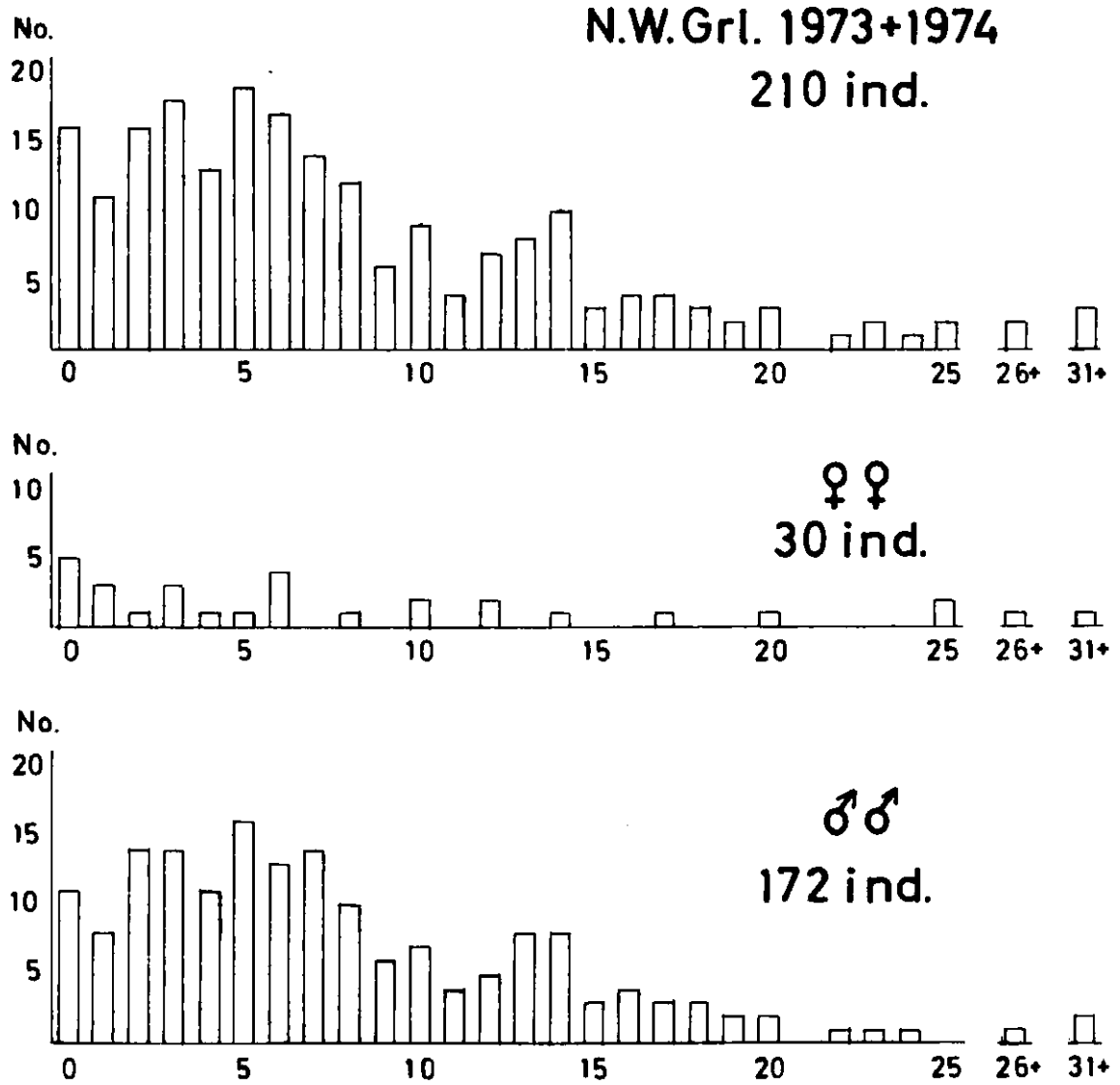


Fig. 2. Age composition of hooded seals caught in Northwest Greenland.

