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Studies on the Hooded Seal, *Cystophora cristata*, in Greenland, 1970-80

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Abstract

The decline in catches of hooded seals, *Cystophora cristata*, in Greenland during the first half of the 20th century was followed by an increase in the late 1960's and the 1970's. The present level of catch is about 3,500 animals annually in West Greenland and about 2,000 in Southeast Greenland. More than 3,000 jaws were collected during 1970-80, of which 2,226 specimens have been aged. The results indicate the dominance of age-groups 2-8 in the catches, with varying frequency in different regions and years. Age-groups 0 and 1 were poorly represented in the catches. The sex ratio of the samples was very much biased toward males, which constituted 66, 62 and 83% of the catches in South, Southeast and Northwest Greenland respectively. Information obtained from hunters indicate that hooded seals in Greenland waters feed mainly on fish, with some seasonal and regional variation in the diet and feeding activity. The relation between hooded seals occurring in Greenland and those of the various breeding and molting areas are briefly discussed on the basis of recoveries of tagged animals.

Introduction

Numerous descriptions of seal hunting in Greenland, including the hunting of hooded seals, have been published since the Danish colonization of the area. An early example, and a very good one, is that of Fabricius (1791). A detailed account of the occurrence and hunting of hooded seals in different regions of Greenland was published by Amdrup *et al.* (1921). Some of this information was included in previous reviews by Kapel (MS 1972, 1975).

The collection of statistical information on catches of marine mammals in Greenland was initiated more than 100 years ago, and these data have been used in several publications (Anon., 1944, 1954-74; Rosendahl, 1961; Kapel, 1975). Additional sources of information are reports on the number of skins and other products purchased by the Royal Greenland Trade Department.

This paper presents results of age determinations of hooded seals based on some of the material collected in Greenland since 1970, provides estimates of the composition of catches in the major regions, and gives available information on feeding. An analysis of samples of female reproductive organs collected in South and Southeast Greenland in 1970 and 1971 was undertaken by Born (1982).

Materials and Methods

The collection of seal jaws in Greenland was initiated in 1970 with the purpose of obtaining information on the age compositions of catches of harp and hooded seals. From information on the level and distribution of hunting of hooded seals (Rosendahl, 1961), sampling effort was concentrated in South Greenland

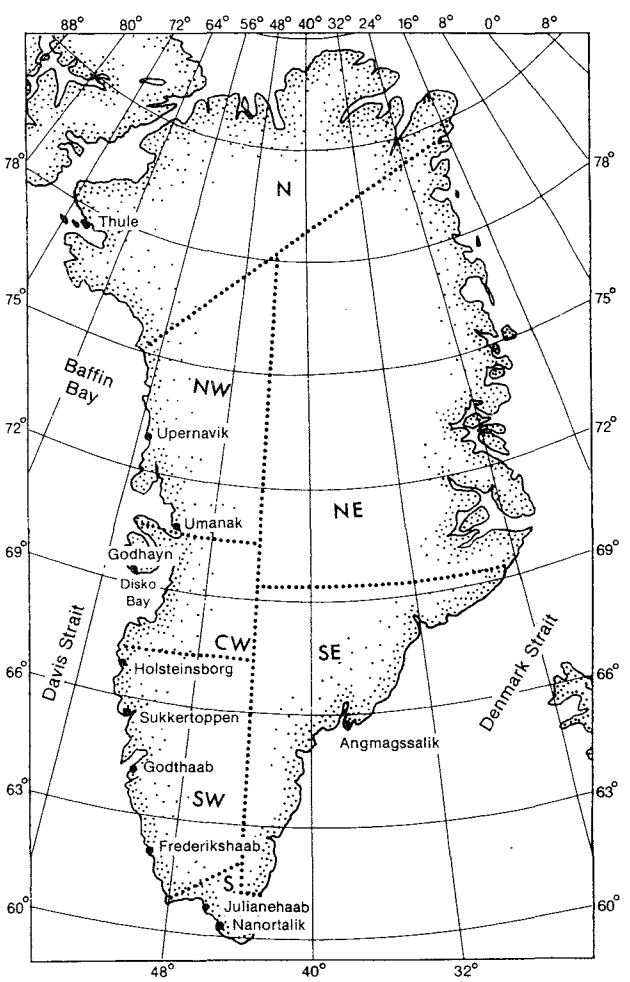

Fig. 1. The major regions of Greenland (from Kapel, 1975).

(Nanortalik and Julianehaab districts) and Southeast Greenland (Angmagssalik district) (Fig. 1). Consequently, samples totalling 898 and 288 animals were collected in the two regions respectively during 1970–74, and the resulting age determinations are presented in this paper. Sampling of hooded seals was discontinued in Angmagssalik district after 1974. However, 788 jaws were collected in South Greenland during 1975–80, but age determinations have not yet been done although the sections have been prepared for analysis.

In Northwest Greenland, where sampling of harp seal catches has been carried out since 1972, the catches of hooded seals were small in the early years and the samples were correspondingly small. Nevertheless, a total of 1,032 animals were sampled during 1973–80, for which age frequencies are available for comparison with the results from Southeast and South Greenland. Ageing of 70 specimens collected in 1971 and 1972 has not yet been completed.

Together with jaws for age determination, the hunters provided information on the date, locality and method of hunting, and on the sex, length and stomach contents of the animals. Some of the data were included in previous reports by the author (Kapel, MS 1972, MS 1974, 1975, MS 1975).

Results

Trends in catch

The catch of hooded seals in Greenland waters declined markedly from a level approximately 15,000 animals per year in the early 1900's to about 1,000 in the late 1950's (Kapel, MS 1978). Since 1960, there has been a general increase in catches in all regions of Greenland (Table 1, Fig. 2). Between 1959 and 1968, the Royal Greenland Trade Department arranged for the catching of hooded seals in Denmark Strait, but this project had limited success and was discontinued in 1969 (Table 1). The apparent decline in some regions after 1977 may not be as great as indicated by the preliminary data because the figures for 1978–80 do not include estimates of non-reported catches.

There is no detailed information on hunting effort available, but the number of hunters has been almost constant over the time period (1954–80). It is unlikely that the introduction of outboard-powered boats or other recent changes in hunting technology have significantly improved the effectiveness of hunting hooded seals. Sinking losses of shot animals may have changed, but this is not considered to have a significant effect on trends in landed catches. The increasing trend in catches is therefore interpreted as evidence of increased availability of hooded seals in Greenland waters.

TABLE 1. Hooded seal catches in Greenland by district (see Fig. 1) in 1954–80.

	West Greenland						East Greenland			Greenland
Year	TH[a]	NW	CW	SW	S	Total	SE	KGH[a]	Total	Total
1954	—	101	158	72	766	1,097	201	—	201	1,298
1955	1	93	218	46	614	972	344	—	344	1,316
1956	—	71	127	59	336	593	264	—	264	857
1957	5	90	77	58	567	797	412	—	412	1,209
1958	—	168	118	42	518	846	365	—	365	1,211
1959	2	84	49	128	517	780	320	414	734	1,514
1960	3	110	195	97	560	965	331	773	1,104	2,069
1961	14	64	159	114	322	673	348	803	1,151	1,824
1962	3	83	97	88	274	545	326	988	1,314	1,859
1963	7	107	185	77	516	892	316	813	1,129	2,021
1964	3	500	229	138	1,315	2,185	545	366	911	3,096
1965	3	487	297	90	945	1,822	318	—	318	2,140
1966	8	368	279	100	1,066	1,821	304	748	1,052	2,873
1967	18	155	294	116	1,025	1,608	358	371	729	2,337
1968	12	220	221	128	851	1,432	641	20	661	2,093
1969	5	153	210	394	1,060	1,822	411	—	411	2,233
1970	3	234	319	165	691	1,412	713	—	713	2,125
1971	2	200	206	229	997	1,634	744	—	744	2,378
1972	1	191	213	284	1,594	2,283	1,827	—	1,827	4,110
1973	16	250	279	390	1,719	2,654	677	—	677	3,331
1974	41	362	380	552	1,446	2,781	1,218	—	1,218	3,999
1975	143	305	941	463	1,834	3,835	1,071	—	1,071	4,906
1976	108	266	455	1,195	2,206	4,230	818	—	818	5,048
1977	102	586	481	561	2,021	3,751	2,227	—	2,227	5,978
1978[b]	71	721	216	671	1,163	2,842	2,315	—	2,315	5,157
1979[b]	78	675	507	493	1,048	2,801	2,316	—	2,316	5,117
1980[b]	113	489	227	637	948	2,414	1,807	—	1,807	4,221

[a] TH = Thule; KGH = Royal Greenland Trade Department special fishery in Denmark Strait.
[b] Provisional data.

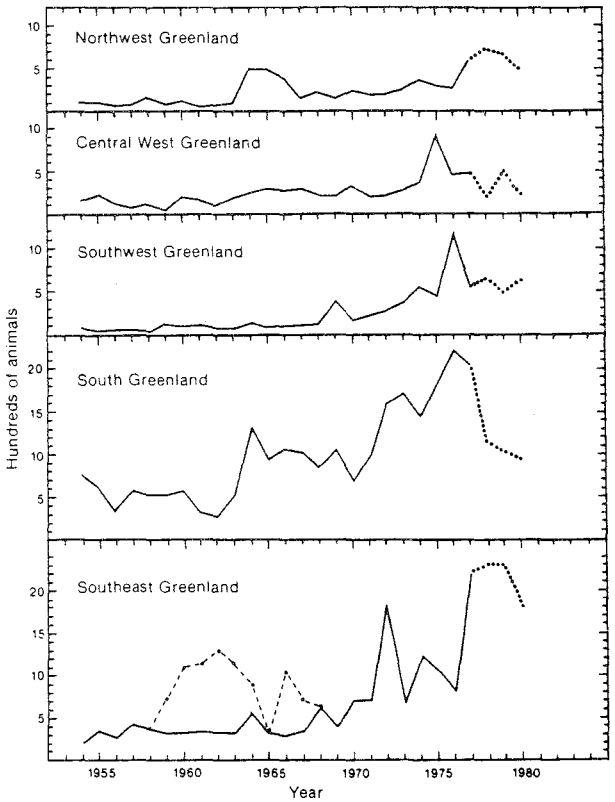

Fig. 2. Catches of hooded seals by region in Greenland, 1954-80. (Data for 1978-80 are provisional; dashed line shows East Greenland catches including a special fishery in Denmark Strait during 1959-68.)

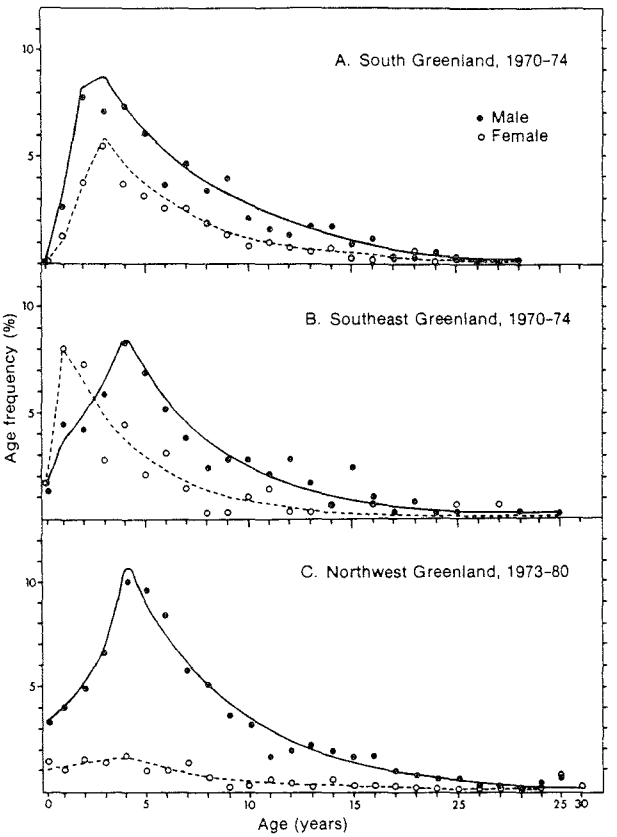

Fig. 3. Age frequencies of hooded seals sampled in (**A**) South Greenland, 1970-74; (**B**) Southeast Greenland, 1970-74; and (**C**) Northwest Greenland, 1973-80.

Age frequencies and sex ratios

South Greenland. Age frequencies of hooded seals sampled in this region during 1970-74 are given in Appendix Table A. Practically all hunting occurred during the spring (April-June) of each year. Yearly differences in age frequencies are partly due to differences in sampling success at different localities in the region, as discussed previously by Kapel (MS 1972, MS 1974). Despite this variation, it was considered reasonable to combine the data, taking into account the numbers of unsexed animals, to represent general age distributions by sex for comparison with the data from other Greenland regions (Table 2, Fig. 3). Age-group 0 animals were almost completely absent and age-group 1 animals were weakly represented in the South Greenland catches (Fig. 3A). In fact, age-groups 2-5 constituted nearly 50% of the animals sampled. The sex ratio was strongly biased towards males (66%) for all age-groups.

Southeast Greenland. The quantity of material for this region (Appendix Table B) is much less than for South Greenland, and the general pattern of the age frequencies is accordingly less reliable. Most of the material was collected in late July, the most important hunting perod; the few specimens representing small catches during autumn and winter do not allow comparison between seasons. In the combined data (Table 2, Fig. 3B), there were only a few age-group 0 animals (3%), but the age distributions for males and females were quite different from the pattern for South Greenland, with females being apparently fully-recruited to the fishery at ages 1 and 2, in contrast to ages 4 and 5 for males. The age-distribution pattern for age 4 and older animals was very similar to that for South Greenland. The sex ratio in the Southeast Greenland samples was almost as biased toward males (62%) as that in South Greenland samples, whereas the sex ratio of hooded seals in the molting patches in Denmark Strait, a few hundred miles northeast of Angmagssalik district, is generally close to equality (Rasmussen, 1960; Øritsland, 1964).

Northwest Greenland. The material for this region was collected, mainly in July-September, at many localities mostly in the Upernavik district (73-75° N), but a few samples from the Umanak district and the Disko Bay region in Central West Greenland are included. Although the samples from several localities were too small to allow an analysis of areal differences in age frequencies, the available data do not indicate significant differences or systematic variation between

TABLE 2. Age frequencies (%) of hooded seals in samples from three Greenland regions.

Age (yr)	South Greenland, 1970-74					Southeast Greenland, 1970-74					Northwest Greenland, 1973-80				
	Actual			Smoothed		Actual			Smoothed		Actual			Smoothed	
	M	F	?	M	F	M	F	?	M	F	M	F	?	M	F
0	0.1	0.1	—	0.1	0.1	1.4	1.7	—	1.5	1.5	3.3	1.4	0.1	3.4	1.1
1	2.7	0.8	0.7	3.1	1.0	4.5	8.0	—	3.7	8.0	4.1	1.0	—	4.1	1.2
2	7.8	3.7	0.5	8.2	3.8	4.2	7.3	—	4.9	6.4	4.9	1.5	0.3	5.1	1.4
3	7.1	5.5	1.0	8.7	5.9	5.9	2.8	—	6.6	4.8	6.6	1.4	0.4	6.9	1.5
4	7.4	3.7	0.9	7.4	4.7	8.3	4.5	0.3	8.5	3.7	10.0	1.7	0.8	10.7	1.8
5	6.1	3.2	0.7	6.3	3.9	6.9	2.1	—	7.0	2.9	9.4	1.0	0.5	8.7	1.4
6	3.7	2.6	1.0	5.4	3.0	5.2	3.1	—	5.6	2.2	8.4	1.0	0.6	7.4	1.1
7	4.7	2.5	0.5	4.5	2.4	3.8	1.4	—	4.6	1.7	5.7	1.4	0.2	6.2	0.9
8	3.5	1.9	1.0	3.8	1.9	2.4	0.3	—	3.7	1.3	5.1	0.7	0.3	5.2	0.7
9	4.0	1.3	0.5	3.3	1.5	2.8	0.3	—	3.1	1.0	3.6	0.2	0.4	4.3	0.6
10	2.1	0.8	0.6	2.8	1.2	2.8	1.0	0.7	2.5	0.8	3.2	0.3	0.2	3.6	0.5
11	1.6	1.0	0.3	2.4	1.0	2.1	1.4	—	2.0	0.6	1.6	0.6	0.2	3.0	0.4
12	1.3	0.7	0.3	2.0	0.8	2.8	0.3	—	1.7	0.5	1.9	0.4	0.3	2.5	0.4
13	1.7	0.6	0.8	1.7	0.7	1.7	0.3	—	1.3	0.4	2.2	0.2	—	2.1	0.3
14	1.7	0.7	0.5	1.5	0.6	0.7	0.7	—	1.1	0.3	1.9	0.6	—	1.8	0.3
15	0.9	0.3	0.3	1.2	0.5	2.4	—	—	0.9	0.2	1.6	0.3	0.1	1.5	0.3
16	1.1	0.1	0.2	1.0	0.4	1.0	0.7	—	0.7	0.2	1.7	0.3	0.2	1.2	0.3
17	0.2	0.3	0.1	0.7	0.3	0.3	—	—	0.6	0.1	0.9	0.2	—	1.0	0.2
18	0.3	0.6	0.1	0.5	0.2	0.7	—	—	0.5	0.1	0.7	0.1	—	0.8	0.2
19	0.5	0.1	0.2	0.4	0.2	0.3	—	—	0.4	0.1	0.6	0.2	0.1	0.7	0.2
20	0.3	0.3	—	0.3	0.1	0.3	0.7	—	0.2	0.3	0.6	0.2	—	0.6	0.2
21	—	0.1	0.1	0.2	0.1	—	—	—	0.2	0.3	0.2	0.1	0.1	0.5	0.2
22	—	0.1	—	0.1	0.1	—	0.7	—	0.1	0.3	0.1	0.3	—	0.4	0.1
23	0.1	—	—	0.1	—	0.3	—	—	0.1	0.3	0.2	0.1	0.1	0.3	0.1
24	—	—	—	—	—	—	—	—	0.1	0.2	0.4	0.1	—	0.3	0.1
25+	—	—	—	—	—	0.3	—	—	0.3	—	0.7	0.8	—	0.8	0.8
30+	—	—	—	—	—	—	—	—	—	—	—	0.2	—	0.2	0.2
Total	58.9	31.0	10.3	65.7	34.4	61.1	37.3	1.0	61.9	38.2	79.6	16.3	4.9	83.3	16.5
Sample	528	277	91			177	108	3			820	163	49		

localities, and the samples were therefore combined by year for the whole area (Appendix Table C). The relative importance of the major age-groups of males varied from one year to the next in some cases. In one or two cases, representation of a particularly strong or weak year-class is indicated; for example, the usually high frequency of age 0 animals in the 1974 sample corresponds to good representation of this year-class in later years, particularly in 1977 and 1978 as 3- and 4-year-olds respectively. It is, however, the general pattern that only a few age 0 and age 1 animals were caught. With the reservation mentioned above regarding strong and weak year-classes, age-groups 2-7 dominated in most years in almost equal numbers. For males, the data for 1977-80 seem to indicate a change in dominance from age-groups 2-6 to age groups 4-8, but no such change is evident in the limited data for females.

When the samples for all 8 years are combined (Table 2, Fig. 3C), the dominance of the 1974 year-class in the larger-than-average 1978 sample results in a peak at age 4. A significant feature of the samples from this region is that males constituted an even greater part of the catch (83%) than in South and Southeast Greenland.

The age composition of hooded seal catches in Northwest Greenland is very different from that for harp seals, where young-of-the-year and other age-groups of immature animals dominate in the catches at most localities (Kapel and Geisler, MS 1979).

Studies on Feeding

Information on the feeding of hooded seals in Greenland is sparse in the published literature. Winge (1902), citing Fabricius (1791), stated that they eat "mainly larger benthic fishes, such as redfish, cod and halibut; squid is also sometimes taken". Data obtained from Greenland hunters during 1970-80 (Table 3) confirm this general statement and give additional information on variation in the diet. Clearly for those animals with food in their stomachs, various demersal fish species constituted the major food items.

Although information is sparse for periods outside the regular spring and summer hunting seasons, the available data indicate that feeding habits vary throughout the year (Table 4). The high number of empty stomachs in hooded seals from Southeast Greenland in July was apparently associated with the fact that the animals were molting or had just finished

TABLE 3. Stomach contents of hooded seals caught in Greenland waters, 1970-78.

	S Greenland 1970-78		SE Greenland 1970-74		NW Greenland 1972-78	
Stomach contents	No.	%	No.	%	No.	%
Greenland halibut	13	1.0	2	0.9	278	45.3
Wolffishes	28	2.3	1	0.4	49	8.0
Redfish	101	8.2	24	10.2	6	1.0
Capelin	58	4.7	1	0.4	26	4.2
Gadidae	131	10.6	1	0.4	15	2.4
Other fish	15	1.2	—	—	22	3.6
Unspecified	482	39.0	1	0.4	5	0.8
Fish total	828	67.0	30	12.7	401	65.3
Squid	6	0.5	—	—	1	0.2
Decapods	14	1.1	—	—	4	0.6
Other crustaceans	2	0.2	—	—	55	9.0
Crustacean total	16	1.3	—	—	59	9.6
Stomachs with food	850	68.8	30	12.7	461	75.1
Stomachs empty	386	31.2	206	87.3	153	24.9
Total all records	1,236	100.0	236	100.0	614	100.0

TABLE 4. Seasonal variation in stomach contents of hooded seals caught in Greenland, 1970-78.

		S Greenland		SE Greenland		NW Greenland	
Season	Food	No.	%	No.	%	No.	%
Mar-Jun	Fish	828	67.0	—	—	54	74.0
	Squid	6	0.5	—	—	—	—
	Crust.	16	1.3	—	—	2	2.7
	Empty	386	31.2	—	—	17	23.3
Jul	Fish	—	—	14	6.5	26	50.0
	Squid	—	—	—	—	1	1.9
	Crust.	—	—	—	—	3	5.8
	Empty	—	—	201	93.5	22	42.3
Aug-Sep	Fish	—	—	—	—	282	63.2
	Squid	—	—	—	—	—	—
	Crust.	—	—	—	—	51	11.5
	Empty	—	—	—	—	113	25.3
Oct-Feb	Fish	—	—	16	76.2	39	76.5
	Squid	—	—	—	—	—	—
	Crust.	—	—	—	—	3	5.9
	Empty	—	—	5	23.8	9	17.6

molting. Also, the number of empty stomachs was relatively high in Northwest Greenland in July, in agreement with observations by hunters and the author that molting hooded seals are often found in this region.

Tag recoveries in Greenland

Results of Norwegian and USSR tagging of harp and hooded seals in the 1951-66 period were published by Rasmussen and Oritsland (1964) and Popov (1971), and additional information was given by Sergeant (1974). Of 237 hooded seals tagged in the Jan Mayen area, 15 were recaptured in the same area within the first 6 weeks, two in the following hunting season and one was taken 5 years later. There were no recoveries in other areas. Of 20 animals tagged at the Front off Newfoundland, one was recaptured the following year in Southeast Greenland and two were taken in South Greenland 3 and 5 years after tagging.

Detailed analyses of tagging experiments carried out since 1967 have not been published in scientific journals, apart from 3 recoveries mentioned by Sergeant (1974), but information has been noted in reports by Fiskeridirektoratets Havforskningsinstitutt, Bergen, Norway (Anon, 1975a, 1975b, 1975c, 1978), and in papers presented at meetings of the International Commission for the Northwest Atlantic Fisheries (Thobro, MS 1973; Sergeant and Hoek, MS 1974; Sergeant, MS 1978; Øritsland, MS 1978).

Norwegian tagging was continued in the Jan Mayen area, and more than 300 hooded seals were tagged since 1967. At least 24 animals were recaptured in the same area, but no recoveries have been reported from other areas. It is striking that not a single animal of more than 500 hooded seals tagged at Jan Mayen has been recovered in East Greenland.

Norwegian scientists tagged nearly 300 hooded seals at the Front (Newfoundland) between 1967 and 1976 and 101 animals in Denmark Strait in 1974. Canadian tagging of hooded seals in the Gulf of St. Lawrence began in 1971 and more than 600 animals have been tagged or branded in this area since then. From all three areas, recaptures have been made in Greenland, all of which are listed in Table 5.

One animal tagged at the Front and four tagged in the Gulf of St. Lawrence were recaptured in South Greenland in the spring (March-June), and four were recaptured in Southeast Greenland in June-August (one tagged at the Front and three in the Gulf). Two animals tagged as immatures in Denmark Strait were recaptured off South Greenland in May, 2 and 7 years after tagging. In addition, three recoveries of hooded seals tagged in Denmark Strait were reported from Newfoundland (Anon, 1978; Øritsland, MS 1979). All of these recoveries clearly demonstrate a close relationship between the whelping area around Newfoundland, the molting area in Denmark Strait and the hunting areas in South and Southeast Greenland.

Finally, the recapture in Upernavik district (August) and Umanak district (October) of two hooded seals tagged in the Gulf of St. Lawrence confirms that at least part of the Newfoundland population spends the late summer and autumn off Northwest Greenland. Whether these animals had frequented the molting area in Denmark Strait earlier in the summer is still an open question. Molting hooded seals are known to occur off West Greenland in the summer.

The age at recapture of hooded seals ranges from 1 to 10 years. None of the tagged animals were caught in Greenland waters within the first 12 months, which is in contrast to harp seal recoveries in Greenland waters

TABLE 5. Recaptures of tagged and branded hooded seals in Greenland, 1956–81.

Tagging					Recapture					
Area	Tag	Type	Country	Date	Date	Lat.	Long.	District	Age[a]	Sex
Front	S0230	Disc, tail	Norway	Mar 31/51	Mar 11/56	60°08′	44°18′	Nanortalik	5+0	M
	A0143	" "	"	Mar 28/64	Apr 14/65	66°54′	53°40′	Holsteinsborg	1+1	M
	A0145	" "	"	Mar 30/64	May 28/67	60°40′	48°00′	Julianehaab	3+2	M
	B0526	Rototag(y)	"	Mar 25/71	Apr /72	60°05′	45°15′	Nanortalik	1+1	M
	B0464	Rototag(y)	"	Apr 4/70	Jul /72	65°31′	37°19′	Angmagssalik[b]	2+4	M
	A0346	+ disc								
Gulf	"N"	Brand	Canada	Mar 18/72	Jun 11/73	60°10′	46°00′	Nanortalik	1+3	—
	976	Rototag(r)	"	Mar 19/75	Mar 29/76	60°37′	45°55′	Julianehaab	1+0	M
	475	" (y)	"	Mar 10/76	May 11/77	60°17′	45°28′	Nanortalik	1+2	M
	940	" (y)	"	Mar 19/76	Jun 10/77	65°38′	37°58′	Angmagssalik[b]	1+3	M
	474	" (y)	"	Mar 10/76	Aug 7/78	65°30′	39°00′	Angmagssalik[b]	2+5	M
	A 923	" (gr)	"	Mar 13/77	Oct 27/78	70°34′	52°00′	Umanak	1+7	M
	975	" (y)	"	Mar 18/76	Jun 10/79	60°23′	45°40′	Nanortalik	3+3	M
	A1414	" (or)	"	Mar 16/79	Aug 12/80	65°34′	37°10′	Angmagssalik[b]	1+5	M
	982	" (r)	"	Mar 20/75	Aug 4/81	73°13′	56°20′	Upernavik	6+5	—
Den.St.	D0004	Rototag(y)	Norway	Jun 25/74	May 21/76	60°65′	46°10′	Julianehaab	3–5[c]	F
	D0046	" (y)	"	Jun 30/74	May 25/81	60°22′	45°42′	Nanortalik	7–9[c]	M

[a] Age in years + months.
[b] East Greenland recaptures.
[c] Animals tagged as immature (1–3 years old).

(Larsen and Kapel, MS 1980). However, this is not surprising when the difference in age composition of catches of harp and hooded seals is taken into account (Kapel and Geisler, MS 1979). For this reason, the number of recoveries in Greenland relative to a given tagging intensity is likely to be lower for hooded seals than for harp seals.

Concluding Remarks

Although a considerable amount of material collected in South Greenland during 1975–80 remains to be analyzed, it is unlikely that the inclusion of additional age frequencies will significantly change the general pattern of the composition of hooded seal catches in Greenland. From the information presented in this paper, the age composition of Greenland catches can be calculated, using an average age composition for each major hunting region. It will probably not be possible to collect enough material to demonstrate year-to-year differences in age composition, as the level of sampling since 1970 (yearly averages of 120, 160 and 60 animals for Northwest, South and Southwest Greenland respectively, representing about 30, 12 and 6% of the catches in these regions) can hardly be improved significantly.

Another problem is how the material collected in Greenland can be used in relation to the samples obtained from other areas. It is obvious that the Greenland catches do not represent the population structure, the deficit in females and young animals being too pronounced. Furthermore, the relation between the catches in Greenland and the different breeding areas is unclear. Recaptures of tagged and branded animals show a relationship between the herds off Newfoundland, in Denmark Strait and the hunting areas of South and Southeast Greenland. There was also two recaptures in Northwest Greenland of animals tagged off Newfoundland. There have been no recaptures in Greenland of hooded seals tagged at Jan Mayen, although a few such recaptures of harp seals have been reported (Larsen and Kapel, MS 1979, MS 1980). It is not known if the whelping patch of hooded seals in Davis Strait contributes significantly to the catches in Greenland, but evidence that they occur off Northwest and Central West Greenland in spring and early summer indicates that molting takes place in areas other than Denmark Strait, and it is likely that these animals come from the Davis Strait stock.

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APPENDIX

APPENDIX TABLE A. Age frequencies by sex of hooded seals sampled in South Greenland, 1970–74. (M = male, F = female, ? = sex not determined.)

Age	1970			1971			1972			1973			1974			1970–74			
(yr)	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	Total
0	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	1	1	—	2
1	1	—	—	5	1	—	2	—	1	11	3	3	5	3	2	24	7	6	37
2	—	—	—	19	6	—	18	5	1	8	7	2	25	15	1	70	33	4	107
3	2	—	—	8	19	—	16	11	2	12	4	4	26	15	3	64	49	9	122
4	—	1	—	15	12	1	22	6	—	9	6	5	20	8	2	66	33	8	107
5	3	1	—	11	12	—	22	5	1	11	3	3	8	8	2	55	29	6	90
6	3	—	—	6	10	—	14	5	3	6	1	5	4	7	1	33	23	9	65
7	4	1	—	14	7	—	13	3	1	7	4	2	4	7	1	42	22	4	68
8	5	1	—	9	8	—	5	2	4	4	4	4	8	2	1	31	17	9	57
9	1	2	—	7	5	—	8	2	1	16	1	3	4	2	—	36	12	4	52
10	3	—	—	5	5	—	5	—	2	2	1	3	4	1	—	19	7	5	31
11	1	—	—	1	5	—	5	1	1	4	1	2	3	2	—	14	9	3	26
12	1	—	—	4	3	—	4	1	1	3	2	2	—	—	—	12	6	3	21
13	2	—	—	4	3	—	3	—	3	5	—	3	1	2	1	15	5	7	27
14	1	—	—	6	4	1	4	—	1	3	1	2	1	1	—	15	6	4	25
15	1	1	—	3	2	—	1	—	—	2	—	1	1	—	2	8	3	3	14
16	2	—	—	3	—	—	1	—	—	2	1	2	2	—	—	10	1	2	13
17	—	1	—	—	1	—	1	—	1	1	1	—	—	—	—	2	3	1	6
18	—	1	—	1	3	—	1	—	1	—	1	—	1	—	—	3	5	1	9
19	—	—	—	1	—	—	2	—	—	1	—	2	—	1	—	4	1	2	7
20	1	1	—	—	1	—	—	—	—	2	1	—	—	—	—	3	3	—	6
21	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	1	1	2
22	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	1
23	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	1
Total	31	11	—	122	108	2	148	41	25	110	42	48	117	75	16	528	277	91	896

APPENDIX TABLE B. Age frequencies by sex of hooded seals sampled in Southeast Greenland, 1970–74. (M = male, F = female, ? = sex not determined.)

Age	1970			1971			1972			1973			1974			1970–74			
(yr)	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	Total
0	4	2	—	—	—	—	—	—	—	—	2	—	—	1	—	4	5	—	9
1	6	3	—	—	2	—	3	8	—	3	10	—	1	—	—	13	23	—	36
2	4	6	—	—	2	—	4	10	—	3	3	—	1	—	—	12	21	—	33
3	3	1	—	—	—	—	7	4	—	6	3	—	1	—	—	17	8	—	25
4	4	2	—	2	4	—	12	5	—	2	2	—	4	—	1	24	13	1	38
5	4	—	—	2	3	—	9	1	—	1	2	—	4	—	—	20	6	—	26
6	3	1	—	1	4	—	3	2	—	6	2	—	2	—	—	15	9	—	24
7	2	—	—	3	3	—	3	—	—	3	1	—	—	—	—	11	4	—	15
8	2	1	—	1	—	—	2	—	—	—	—	—	2	—	—	7	1	—	8
9	—	—	—	3	1	—	1	—	—	2	—	—	2	—	—	8	1	—	9
10	2	1	1	2	1	—	4	—	1	—	1	—	—	—	—	8	3	2	13
11	2	1	—	—	2	—	—	1	—	3	—	—	1	—	—	6	4	—	10
12	2	—	—	4	1	—	1	—	—	1	—	—	—	—	—	8	1	—	9
13	1	1	—	3	—	—	—	—	—	1	—	—	—	—	—	5	1	—	6
14	1	—	—	1	—	—	—	—	—	—	2	—	—	—	—	2	2	—	4
15	3	—	—	—	—	—	—	—	—	3	—	—	1	—	—	7	—	—	7
16	1	—	—	2	—	—	—	2	—	—	—	—	—	—	—	3	2	—	5
17	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	1
18	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	2	—	—	2
19	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	1
20	—	—	—	—	—	—	—	1	—	1	1	—	—	—	—	1	2	—	3
21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	2
23	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
25+	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	1
Total	45	20	1	25	24	—	51	34	1	36	29	—	20	1	1	177	108	3	288

APPENDIX TABLE C. Age frequencies by sex of hooded seals sampled in Northwest Greenland, 1973–80. (M = male, F = female, ? = sex not determined.

Age	1973			1974			1975			1976			1977			1978			1979			1980			1973–80			
(yr)	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	M	F	?	Total
0	1	1	—	15	3	—	4	3	—	5	2	—	2	2	1	3	2	—	3	—	—	1	1	—	34	14	1	49
1	1	1	—	8	2	—	9	2	—	4	1	—	7	2	—	5	1	—	4	—	—	4	1	—	42	10	—	52
2	1	—	1	16	1	—	1	1	—	6	3	—	7	2	—	13	4	2	5	3	—	2	1	—	51	15	3	69
3	3	—	—	10	3	—	4	2	1	6	—	—	22	3	1	12	4	1	5	—	—	6	2	1	68	14	4	86
4	2	—	—	10	1	1	5	—	—	6	2	—	12	2	—	39	4	2	12	1	3	17	7	2	103	17	8	128
5	6	—	1	11	1	1	6	—	—	5	3	—	15	—	1	20	2	—	23	2	1	11	2	1	97	10	5	112
6	4	—	—	9	4	1	5	1	—	7	—	—	9	—	1	19	—	1	17	1	3	17	4	—	87	10	6	103
7	5	—	—	10	—	—	2	1	—	2	—	—	5	—	—	8	4	1	11	7	1	16	2	—	59	14	2	75
8	5	—	—	8	2	1	1	1	—	4	—	—	3	—	—	8	—	2	7	2	—	17	2	—	53	7	3	63
9	1	—	—	5	—	—	—	—	—	2	—	—	3	1	—	12	1	—	7	—	2	7	—	2	37	2	4	43
10	3	1	—	4	1	—	3	—	1	3	—	—	2	—	—	4	—	—	8	—	—	6	1	1	33	3	2	38
11	—	—	—	5	—	—	—	1	—	2	—	—	1	—	1	4	2	—	1	—	1	3	3	—	16	6	2	24
12	2	—	—	2	2	—	—	—	—	—	—	—	4	—	—	3	—	1	4	2	—	5	—	2	20	4	3	27
13	4	—	—	4	—	—	2	—	—	—	—	—	3	—	—	2	—	—	5	2	—	3	—	—	23	2	—	25
14	4	—	—	5	1	—	1	2	—	2	1	—	3	—	—	—	1	—	3	—	—	2	1	—	20	6	—	26
15	2	—	1	1	—	—	2	—	—	1	—	—	5	1	—	1	—	—	3	—	—	1	2	—	16	3	1	20
16	3	—	—	1	—	—	1	—	—	—	—	—	3	1	—	2	1	2	4	1	—	3	—	—	17	3	2	22
17	—	—	—	3	1	—	3	—	—	—	—	—	1	1	—	1	—	—	—	—	—	1	—	—	9	2	—	11
18	2	—	—	1	—	—	1	—	—	—	—	—	1	—	—	—	—	—	1	—	—	1	1	—	7	1	—	8
19	—	—	—	2	—	—	—	—	—	2	—	—	1	1	—	—	—	—	1	—	1	—	1	—	6	2	1	9
20	—	1	—	2	—	—	—	—	—	1	—	—	—	—	—	1	1	—	1	—	—	1	—	—	6	2	—	8
21	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	1	—	1	—	—	—	2	1	1	4
22	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	2	—	1	3	—	4
23	—	—	—	1	—	1	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	2	1	1	4
24	—	—	—	1	—	—	1	—	—	—	—	—	1	—	—	—	1	—	1	—	—	—	—	—	4	1	—	5
25+	—	2	—	1	2	—	—	—	—	2	1	—	3	1	—	—	—	—	1	2	—	—	—	—	7	8	—	15
30+	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2	—	2
Total	50	7	3	135	24	5	52	14	2	60	13	—	114	19	5	157	30	12	128	23	13	124	33	9	820	163	49	1,032