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# Review of Studies of Hooded Seal in Greenland, 1970 - 1979

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At the Special Meeting of Scientific Council (NAFO) in November 1979 the Working Group on Seals made the recommendation that available material on hooded seal in the Northwest Atlantic be worked up as soon as possible. The present paper reviews the material collected in Greenland since 1970, tabulates the result of the age determinations carried out to date, and gives some preliminary estimates of the composition of catches in Greenland, in addition to what has been given in previous papers. A thorough analysis of the material, and a discussion of the Greenland evidence in the light of information from other sources has not been possible at present.

## MATERIAL AND METHODS

### 1. Information on hunting and catch levels

Descriptions of seal hunting, including hunting of hooded seal, in Greenland are numerous in literature since the Danish colonization of Greenland. An early example, and a very fine one, is Fabricius (1791). A detailed account of the occurrence and the hunting of hooded seal i different regions of Greenland can be found in Amdrup et. al. (1921). Some of this information was included in short reviews by the present author (1972, 1975b).

Statistical information on the catch of marine mammals in Greenland was initiated more than one hundred years ago, and this material has been used in several publications (e.g. Anon., 1944 ; Anon., 1954-74; Rosendahl, 1961, and Kapel, 1975b). An additional, and often supplementary, source is the statistics of skins and other products purchased to KGH (Royal Greenland Trade Department).

Information from the catch statistics ("Lists og Game") on the catch of hooded seal in different regions of Greenland is given i Table 1 and Figure 1, and the seasonal and regional distribution appears from Figure 2 (from Rosendahl, 1961).

2. Collection of biological material

In 1970 the present author started collecting seal jaws in Greenland with the purpose of obtaining information on the age composition of the catches of harp and hooded seal. Using the information on the level and distribution of the hunting of hooded seal (Fig. 1 & 2), the sampling effort in respect to the hooded seal was concentrated in South East Greenland (Angmagssalik district) and South Greenland (Nanortalik and Julianehåb districts). Between 1970 and 1974 a sample of 290 and 898 was obtained from the two regions, respectively. Part of this material has been presented in previous documents (Kapel, 1972; 1974; 1975a & b), and all the resulting age determinations are shown in Table 2 and 3 of the present paper. After 1974 collecting of hooded seal was discontinued in Angmagssalik district, whereas additional 720 jaws were collected from South Greenland in 1975-79. Unfortunately, it has not yet been possible to age this material, but the major part of the sections has been prepared.

In North West Greenland, where satisfactory samples of harp seal were obtained since 1971, the material of hooded seal was sparse in the first years, partly because the catch is rather small compared with the two other regions. Preliminary results were presented in a previous paper (Kapel, 1975a). In the present paper all the material collected between 1973 and 1978 is used for comparison with the results from South East and South Greenland (Table 4 and 5, Figure 3 and 4). Inclusion in this material (710 specimens) of 211 jaws collected in 1971, 1972 and 1979 was not possible in time for this manuscript.

Together with the jaws the hunters provided information on the sex, length, and stomach contents of the animals, as well as date, locality and method of hunting. Part of this information was included in previous papers (Kapel, 1972; 1974; 1975a & b), and the present paper gives supplementary data on the seasonal distribution of catches (Fig. 3), and on stomach contents (Tables 6 and 7).

An analysis of the material of female reproductive organs collected in South East and South Greenland in 1970 and 1971 is given in a separate contribution to the 1980 meeting of the Working Group on Seals (Born, 1980).

RESULTS

1. Trends in catch levels of hooded seal in Greenland

The information given in Table 1 and Figure 1 indicates a general increase in catches of hooded seal in all regions of Greenland since the early 1960s. The apparent decline in Central West, South West and South Greenland in recent years may not be as great as the preliminary data suggest, because the figures for 1977-79 do not include estimates of non-reported catches.

There is no detailed information on the hunting effort available, but the number of participating hunters has been almost constant over the time period in question, and it is unlikely that the introduction of outboard powered boats, or other recent changes in hunting technology, have improved the effectiveness of hooded seal hunting significantly, at least not in respect to the number of landed animals. (Loss rates may have changed, but this question have little relation to evaluation of trends in landed catches.)

The increasing trend in the hunting statistics is, therefore, interpreted as an evidence of increased availability of hooded seal in Greenland waters.

It should, however, be born in mind, that the catches of hooded seal in Greenland showed a markedly decreasing trend prior to 1960, probably from a level of approximately 15,000 per year at the turn of the century (Kapel, 1978).

2. Age frequencies and sex ratio in the Greenland catches

i. South Greenland.

Table 2 and Figure 3 add one more year to the previously published results of aged animals from the catch in South Greenland. The additional material does not change the general pattern significantly: Youngs of the are almost completely absent, and one year old animals are weakly represented in the spring catch of hooded seal in South Greenland, which is dominated by 2-6 years old animals (app. 50 % of the samples). Differences in age composition between one year and the next may at least partly be due to differencies in the sampling success at different localities within South Greenland, as discussed in previous papers (Kapel, 1972; 1974). Despite this variation in is considered reasonable to pool all years into the general age distribution for South Greenland presented in Table 5 and illustrated in Figure 4. The actual frequencies have been smoothed to the percentages given in the columns headed "corr.", taking the number of not sexed animals into account(nk).

The sex ratio is strongly biased towards males (66 %) for all age groups.

ii. South East Greenland.

The material from South East Greenland (Table 3, Fig. 3) is much smaller than the above mentioned (288 and 898 specimens, respectively), and a general pattern of age frequencies accordingly less clear . By pooling the data from all five years and treating the actual frequencies as described for South Greenland the pattern shown in Table 5 and Figure 3 was obtained: Few youngs of the year (3 %), and a somewhat different age distribution for males and females. Females seem to be fully recruited to the catches at age 1 or 2 , males not before age 3-5. The age distribution indicated by this limited material does not appear to be different from that found at the moulting area in the Denmark Strait a month earlier, a few hundred miles northeast of Angmagssalik district. The main difference seems to be, that the males occur in fair number in the Denmark Strait at the age of 1 and 2, and to be fully recruited to this area at the age of 3.

The sex ratio in the catches in South East Greenland is almost as biased as in South Greenland (62 % males), whereas it appears to be close to equality at the moulting patches in the Denmark Strait.

iii. North West and Central West Greenland.

The material from these regions (north of the Disko Bay area) was collected at a large number of localities between 69° and 75°N. Most of it, however, comes from Upernavik district (73°-75°N). The question therefore arises, whether the age composition differs from one locality to the other. Although the sample size from several localities are too small to allow a full analysis of this question, the available material do not indicates any differences or systematic variation between localities, and the samples were therefore pooled in Table 4 and Fig. 3.

A general feature of the samples from this region is, that males constitute an even greater part of the catch than in South East and South Greenland (more than 80 % on the average, Table 5). Some variation in the relative importance of various age groups of males appear to exist between one year and the following. In one or two cases a certain year class is particularly strongly or weakly represented: The unusually high frequency of youngs of the year found in the 1974 sample corresponds to strong representation in later samples, particularly in 1977 and 1978. It is, however, the general pattern that youngs of the year are only rarely caught, and also one year old animals are rather few in the samples. Age group 2-6 are dominating most samples and are found in almost equal numbers, with the reservation mentioned above of strong or weak year classes. The limited material of females does not indicate a significant difference in the occurrence of age group 0-4.

When pooling the samples from all six years, the dominance of year class 1974 in the rather large samples from 1977 and 1978 tends to result in a peak at 4 years, which will probably be less pronounced, when more material is added (Table 5 and Figure 4).

The age composition of hooded seal in North West Greenland is completely different from that of harp seal, where youngs of the year are dominating at most localities (Kapel and Geisler, 1979).

## 3. Feeding of hooded seal in Greenland

Information on the feeding of hooded seal in Greenland is sparse in published literature. Winge (1902) states "mainly larger benthic fishes, such as redfish, cod and halibut, according to Fabricus; squid is also sometimes taken".

The information obtained from the Greenlanders (Tables 6 and 7) confirms this general statement, and gives additional data on the variation in the diet. It appears that the feeding habits are changing through the year and/or from region to region. The high number of empty stomachs in South East Green-

land in July-August relates to the fact, that the animals are still moulting , or have just finished moulting. Also in North West Greenland the number of empty stomachs is high in July , which agrees with the fact that moulting hooded seals are found rather often in this region (information from hunters and the author's own observation).

CONCLUDING REMARKS

As stated above, a fair amount of material of hooded seal jaws collected in Greenland still awaits treatment, and this paper should be considered rather as a progress report of what has been possible to work up to date. A final analysis should include the material collected in South Greenland 1975-80 and in North West Greenland 1979-80.

On the other hand, it is questionable whether the inclusion of the additional material will change the general pattern of the composition of the catches in Greenland significantly. On the basis of the information presented in this paper it is possible to calculate the catch at age of hooded seal in Greenland, using an average age composition for each main hunting area.

It will probably not be possible to collect enough material to demonstrate any differences in age composition between one year and the following. The level of sampling obtained since 1970 (average 110, 160 and 60 for North West, South and South East Greenland) can hardly be improved significantly, and represent approximately 33 %, 12 %, and 6 % of the catches in these regions, respectively.

Another problem is, how the material collected in Greenland can be used in relation to material obtained from other areas. It is obvious, that the Greenland catches do not represent the population structure: The deficit in females and young animals is too pronounced. The relation between the catch in Greenland and the different breeding areas is, further, an open question. Recoveries of tagged and/or branded animals (Table 8) demonstrate a connection between Newfoundland, Denmark Strait and the hunting areas in South East and South Greenland. There is also one recovery in North West Greenland tagged at Newfoundland. There is no recoveries in Greenland of hooded seals tagged at Jan Mayen (but a few harp seals, see Larsen and Kapel, 1979; 1980). The importance of the whelping patch in the Davis Strait for the catches in Grenland is not known, but the fact, that hooded seal do occur off Central and North West Greenland in spring and early summer, indicates that moulting takes place in other areas than the Denmark Strait, and it is likely that these animals come from the Davis Strait stock.

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Table 1. Catch of hooded seal in Greenland, 1954-1959 per district and region.

| Region / Year | THU[a] | NW | CW | SW | S | Total[b] West Grl. | East Grl. | KGH[c] |
|---|---|---|---|---|---|---|---|---|
| 1954 | - | 101 | 158 | 72 | 766 | 1097 | 201 | - |
| 1955 | 1 | 93 | 218 | 46 | 614 | 971 | 344 | - |
| 1956 | - | 71 | 127 | 59 | 336 | 593 | 264 | - |
| 1957 | 5 | 90 | 77 | 58 | 567 | 792 | 412 | - |
| 1958 | - | 168 | 118 | 42 | 518 | 846 | 365 | - |
| 1959 | 2 | 84 | 49 | 128 | 517 | 778 | 320 | 414 |
| 1960 | 3 | 110 | 195 | 97 | 560 | 962 | 331 | 773 |
| 1961 | 14 | 64 | 159 | 114 | 322 | 659 | 348 | 803 |
| 1962 | 3 | 83 | 97 | 88 | 274 | 542 | 326 | 988 |
| 1963 | 7 | 107 | 185 | 77 | 516 | 885 | 316 | 813 |
| 1964 | 3 | 500 | 229 | 138 | 1315 | 2182 | 545 | 366 |
| 1965 | 3 | 487 | 297 | 90 | 945 | 1819 | 318 | - |
| 1966 | 8 | 368 | 279 | 100 | 1066 | 1813 | 304 | 748 |
| 1967 | 18 | 155 | 294 | 116 | 1025 | 1590 | 358 | 371 |
| 1968 | 12 | 220 | 221 | 128 | 851 | 1420 | 641 | 20 |
| 1969 | 5 | 153 | 210 | 394 | 1060 | 1817 | 411 | - |
| 1970 | 3 | 234 | 319 | 165 | 691 | 1409 | 713 | - |
| 1971 | 2 | 200 | 206 | 229 | 997 | 1632 | 744 | - |
| 1972 | 1 | 191 | 213 | 284 | 1594 | 2282 | 1827 | - |
| 1973 | 16 | 250 | 279 | 390 | 1719 | 2638 | 677 | - |
| 1974 | 41 | 362 | 380 | 552 | 1446 | 2740 | 1218 | - |
| 1975 | 143 | 305 | 941 | 463 | 1834 | 3692 | 1071 | - |
| 1976 | 108 | 266 | 455 | 1195 | 2206 | 4122 | 818 | - |
| 1977[d] | 191 | 571+ | 352+ | 566+ | 1679 | 3168+ | 2169+ | - |
| 1978[d] | 73 | 721 | 216+ | 671+ | 1163+ | 2771+ | 2315 | - |
| 1979[d] | . | 651+ | 507+ | 483+ | 889+ | 2530+ | 2108+ | - |

a) Data from Thule district are of varying quality, and are therefore not included in the total for West Greenland.

b) West Greenland exclusive Thule.

c) The Royal Greenland Trade Department (KGH) arranged catching in the Denmark Strait between 1959 and 1968.

d) Figures for 1977-79 are provisional.

Table 2. Age frequencies in samples of hooded seal from South Greenland, 1970-74.

| YEAR | 1970 | | | 1971 | | | 1972 | | | 1973 | | | 1974 | | | 1970 - 1974 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEX | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | TOTAL |
| AGE | | | | | | | | | | | | | | | | | | | |
| 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 |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25+ | | | | | | | | | | | | | | | | | | | |
| 30+ | | | | | | | | | | | | | | | | | | | |
| TOTAL | 31 | 11 | | 122 | 108 | 2 | 148 | 41 | 25 | 110 | 42 | 48 | 117 | 75 | 16 | 528 | 277 | 91 | 896 |
| n.d. | | | | | 2 | | | | | | | | | | | | 2 | | 2 |

Table 3. Age frequencies in samples of hooded seal from South East Greenland, 1970-74.

| YEAR | 1970 | | | 1971 | | | 1972 | | | 1973 | | | 1974 | | | 1970 - 1974 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEX | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | TOTAL |
| AGE | | | | | | | | | | | | | | | | | | | |
| 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 |
| 24 | | | | | | | | | | | | | | | | | | | |
| 25+ | | | | | | | 1 | | | | | | | | | 1 | | | 1 |
| 30+ | | | | | | | | | | | | | | | | | | | |
| TOTAL | 45 | 20 | 1 | 25 | 24 | - | 51 | 34 | 1 | 36 | 29 | - | 20 | 1 | 1 | 177 | 108 | 3 | 288 |

Table 4. Age frequencies in samples of hooded seal from North West and Central West Greenland, 1973-1978.

| YEAR | 1973 | | | 1974 | | | 1975 | | | 1976 | | 1977 | | | 1978 | | | 1973 - 1978 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEX | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | ♂ | ♀ | nk | ♂ | ♀ | nk | ♂ | ♀ | nk | TOTAL |
| AGE | | | | | | | | | | | | | | | | | | | | | |
| 0 | 1 | 1 | | 15 | 3 | | 4 | 3 | | 5 | 2 | 2 | 2 | 1 | 3 | 2 | | 30 | 13 | 1 | 44 |
| 1 | 1 | 1 | | 8 | 2 | | 9 | 2 | | 4 | 1 | 7 | 2 | | 5 | 1 | | 34 | 9 | | 43 |
| 2 | 1 | | 1 | 16 | 1 | | 1 | 1 | | 6 | 3 | 7 | 2 | | 13 | 4 | 2 | 44 | 11 | 3 | 58 |
| 3 | 3 | | | 10 | 3 | | 4 | 2 | 1 | 6 | | 22 | 3 | 1 | 12 | 4 | 1 | 57 | 12 | 3 | 72 |
| 4 | 2 | | | 10 | 1 | 1 | 5 | | | 6 | 2 | 12 | 2 | | 39 | 4 | 2 | 74 | 9 | 3 | 86 |
| 5 | 6 | | 1 | 11 | 1 | 1 | 6 | | | 5 | 3 | 15 | | 1 | 20 | 2 | | 63 | 6 | 3 | 72 |
| 6 | 4 | | | 9 | 4 | 1 | 5 | 1 | | 7 | | 9 | | 1 | 19 | | 1 | 53 | 5 | 3 | 61 |
| 7 | 5 | | | 10 | | | 2 | 1 | | 2 | | 5 | | | 8 | 4 | 1 | 32 | 5 | 1 | 38 |
| 8 | 5 | | | 8 | 2 | 1 | 1 | 1 | | 4 | | 3 | | | 8 | | 2 | 29 | 3 | 3 | 35 |
| 9 | 1 | | | 5 | | | | | | 2 | | 3 | 1 | | 12 | 1 | | 23 | 2 | | 25 |
| 10 | 3 | 1 | | 4 | 1 | | 3 | | 1 | 3 | | 2 | | | 4 | | | 19 | 2 | 1 | 22 |
| 11 | | | | 5 | | | | 1 | | 2 | | 1 | | 1 | 4 | 2 | | 12 | 3 | 1 | 16 |
| 12 | 2 | | | 2 | 2 | | | | | | | 4 | | | 3 | | 1 | 11 | 2 | 1 | 14 |
| 13 | 4 | | | 4 | | | 2 | | | | | 3 | | | 2 | | | 15 | | | 15 |
| 14 | 4 | | | 5 | 1 | | 1 | 2 | | 2 | 1 | 3 | | | | 1 | | 15 | 5 | | 20 |
| 15 | 2 | | 1 | 1 | | | 2 | | | 1 | | 5 | 1 | | 1 | | | 12 | 1 | 1 | 14 |
| 16 | 3 | | | 1 | | | 1 | | | | | 3 | 1 | | 2 | 1 | 2 | 10 | 2 | 2 | 14 |
| 17 | | | | 3 | 1 | | 3 | | | | | 1 | 1 | | 1 | | | 8 | 2 | | 10 |
| 18 | 2 | | | 1 | | | 1 | | | | | 1 | | | | | | 5 | | | 5 |
| 19 | | | | 2 | | | | | | 2 | | 1 | 1 | | | | | 5 | 1 | | 6 |
| 20 | | 1 | | 2 | | | | | | 1 | | | | | 1 | 1 | | 4 | 2 | | 6 |
| 21 | | | | | | | 1 | | | | | | 1 | | | | | 1 | 1 | | 2 |
| 22 | 1 | | | | | | | | | | | | | | | 1 | | 1 | 1 | | 2 |
| 23 | | | | 1 | | 1 | | | | | | 1 | | | | 1 | | 2 | 1 | 1 | 4 |
| 24 | | | | 1 | | | 1 | | | | | 1 | | | | 1 | | 3 | 1 | | 4 |
| 25+ | | 2 | | 1 | 2 | | | | | 2 | 1 | 3 | 1 | | | | | 6 | 6 | | 12 |
| 30+ | | 1 | | | | | | | | | | | 1 | | | | | | 2 | | 2 |
| TOTAL | 50 | 7 | 3 | 135 | 24 | 5 | 52 | 14 | 2 | 60 | 13 | 114 | 19 | 5 | 157 | 30 | 12 | 568 | 107 | 27 | 702 |
| n.d. | 2 | | | | | | 3 | 1 | | 1 | 1 | | | | | | | 6 | 2 | | 8 |

Table 5. Age distribution (%) in catches of hooded seal in Greenland for three different regions.

| | North West Greenland 1973-78 | | | | | South Greenland 1970-74 | | | | | South East Greenland 1970-74 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | actual | | | corr. | | actual | | | corr. | | actual | | | corr. | |
| AGE | ♂ | ♀ | nk | ♂ | ♀ | ♂ | ♀ | nk | ♂ | ♀ | ♂ | ♀ | nk | ♂ | ♀ |
| 0 | 4.3 | 1.9 | .1 | 4.4 | 1.9 | .11 | .11 | | .1 | .1 | 1.4 | 1.7 | | 1.5 | 1.5 |
| 1 | 4.8 | 1.3 | | 4.8 | 1.3 | 2.7 | .8 | .7 | 3.1 | 1.0 | 4.5 | 8.0 | | 3.7 | 8.0 |
| 2 | 6.3 | 1.6 | .4 | 6.6 | 1.7 | 7.8 | 3.7 | .5 | 8.2 | 3.8 | 4.2 | 7.3 | | 4.9 | 6.4 |
| 3 | 8.1 | 1.7 | .4 | 8.4 | 1.9 | 7.1 | 5.5 | 1.0 | 8.7 | 5.9 | 5.9 | 2.8 | | 6.6 | 4.8 |
| 4 | 10.5 | 1.3 | .4 | 11.0 | 1.4 | 7.4 | 3.7 | .9 | 7.4 | 4.7 | 8.3 | 4.5 | .3 | 8.5 | 3.7 |
| 5 | 9.0 | .9 | .4 | 9.0 | 1.1 | 6.1 | 3.2 | .7 | 6.3 | 3.9 | 6.9 | 2.1 | | 7.0 | 2.9 |
| 6 | 7.6 | .7 | .4 | 7.4 | .9 | 3.7 | 2.6 | 1.0 | 5.4 | 3.0 | 5.2 | 3.1 | | 5.6 | 2.2 |
| 7 | 4.6 | .7 | .1 | 6.1 | .6 | 4.7 | 2.5 | .5 | 4.5 | 2.4 | 3.8 | 1.4 | | 4.6 | 1.7 |
| 8 | 4.1 | .4 | .4 | 5.0 | .5 | 3.5 | 1.9 | 1.0 | 3.8 | 1.9 | 2.4 | .3 | | 3.7 | 1.3 |
| 9 | 3.3 | .3 | | 4.1 | .4 | 4.0 | 1.3 | .5 | 3.3 | 1.5 | 2.8 | .3 | | 3.1 | 1.0 |
| 10 | 2.7 | .3 | .1 | 3.3 | .3 | 2.1 | .8 | .6 | 2.8 | 1.2 | 2.8 | 1.0 | .7 | 2.5 | .8 |
| 11 | 1.7 | .4 | .1 | 2.8 | .3 | 1.6 | 1.0 | .3 | 2.4 | 1.0 | 2.1 | 1.4 | | 2.0 | .6 |
| 12 | 1.6 | .3 | .1 | 2.3 | .3 | 1.3 | .7 | .3 | 2.0 | .8 | 2.8 | .3 | | 1.7 | .5 |
| 13 | 2.1 | | | 1.9 | .3 | 1.7 | .6 | .8 | 1.7 | .7 | 1.7 | .3 | | 1.3 | .4 |
| 14 | 2.1 | .7 | | 1.5 | .3 | 1.7 | .7 | .5 | 1.5 | .6 | .7 | .7 | | 1.1 | .3 |
| 15 | 1.7 | .1 | .1 | 1.2 | .2 | .9 | .3 | .3 | 1.2 | .5 | 2.4 | | | .9 | .2 |
| 16 | 1.4 | .3 | .3 | 1.0 | .2 | 1.1 | .1 | .2 | 1.0 | .4 | 1.0 | .7 | | .7 | .2 |
| 17 | 1.1 | .3 | | .8 | .2 | .2 | .3 | .1 | .7 | .3 | .3 | | | .6 | .1 |
| 18 | .7 | | | .7 | .2 | .3 | .6 | .1 | .5 | .2 | .7 | | | .5 | .1 |
| 19 | .7 | .1 | | .6 | .2 | .5 | .1 | .2 | .4 | .2 | .3 | | | .4 | .1 |
| 20 | .6 | .3 | | .5 | .2 | .3 | .3 | | .3 | .1 | .3 | .7 | | .2 | .3 |
| 21 | .1 | .1 | | .4 | .1 | | .1 | .1 | .2 | .1 | | | | .2 | .3 |
| 22 | .1 | .1 | | .3 | .1 | | .1 | | .1 | .1 | | .7 | | .1 | .3 |
| 23 | .3 | .1 | .1 | .3 | .1 | .1 | | | .1 | | .3 | | | .1 | .3 |
| 24 | .4 | .1 | | .2 | .1 | | | | | | | | | .1 | .2 |
| 25+ | .9 | .9 | | .6 | .5 | | | | | | .3 | | | .3 | |
| 30+ | | .3 | | | .2 | | | | | | | | | | |
| SUM | 80.9 | 15.2 | 3.9 | 84.2 | 15.8 | 58.9 | 30.9 | 10.2 | 65.6 | 34.4 | 61.5 | 37.5 | 1.0 | 62.0 | 38.0 |
| Number (sample size) | 568 | 107 | 27 | . | . | 528 | 277 | 91 | . | . | 177 | 108 | 3 | . | . |

Table 6. Stomach contents of hooded seal caught in Greenland

| Stomach contents | South Grl. 1970-78 No. | % full | % all | South East Grl. 1970-74 No. | % full | % all | North West and Central West Grl. 1972-78 No. | % full | % all |
|---|---|---|---|---|---|---|---|---|---|
| Greenland halibut | 13 | 1.5 | 1.1 | 2 | 6.7 | 0.9 | 278 | 60.3 | 45.3 |
| Wolffish | 28 | 3.3 | 2.3 | 1 | 3.3 | 0.4 | 49 | 10.6 | 8.0 |
| Redfish | 101 | 11.9 | 8.2 | 24 | 80.0 | 10.2 | 6 | 1.3 | 1.0 |
| Gadidae | 131 | 15.4 | 10.6 | 1 | 3.3 | 0.4 | 15 | 3.3 | 2.4 |
| Capelin | 58 | 6.8 | 4.7 | 1 | 3.3 | 0.4 | 26 | 5.6 | 4.2 |
| Other spp. | 15 | 1.8 | 1.2 | - | - | - | 22 | 4.8 | 3.6 |
| Unspecified | 482 | 56.7 | 39.0 | 1 | 3.3 | 0.4 | 5 | 1.1 | 0.8 |
| Fish total | 828 | 97.4 | 67.0 | 30 | 100 | 12.7 | 401 | 87.0 | 65.3 |
| Squid | 6 | 0.7 | 0.5 | - | - | - | 1 | 0.2 | 0.2 |
| Decapods | 14 | 1.6 | 1.1 | - | - | - | 4 | 0.9 | 0.7 |
| Other | 2 | 0.2 | 0.2 | - | - | - | 55 | 11.9 | 9.0 |
| Crustacean total | 16 | 1.8 | 1.3 | - | - | - | 59 | 12.8 | 9.7 |
| Sum (full stom.) | 850 | 100 | 68.8 | 30 | 100 | 12.7 | 461 | 100 | 75.0 |
| Empty stomachs | 386 | . | 31.2 | 206 | . | 87.3 | 153 | . | 24.9 |
| All records | 1236 | . | 100 | 236 | . | 100 | 614 | . | 100 |
| No information | 284 | . | . | 55 | . | . | 44 | . | . |

Table 7 Stomach contents of hooded seal caught in Greenland

| | March - June | | July | | August | | September | | October - Februar | |
|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % |
| SOUTH GREENLAND | | | | | | | | | | |
| Fish | 828 | 66.8 | - | - | - | - | - | - | - | - |
| Squid | 16 | .5 | - | - | - | - | - | - | - | - |
| Crustaceans | 16 | 1.3 | - | - | - | - | - | - | - | - |
| Empty stomachs | 390 | 31.5 | - | - | - | - | - | - | - | - |
| SOUTH EAST GREENLAND | | | | | | | | | | |
| Fish | - | - | 14 | 6.5 | | | - | - | 16 | 76.2 |
| Squid | - | - | - | - | | | - | - | - | - |
| Crustaceans | - | - | - | - | | | - | - | - | - |
| Empty stomachs | - | - | 201 | 93.5 | | | - | - | 5 | 23.8 |
| NW + CW GREENLAND | | | | | | | | | | |
| Fish | 54 | 74.0 | 26 | 50.0 | 216 | 63.5 | 66 | 62.3 | 39 | 76.5 |
| Squid | - | - | 1 | 1.9 | - | - | - | - | - | - |
| Crustaceans | 2 | 2.7 | 3 | 5.8 | 37 | 10.9 | 14 | 13.2 | 3 | 5.9 |
| Empty stomachs | 17 | 23.3 | 22 | 42.3 | 87 | 25.6 | 26 | 24.5 | 9 | 17.6 |

Tabel 8. RECAPTURES 1956 - 1977 IN GREENLAND OF TAGGED OR BRANDED HOODED SEALS

| Tag | | | Tagging | | | Recapture | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. | Type | Nat. | Date | Loc. | Div. | Date | Position | Locality | | Age | Sex |
| S 230[a] | disc. tail | N | 31/3-51 | Front | 3K | 11/3-56 | 60°08'N 44°18'W | Augpilagtoq, | NAN[b] | 5 + 0 | ♂ |
| A 0143 | " | N | 28/3-64 | " | 3K | 14/4-65 | 66°54'N 53°40'W | Amerdloq, | HBG | 1 + 1 | ♂ |
| A 0145 | " | N | 30/3-64 | " | 3K | 28/5-67 | 60°40'N 48°00'W | Nunarssuit, | JUL | 3 + 2 | ♂ |
| B 464 | rototag (y) | N | 4/4-70 | " | 2H | July 72 | 65°31'N 37°19'W | Auluit, | ANG | 2 + 4 | ♂ |
| (A 0346) | (+ disc) | | | | | | | | | | |
| B 526 | rototag (y) | N | 25/3-71 | " | 3K | Apr. 72 | 60°05'N 45°15'W | off Nanortalik, | NAN | 1 + 1 | ♂ |
| "N" | brand | C | 17-20/3-72 | Gulf | 4T | 11/6-73 | 60°10'N 46°00'W | Kap Egede, | NAN | 1 + 3 | . |
| 976 | rototag (r) | C | 19/3-75 | " | 4T | 29/3-76 | 60°37'N 45°55'W | Eqalugarssuit, | JUL | 1 + 0 | ♂ |
| D 0004 | " (y) | N | 25/6-74 | D.str. | XIV b | 21/5-76 | 60°35'N 46°10'W | Umánaq Isl., | JUL | 3-5[d] | ♀ |
| 474 | " (y) | C | 10/3-76 | Gulf | 4T | 7/8-78 | 65°30'N 39°00'W | Isortoq, | ANG | 2 + 5 | ♂ |
| 475 | " (y) | C | 10/3-76 | " | 4T | 11/5-77 | 60°17'N 45°28'W | Sagdliit, | NAN | 1 + 2 | ♂ |
| 940 | " (y) | C | 18-20/3-76 | " | 4T | 10/6-77 | 65°38'N 37°58'W | Ikáteq, | ANG | 1 + 3 | ♂ |
| A 923 | " (gr) | C | 13/3-77 | " | 4T | bf. 27/10-78 | 70°34'N 52°00'W | Sermiarssuit, | UMK | 1 + 7 | ♂ |
| A 1414 | " (or) | C | 16/3-79 | " | 4T | 12/8-80 | 65°34'N 37°10'W | Kap Dam | ANG | 1+5 | ♂ |

a) S 230. No. not readable at recapture. Original note state: "Augpilagtoq Fjord", which could be further west and south.

b) UMK, HBG, JUL, NAN, and ANG refer to districts in West Greenland (Umanak, Holsteinsborg, Julianehåb, Nanortalik) and East Greenland (Angmagssalik).

c) Age in years + months.

d) This animal was tagged as immature (1-3 years old), all the others as pubs.

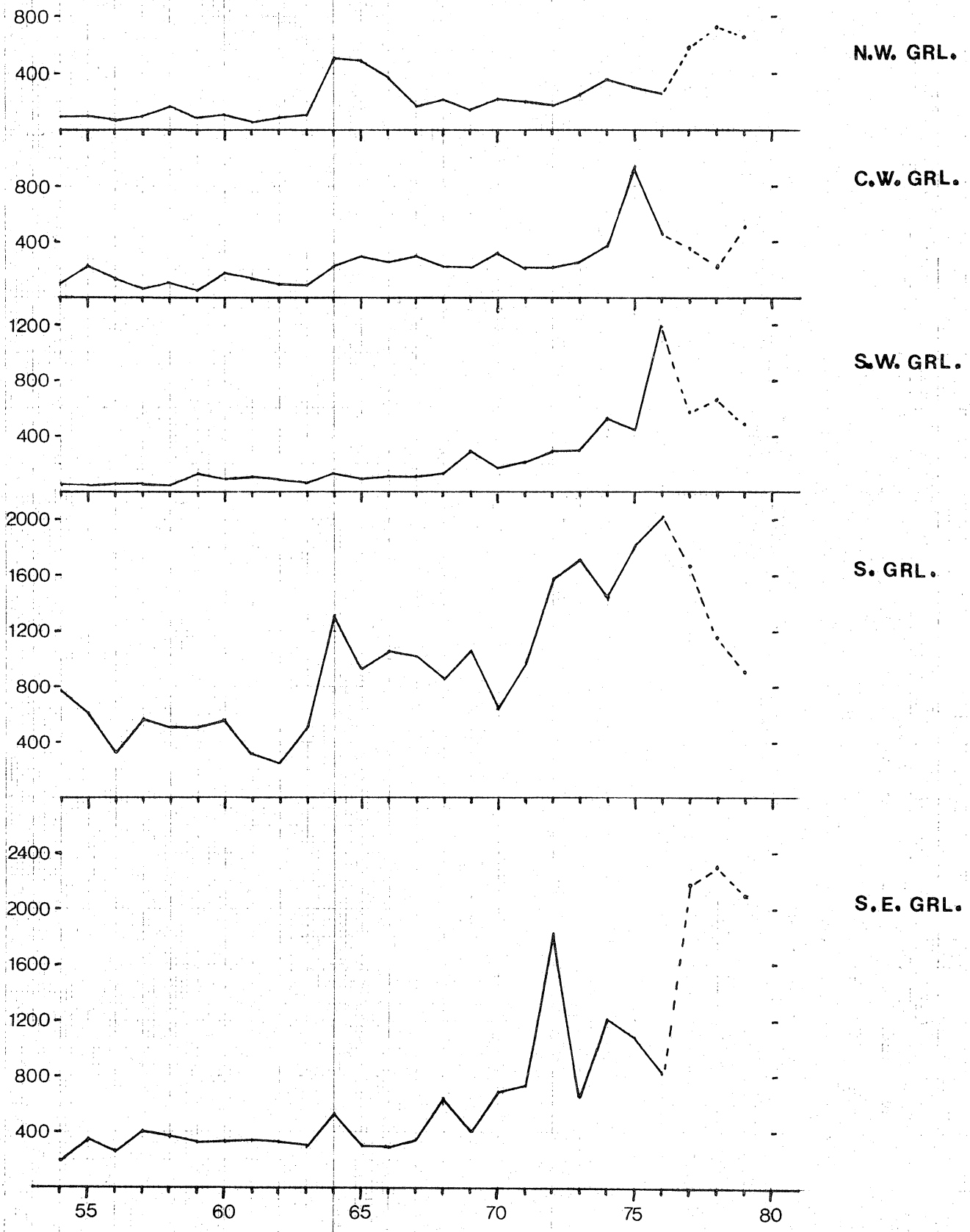


Fig. 1. Catch of Hooded Seal in Greenland, 1954-79.

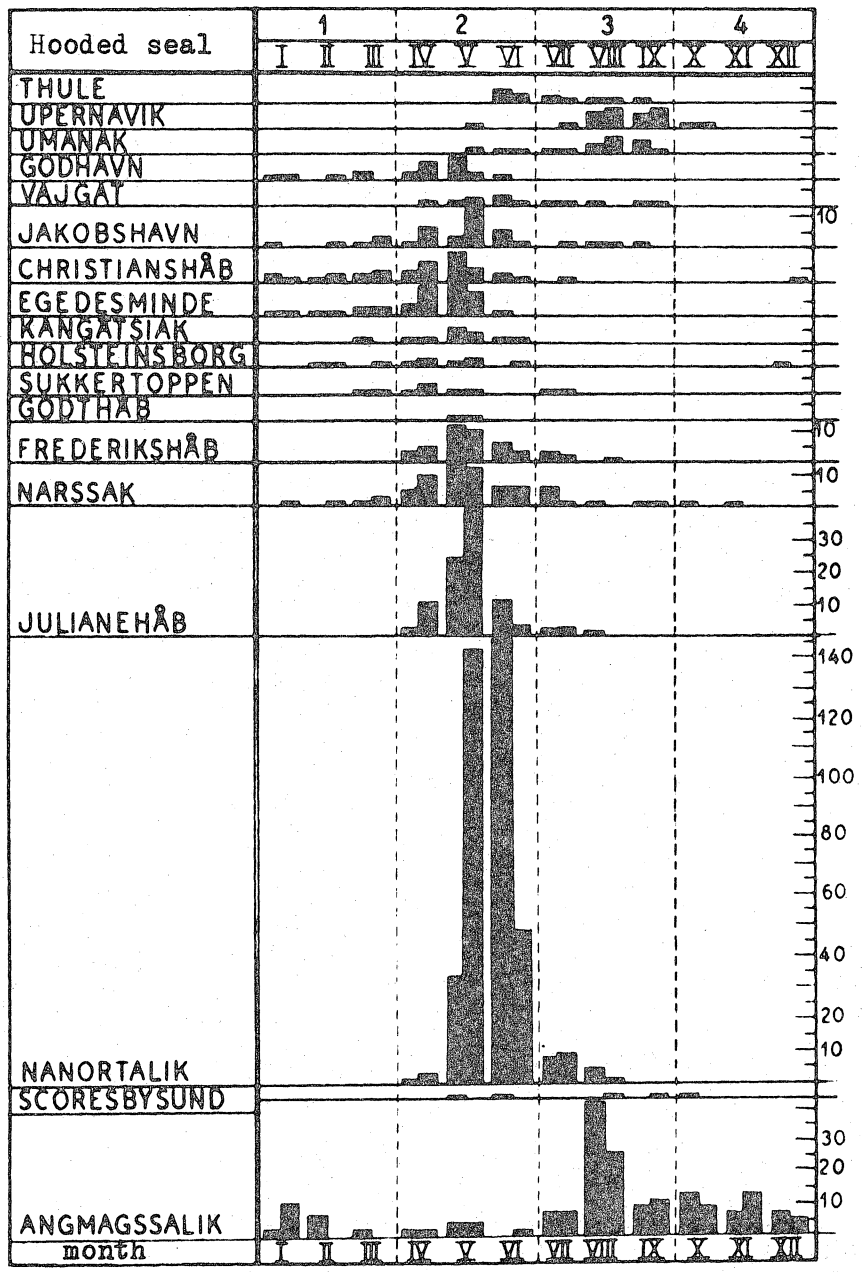


Fig. 2. Average catch per 100 hunters per half-month in the period 1948/49 - 1950/51. (Rosendahl, 1961.)

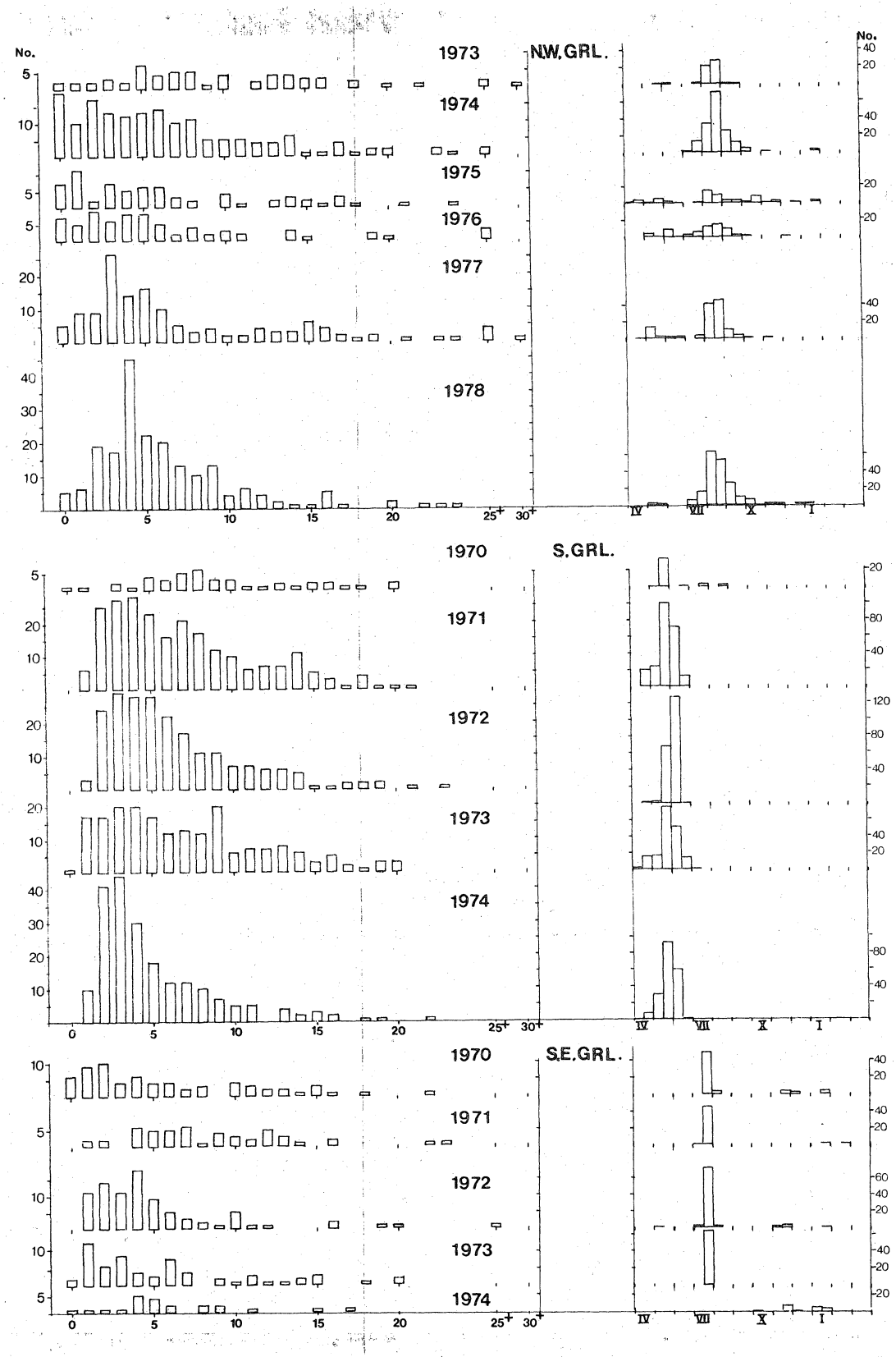


Fig. 3. Age frequencies in samples, and half-monthly distribution of the material of hooded seal collected in northwest, south and southeast Greenland, 1970-1978.

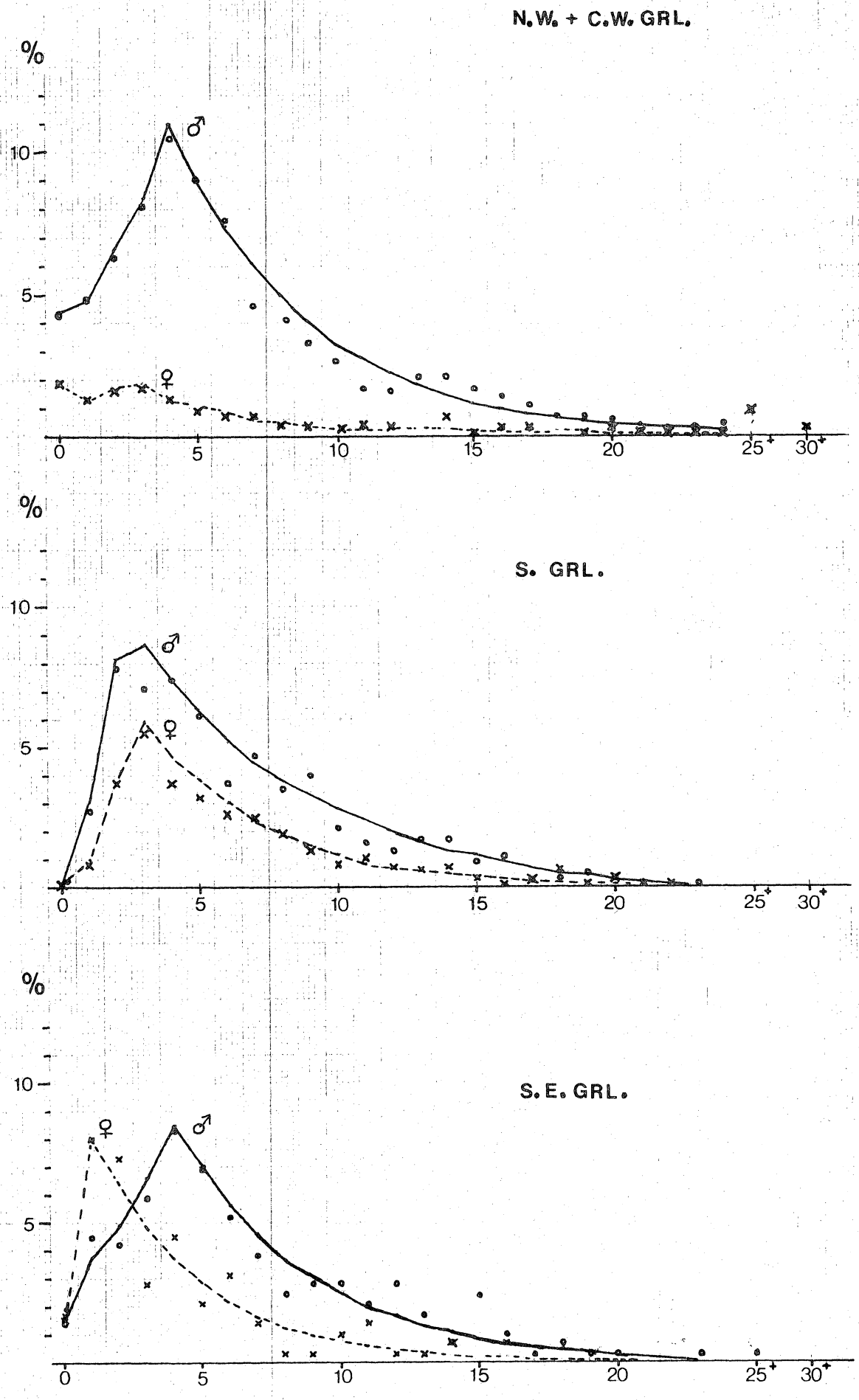


Figure 4 Age distribution in catches of hooded seal in Greenland for three different regions.