RESTRICTED

INTERNATIONAL COMMISSION FOR THE NORTHWEST ATLANTIC FISHERIES

Serial No. 3072
(D.c.11)

ICNAF Res.Doc. 73/54

ANNUAL MEETING - JUNE 1973

AGE ANALYSES AND CATCH OF HARP SEAL IN NORTHWEST GREENLAND 1953 - 1972

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Published in ICNAF RES. BULL. NO. 11: 93-106

CONTENTS

54

ABSTRACT

Catches of harp seals in Greenland have generally shown a declining tendency during the last twenty years. The fluctuations during this period and the annual distribution of the catch in 1953 and 1972 are described for the northwestern part of the country.

Two series of jaw collections from Northwest Greenland for age determination are considered to give a reasonable representation of the catch in 1953 and 1972, especially in the last mentioned year.

Age analyses show that differences exist between various areas inside a year and between years inside an area. Youngs of the year seem to be more numerous or to dominate in the Vaigat and Umanak areas, whereas older youngs form the major part of the samples from Upernavik district.

Comparison of the 1953 sample and the 1972 one seem to support the theory that an increase in mortality rate has occurred in the intervening years.

Indications are found of a relation between catches in the breeding areas and the catches in Greenland, so that large respectively low catches in the former areas result in low respectively large catches in the latter the following summer. This relation can be traced both in catch statistics and in the age samples.

1. Introduction.

Although ringed seal in recent times is by far the most important hunting object in Greenland catch of harp seal is of some importance in many parts of the country. Harp seal hunting takes place especially in summer and autumn and the northern part of West Greenland has apparently for centuries been the centre of this activity.

General descriptions of the occurrence and hunting of harp seals in Greenland have been presented in many earlier publications, e.g. Sergeant (1965) and Hansen (1966).

In this paper a more detailed description of the development of the harp seal hunt in Northwest Greenland during the last twenty years and a presentation of some age analyses is given.

2. Material and methods.

Data for estimating the catch of the harp seal in Greenland and its seasonal variations comes from the "Hunters Lists of Game" issued by the

Ministry for Greenland (Anon. 1954-69). This statistical material is not exact to the last detail, but is considered good enough to give a reliable picture of the distribution and variation of the catch. A presentation of the history of this hunting statistics and its value has been given by Rosendahl (1961), and a few comments on this subject are included in a paper, which will appear in near future (Kapel, in prep.).

Another source of evidence used as basis for this paper are samples of harp seal jaws in Greenland 1953 and 1972. The former collection was made by Dr. Paul Hansen and Mr. Ph. Rosendahl, head of office in the Ministry for Greenland. The representative of KGH (Royal Greenland Trade Department) on numerous localities were asked to purchase jaws of harp and hooded seals from the hunters. The result was about 800 jaws from more than forty localities. In this paper only some of the samples are dealt with, namely c. 500 jaws from the localities in Northwest and Central West Greenland listed at the top of table I and shown on fig. 1.

Little material was obtained in the following years, and in 1970 sampling was rearranged by Greenland Fisheries Investigations. Results were, however, rather poor until 1972, when 567 jaws were collected in the above mentioned area.

The jaws were cleaned and preserved in salt, and after arrival to the laboratory they were boiled and the canines extracted. Transverse sections of the canines were prepared by a method similar to the one described by Fisher and Mackenzie (1954), but it was found unnecessary to polish the sections after cutting.

3. Catch of harp seal in West Greenland, 1953-1972.

In the last twenty years the catch of harp seal in West Greenland has shown great fluctuations with a generally decreasing tendency (fig. 2). In the early 50'ies the total catch was of the order 15-20 thousand seals per year, in the period 1956-1965 it fluctuated between 16 and 18 thousand and has in the last years been of the level 7-4 thousand. (Final data for 1972 are not yet available, but figures for this year seem a little higher than for the nearest preceeding years).

The decline can be traced in all parts of West Greenland, but most pronouncedly in the northern regions. The catch in Upernavik and Umanak districts (region NW) amounted to 5-3000 in the period 1953-61, was there-

after for some years of the level of 2,500 and has since 1966 ranged between 2000 and 1000.

In the Vaigat-Jakobshavn area (CWn) the catch was highly fluctuating between more than 5000 and c. 2000, but kept the order 3-4000 until 1966. Since 1967 the catch has ranged between one and two thousand also in this region.

Except in one year the two above mentioned regions accounted for 50-70% of the total catch in West Greenland up to 1966 and might thus be considered the most important areas for hunting of harp seal, but in the last five years the share of the two regions has been no more than 35-50% of the total catch.

The percentage of total catch accounted for by different regions is shown in the table below:

Mean for	NW	CWn	CWs	SWn	SWs	S
1954-59	27.1	24.8	21.3	7.3	8.3	11.1
1960-64	28.1	37.0	16.9	4.9	4.0	7.9
1965-69	23.3	32.0	21.8	7.5	5.0	7.2
1970-71	19.1	17.5	23.9	13.9	15.8	9.8

Besides the above mentioned general decline in the catch of harp seal in West Greenland, a shifting in the relative importance of various hunting districts thus seems to have occurred. Whereas the catch of the northern regions in the years up to 1966 was much more important than in the southern regions, it is obvious that in recent years the catch has been more evenly distributed along the coast of West Greenland, although the main area for the harp seal hunting are still the regions from Disko Bay and northwards.

4. Catch and samples in Northwest Greenland.

Fig. 3 shows fluctuations in catch of harp seals 1953-72 on various localities in the regions NW and CWs, monthly break-down of the catch in 1953 and 1972 and the number of jaws collected in these two years. On the basis of correspondence in catching period some closely situated localities are put together as a simplification.

In 1953 the Vaigat-catching (loc. 40) started already in May, was significant in June and raised to its maximum in July and August, but the catch was considerable throughout the autumn months and did not ebb away

until January the following year.

In the Umanak district (loc. 30-38) catching was negligible until end of June, somewhat larger in July especially in the northern parts of the district, but did not reach its maximum before August. On some localities the activity kept on that level in September and then declined in the course of the autumn; on the innermost (eastern) localities the catch seems to have been negligible at the end of October, whereas it was of some importance on the outermost (western) localities also in the two last months of the year.

In the Upernavik district (loc. 11-29) catching began almost at the same time as in the Umanak area - on some localities in the middle of the district even a little earlier, and on most localities a maximum was reached already at the end of July or first half of August. The succeeding development seems to be different on various localities, but generally speeking a decreasing catch in September was followed by a new maximum in October. At the end of November catching had finished.

The above picture of catching activity in 1953 correlates well with current descriptions of the occurrence of harp seals in Northwest Greenland (Rosendahl, 1961 and Sergeant, 1965), according to which a northward migration reaches the Disko area in June and continues to Umanak and Upernavik districts, where the seals show up little later - maybe latest in Umanak where winter ice as a rule disappears later than in the southern parts of the Upernavik area. The two peaks on the curves for the Upernavik area might support the theory of a southward migration along the coast of Northwest Greenland in autumn, but the curves for the Umanak and Vaigat areas indicate that some herds of harp seals did not make this double migration but remained in the area to which they arrived in early summer.

In 1972 the catch in the Vaigat area was negligible until the beginning of July. The catch curve shows a peak in August followed by a rather smooth decrease towards the end of the year.

1972-hunting statistics for the Umanak area are not yet available, but to judge from the sample catching maximum occurred in the last half of August. Personal observations by the author support, that catches were insignificant until the end of July.

In the middle part of Upernavik district some harp seals were caught already in the last days of June and catches were rather good in July. In most parts of the district catching activity peaked in August, but in the northernmost part (loc. 14) not until September; on other localities catches were low in September, and only on the southernmost localities (loc. 27 and to some degree 29) catch was of some importance in October and the following two months.

The occurrence of harp seal in Northwest Greenland 1972 thus seems to differ from the occurrence in 1953 - apart from a considerably lower number - in two respects: Firstly the seals appeared a month later in the Vaigat, secondly they apparently left the northern parts of West Greenland a little earlier. A possible explanation of the first mentioned circumstance might be, that faced by the ice the early "waves" of harp seals followed migration routes in open sea west of the Disko Island and did not show up in hunting areas until they reached the Upernavik district.

In addition to the above description of hunting activities fig. 3 gives an impression of, how far the samples in 1953 and 1972 are representative for the catches of the years concerned.

The samples from 1953 do not amount to more than ten per cent of the catch on the localities in question, for loc. 40 not even two per cent. Further, it is characteristic that the samples chiefly derive from the initial phases of hunting periods, thus only giving an impression of composition of catches in June to August, not of the final phases of the hunting activity. An exception is formed by the sample from loc. 27 (and to some degree by loc. 37), which was collected in the months September to November, but on the other hand the sample does not contain material from the catch in early summer.

The 1972-material, although not much larger in respect to absolute number of jaws, gives an essentially better covering. On the first hand the sample account for between 25 and 55 per cent of the catches on sampling localities, except on the northernmost localities in Upernavik district, from where only two per cent of the catch were sampled.

Secondly, in respect to distribution of sampling activity throughout the hunting period the 1972-material is much better than that of 1953. For loc. 17-20 in Upernavik district, however, samples cover only the initial phases of catching activity, but in the southern localities of Upernavik

district also the maxima and the final phases are represented.

Unfortunately, material from the northern part of Umanak district has not yet arrived to the laboratory, and hunting statistics for the whole district are as mentioned not yet available. However, for loc. 38 in the southern part of the district the sample is considered to constitute 50 per cent or more of the catch and to give a good picture of the initial phases and the maximum.

The sample from loc. 40 in the Vaigat area gives - contrary to the 1953-material - a good representation of the catch, except for the rather negligible catch in July and December. It should be mentioned, that some discrepancy seems to exist between dates of catch and dates of sampling for loc. 40 and 27, but evidently not big enough to alter the above given picture.

This evaluation of the two sets of samples is to be born in mind, when both series of age composition are described and compared below.

5. Age analyses, 1953 and 1972.

Table II and III present the age determination of the material from all sampling localities in 1953 and 1970-72. Especially as regards the first serie the material from some localities is so scanty that some pooling is desirable. To begin with a pooling is attempted of closely situated localities, where 1) hunting activities are similar, 2) samples represent same phase of catching and 3) age determinations show a reasonable degree of mutual agreement. The result is presented in table IV and fig. 4.

In 1953 youngs of the year form 20-25 per cent and one-year-old youngs 35-45 per cent of the sample on most localities in Upernavik district (loc. 20-25). In the sample from loc. 12-14 in the northern part of the district youngs of the year seem to dominate, but this difference may be accidental, the small size of the sample taken into account.

It is striking, however, that youngs of the year are totally absent in the sample from loc. 27. The explanation might be, that this sample covers only the end of the hunting period, and that youngs of the year form a smaller proportion of the catch at this time (at least on loc. 27).

Other age groups of young seals (age group 2-4) are weakly represented in the northern part, stronger in the southern part of the district. The percentage of mature animals (5 years and more) is rather identical on all localities or slowly increasing from north to south.

In the material from the northern and middle part of Umanak district youngs of the year account for 20-30 per cent of the sample and a similar proportion is formed by the one-year-olds. Other young animals (age groups 2-4) and mature animals (age group 5 and older) are represented with the same percentages as in the northern and middle parts of Upernavik district.

The composition of the material from the southern parts of Umanak district differ to some degree from this picture. Here the youngs of the year account for more than half, one-year-olds for about one fourth of the sample, whereas 2-4 year olds and mature animals are weakly represented.

The sample from loc. 40 in the Vaigat is characterized by a very weak representation of youngs of the year and rather few one-year-olds, whereas 2-4 year old seals and especially mature animals are well represented. This fits very badly with the figures of the game lists and other statements, according to which young harp seals are extremely important to the hunting in the Vaigat area (cf. also the 1972-sample and a Canadian sample from loc. 40, 1962). A sample composition like the one in 1953 is found in a couple of samples from 1970-71, but it is known, that younger harp seals were <u>not</u> sampled in 1970-71 as a consequence of interpretative misunderstanding of the sampling instruction. Obviously this may have been the case in 1953 too, and this sample is probably biased by selection of older animals. The sample, which as mentioned represent only two per cent of the local catch, should thus be categorized as untypical of the catch in Vaigat.

Sampling in 1972 was carried out on fewer localities than in 1953, but must nevertheless be considered to represent the catch better. The fact alone, that the sample account for a considerably higher percentage (25-55%) of the catch in the sampling areas, points in this direction.

There is an obvious difference in age composition of the samples from loc. 40 and 38 and those from localities in Upernavik district. The two first mentioned samples are quite dominated by youngs of the year (75 and 85 per cent respectively), whereas 1-4 year old youngs and younger age groups of mature animals are very weakly represented in both samples. In loc. 38 older age groups of mature animals are equally badly represented, whereas they occur in greater number in the sample from loc. 40.

The age composition of the materials from Upernavik is quite different. In the samples from loc. 19-23 youngs of the year account for well 40 per cent, one-year-olds for almost 20 per cent, age groups 2-4 about 25 per cent

and mature animals about 15 per cent. In the sample from loc. 24 the corresponding percentages are 32, 23, 34 and 11 respectively. Slightly different is the material from loc. 27: 12, 30, 39 and 18 per cent respectively. It is possible, that a selection of older animals (especially females) has occurred here, but on the other hand it is striking that the 1953-sample from this locality also differed from those of other localities in the district - and in the same direction. There is, however, no indications of the sample representing only the final phase of the hunting period as in 1953, although the catching activity on loc. 27 as a whole did fall a little later than on the other localities. Some evidence thus indicate that youngs of the year in fact is of minor importance to the hunting around loc. 27.

Altogether the samples in 1972 seem to represent the catch of the localities in question rather well, although a better representation of the final phases might be desirable. That older animals account for an increasing percentage of the catch in the autumn can be traced as a faint tendency.

It is evident that some differences exist between catches of harp seals in various parts of Northwest Greenland in respect to age composition. Youngs of the year seem to dominate catches in the Vaigat and Umanak areas, whereas 1-4 year old animals account for the major part of catches in Upernavik district. Older animals occur in all areas but with varying percentages. Thus samples from one area are not sufficient to give a picture of composition of the catch in Northwest Greenland as a whole. To obtain this it will further be necessary to weigh the various samples against each other in relation to importance or size of the catch in the area in question. An attempt in this direction is shown in fig. 5, leaving out the Vaigat samples which for 1953 were biased as mentioned above.

The general feature seems to be, that the 1972 curve shows a steaper decline than the 1953 one, probably as a result of heavy exploitation of the stock in the 1950'ies and 60'ies.

In the 1953-sample age groups 1 and maybe 3 and 7 (year-classes 1952, 1950 and 1947) seem to be rather strongly, age group 2 (1951) rather weakly represented.

In the 1972-sample age group 7 (1965) and maybe age group 4 (1968) show values a little higher, age group 3 (1969) a little lower value than would be expected by a steady production and a constant mortality rate.

6. Sex ratio.

For the 1953-material sex was not reported, but this was done for most animals in the 1972-sample. For the sample as a whole females accounted for only 42 per cent, and the same percentage is found when youngs of the year are looked upon separately. For the 1-4 year old animals the percentage is sligthly lower (35.3%), but of old animals females constitute more than fifty per cent of the sample. This fact may be due to the circumstance, that mature females were specially asked for.

Some differences in sex ratio occur between samples from different localities. In Upernavik district females account for less than 25% in the northernmost locality, more than 50% in the southernmost. In the samples from Umanak and Vaigat they constitute 42.6 and 48.5% respectively.

Especially as regards mature animals the difference between localities is evident. In the northern localities of Upernavik district and in Umanak district most mature animals were males, but in loc. 27 in the southern part of Upernavik district and in loc. 40 of the Vaigat almost all old animals were females. It is thus possible, that mature females concentrate in some areas, but the material is too sparse to draw any definite conclusion and, further, the differences may as mentioned reflect differences in sampling activity.

7. Discussion.

It has been mentioned above, that the collection of material from 1972 seems to represent the catch on the localities in question rather well, and it is further indicated that these localities give a sufficient coverage of the catch in Northwest Greenland as a whole.

The 1953-material is less satisfactory, but may, however, serve to characterize the catch at that time and to comparison with new samples. The material was aged by the staff of Greenland Fisheries Investigations in the mid fifties and the result was presented and used by Sergeant and Fisher (1960), but this previous age determination has shown not reliable, and the material was therefore revised by the present author.

Whether the catch in other regions of Greenland is composed as in Northwest Greenland, is not quite clarified. It has been shown above that age

composition differs from area to area within Northwest Greenland, and the same may be the case in other regions. Figures from the Lists of Game on the relation between "blåsider" and "sortsider" (young and mature animals respectively) might point in this direction. Further, the above mentioned previous age determination tended to show higher percentages of mature animals in samples from some areas in Southwest Greenland, but as the age determination is not fully reliable and as the samples from these parts of Greenland are considered less representative for the catch, further discussion is not possible until new age analyses of material from other regions has demonstrated the variation in age composition more clearly. At present it is assumed, that the age composition described above for Northwest Greenland catches is rather typical for Greenland as a whole, although some older animals may occur in other regions in higher percentages.

Another question is, whether the composition of the catch is sufficient to illustrate the composition of the herds of harp seals in the hunting areas, in other words whether a selection of some age groups occurs by catching. It is generally assumed among hunters, that young seals are easier to catch than old ones, but this assertion is probably valid particularly for ringed seals and especially to the netting of these. As harp seals in Greenland are almost exclusively shot in water, and as selection is considered little by this method, it is assumed that the catch is representative of the occurrence of seals in the hunting areas.

Further, it might be discussed, whether the herds of harp seals in the hunting areas of Greenland are composed in the same way as the stock as a whole. It is suggested that various age groups may arrive to differnt areas at different times and may concentrate in different regions. Further, it is possible that some age groups to a certain degree stay away from the hunting areas of Greenland and thus may be underrepresented in the catches. Samples from Baffin Island indicate that mature animals are relatively better represented than immatures in that area, and this may be the case in other parts of the Canadian Arctic. However, until more evidence in this direction is available, it is here assumed that harp seals occur in the hunting areas of Greenland in the proportions, by which they are represented in the stock.

If these assumptions come true, the size and composition of the catches in Greenland would be expected to reflect fluctuations of the stock of harp seals in the Northwest Atlantic, among others those caused by exploitation at the breeding areas near Newfoundland.

The intensive exploitation, which has occurred here during the 50'ies and 60'ies, is assumed to be the most important cause of the general decline in catch of harp seals in Greenland (cf. fig. 2), although climatic influence and changes of hunting activities in Greenland may also have played a role.

In addition to the evidence of the general development of the harp seal stock in the 1953-72 period the material presented here may give some information of the relation between catches at the breeding places and in Greenland for each particular year.

As youngs of the year contribute to the Greenland catches by a significant proportion, it should be expected that years of particularly large catch (high mortality) of youngs in the Front and the Gulf would result in rather low catches in Greenland - and the reverse.

From fig. 2 it appears, that catches in Greenland were comparatively low in 1956, 1959, 1967 and for region CWn also in 1962. In the breeding areas, 1956 was the year with the largest catch of youngs in the period, and also in 1959 and 1967 catches were larger than usual. In 1962, however, the catch was only slightly higher than in the proceeding year and much lower than in the two following years.

Catches in Greenland were comparatively high 1952-54, 1958 and 1960. In the two last mentioned years catches of youngs in the breeding areas were unusually low, and the results were rather poor also in the 1952-54 period. The comparatively low catches of youngs at the breeding places in 1957, 1961, 1965 and 1968, however, do not seem to have resulted in particularly high catches in Greenland the following summer.

Although exceptions are found for a number of years a correlation between catches of harp seals in the breeding areas and in Greenland thus seems to exist.

This fact is in good agreement with the statement by Sergeant and Fisher (1960), that large catches can be traced in age samples as poorly represented year classes, and is also supported by the age analyses presented in this paper. As mentioned above, the year-classes 1947, 1965 and 1968 - and to some degree 1950 and 1952 - are rather well represented in the samples, corresponding to low catches of youngs at the breeding places in any of these years.

On the other hand only one year of unusually high catch of youngs at breeding places, namely 1951, seems to have resulted in an especially weak representation in the age samples.

The lack of accordance between catches in the breeding areas and in Greenland found for some years may be explained by fluctuations in production and natural survival or by differences in weather conditions and other factors affecting hunting activity in Greenland.

The fact that the age curve for the 1972-sample shows a steaper fall than that of the 1953-sample is an indication of increasing mortality rates in the intervening years, in all probability caused by heavy exploitation.

An attempt to calculate mortality rates on the basis of the samples from Northwest Greenland gave values far too high to be real ($Z = 0.3-0.5$). This applies to both the 1953-sample and the 1972-sample. The explanation may be that medium-age animals are underrepresented in catches of Northwest Greenland.

Sergeant and Fisher (1960) used the 1953-samples from West Greenland as a whole for calculating mortality rates and found a total mortality coefficient, $Z = 0.22$ for ages 0-4 and $Z = 0.11$ for ages 5-10. Consideration of the part of the sample, which has been re-determined, seems to indicate that these values would be slightly higher, using the new age determinations. However, re-determination of the sub-samples from regions CWs, SWn, SWs and S has not yet been done, and it is difficult to say whether the final result will be changed in one direction or the other. Besides, an evaluation of the total sample as an illustration of the catches in Greenland at that time has to be done. In the author's opinion it is too benevolent to give the sample the characterization: "excellent" (Sergeant, 1969).

It is thus evident that further revision of the previous samples is needed. It is also obvious that new samples from Northwest Greenland are necessary to show, whether the age composition found for the 1972-sample is valid for other years, and, finally, it would be of interest to get samples from other regions of Greenland to illustrate the composition of the catches of harp seals in Greenland as a whole.

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8. References.

Anon. 1954-69 — Hunting statistics based on the Greenlanders' lists of game caught in Greenland. 1954/55 .... 1969. Ministry for Greenland. København.

Fisher, H.D. and B.A.Mackenzie. Rapid preparation of tooth sections for
1954 age determination. Journ.Wildl.Manag., Vol.18, No.4:535-537.

Hansen, Paul M. Harp seal (Phoca groenlandica) and hooded seal (Cystophora cristata) in Greenland waters. ICNAF Serial No.1750,
1966 Seal Contr. No.5.

Kapel, F.O. Recent research on seals and seal hunting in Greenland.
(in prep.) Symp.Biol.Seal, Guelph (ICES Rapp.Proc.Verb.)

Rosendahl, Ph. Grønlandsk jagt- og fangststatistik (Greenland game
1961 statistics). Geograf.Tidsskr. Bd. 60:16-38. København.

Sergeant, D.E. and H.D.Fisher. Harp seal populations in the western North
1960 Atlantic from 1950 to 1960. Fish.Res.Bd.Can., Arctic Unit Circ. No. 5.

Sergeant, D.E. Migrations of Harp Seals Pagophilus groenlandicus (Erx-
1965 leben) in the Northwest Atlantic. Journ.Fish.Res.Bd.Can., 22 (2):433-464.

Sergeant, D.E. On the population dynamics and size of stocks of harp
1969 seals in the Northwest Atlantic. ICNAF Serial No.2171, Res.Doc. 69/31, Seal Contr. No. 1.

Table I. Age samples of harp seal from Greenland.

Loc.No.	Locality	1953	1954	1955	1956	1957	1962+)	1970	1971	1972
(12-)14	Kraulshavn	25	1							3
17 - 20	Tasiussaq	26	31			4	91		19	70
21 - 23	Tugssaq	30								115
24	Augpilagtoq	30						4	23	44
25	Upernavik	42								
27	Prøven	30						1		56
District	UPERNAVIK	183	32	-	-	4	91	5	42	288
30	Igdlorssuit	30	1						25	2+)
31	Nugatsiaq	74								
32	Uvkusigssat	19	26							
34	Satut	30								
35 - 36	Ikerasak	37	3		8	2				
37	Umanak	34	33	13		4				
38	Qaersut	32						77	98	115
District	UMANAK	256	63	13	8	6	-	77	123	117+)
40	Sarqaq	54					256	45	10	164
	other	29	40	52						1
District	VAIGAT-JAK.	83	40	52	-	-	256	45	10	165
SUBTOTAL	NW + CWn	522	135	65	8	10	347	127	175	570+)
District	CHRISTIANSHÅB	73	10	17						
"	GODHAVN	64			8		6			
"	EGEDESMINDE	29		6						
"	KANGATSIAQ	78							4	
"	HOLSTEINSBORG	20								
"	SUKKERTOPPEN	10	28							
"	GODTHÅB	-								
"	FREDERIKSHÅB	13								
"	JULIANEHÅB + NANORTALIK	40								
TOTAL	West Greenland	849	173	88	16	10	353	127	179	570+)
TOTAL	East Greenland	10	20	-	-	-	-	-	1	-

+) Additional material is known collected in Igdlorssuit but has not yet arrived to the laboratory.

+) Collected by Fisheries Research Board of Canada.

Table II. Age samples of harp seals in Northwest Greenland, 1953.

District	UPERNAVIK						UMANAK							VAIGAT
Loc.No.	14	20	23	24	25	27	30	31	32	34	35+36	37	38	40
Age \ Nos.														
0.4	13	8	5	6	8	-	23	9	5	7	16	19	19	6
1.4	4	11	14	6	14	5	19	6	5	9	9	8	8	10
2.4	-	1	1	4	2	3	3	2	1	1	1	2	1	4
3.4	1	1	1	4	2	7	6	5	1	3	1	3	-	8
4.4	-	1	1	1	3	4	2	2	-	1	3	-	-	5
5.4	-	-	-	1	1	-	9	1	1	3	1	-	1	2
6.4	1	1	1	1	2	2	3	1	1	-	3	-	1	4
7.4	1	-	1	4	-	1	1	-	-	-	1	1	1	1
8.4	-	-	1	1	-	1	2	1	1	1	1	-	-	2
9.4	2	-	-	-	1	1	2	-	-	1	-	-	-	3
10.4	-	-	1	-	-	-	-	-	1	-	-	-	-	1
11.4	1	-	-	-	-	-	-	1	-	-	-	-	-	2
12.4	-	-	-	-	1	-	-	-	-	-	-	-	-	2
13.4	-	-	-	1	1	-	1	-	-	1	-	-	-	2
14.4	-	-	1	-	1	2	-	-	-	-	-	-	-	-
15.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
16.4	1	-	1	1	1	-	-	-	-	-	1	-	1	-
17.4	-	-	-	-	-	1	-	1	-	1	-	-	-	-
18.4	-	1	-	-	1	1	1	1	1	-	-	-	-	-
19.4	-	-	-	-	-	-	1	-	-	-	-	-	-	-
20.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
21.4	-	-	-	-	1	1	-	-	-	-	-	-	-	-
22.4	-	2	-	-	2	1	-	-	-	-	-	-	-	-
23.4	-	-	2	-	-	-	-	-	-	1	-	-	-	-
24.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
25.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
26.4	-	-	-	-	-	-	-	-	-	-	-	-	-	1
27.4	1	-	-	-	-	-	1	-	-	-	-	1	-	-
28.4	-	-	-	-	-	-	-	-	-	1	-	-	-	1
29.4	-	-	-	-	1	-	-	-	1	-	-	-	-	-
30.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
+30.	-	-	-	-	-	-	-	-	1	-	-	-	-	-
SUM	25	26	30	30	42	30	74	30	19	30	37	34	32	54

Note. Age 0.4, 1.4, etc. indicates that most animals were caught 3-6 months after breeding period.

Table III. Age samples of harp seals in Northwest Greenland, 1970-72.

Year	1970		1971				1972									
District	UMK	VAI	UPV		UMK		VAI	UPERNAVIK						UMK		VAI
Loc.No.	38	40	20	24	30	38	40	14	17-20	21+23	24	27		30	38	40
Age \ Nos.																
0.4	63	3	4	3	18	83	2	2	28	50	14	7		-	95	126
1.4	6	3	3	2	4	8	-	-	16	15	10	17		1	8	8
2.4	2	2	-	4	-	4	-	1	11	15	3	11		-	1	7
3.4	1	6	3	4	2	1	2	-	2	7	5	6		-	1	-
4.4	2	1	2	2	-	-	-	-	3	8	7	5		-	1	3
5.4	-	5	-	-	1	-	1	-	2	5	-	1		-	2	2
6.4	-	4	1	1	-	-	-	-	1	3	1	-		1	-	4
7.4	-	3	1	-	-	-	-	-	1	3	1	3		-	1	2
8.4	-	2	-	1	-	-	-	-	-	3	-	-		-	-	-
9.4	1	2	1	2	-	-	-	-	-	-	-	-		-	-	-
10.4	1	1	-	-	-	-	1	-	-	1	-	2		-	-	-
11.4	1	2	2	-	-	-	1	-	-	-	1	1		-	-	-
12.4	-	1	1	-	-	1	-	-	1	-	-	-		-	-	2
13.4	-	1	-	-	-	-	-	-	-	-	-	1		-	-	-
14.4	-	1	1	1	-	-	1	-	-	-	-	-		-	-	-
15.4	-	-	-	-	-	-	1	-	1	1	-	-		-	-	1
16.4	-	-	-	-	-	-	-	-	-	-	-	1		-	-	1
17.4	-	-	-	-	-	1	-	-	-	1	-	-		-	-	-
18.4	-	-	-	1	-	-	-	-	-	-	1	-		-	-	1
19.4	-	-	-	-	-	-	-	-	-	-	1	1		-	1	-
20.4	-	2	-	-	-	-	-	-	-	1	-	-		-	-	1
21.4	-	1	-	1	-	-	-	-	-	-	-	-		-	-	2
22.4	-	2	-	-	-	-	1	-	-	-	-	-		-	-	-
23.4	-	-	-	-	-	-	-	-	1	-	-	-		-	1	1
24.4	-	-	-	-	-	-	-	-	1	-	-	-		-	-	1
25.4	-	-	-	-	-	-	-	-	-	-	-	-		-	-	1
26.4	-	-	-	-	-	-	-	-	1	-	-	-		-	-	-
27.4	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-
28.4	-	-	-	-	-	-	-	-	-	-	-	-		-	-	1
29.4	-	-	-	-	-	-	-	-	-	1	-	-		-	-	1
30.4	-	-	-	1	-	-	-	-	-	-	-	-		-	-	-
+30.	-	2	-	-	-	-	-	-	1	1	-	-		-	-	-
SUM	77	45	19	23	25	98	10	3	70	115	44	56		2	112	165
?															3	

Note. Age 0.4, 1.4, etc. indicates that most animals were caught 4-6 months after breeding period

Table IV. Age composition of harp seals caught in NW.Greenland, 1953 and 1972.

Year	1953								1972				
District	Upernavik				Umanak			Vai.	Upernavik			Umn.	Vai.
Loc.No.	14	20–23	24–25	27	30–31	32–34	35–38	40	17–23	24	27	38	40
	%	%	%	%	%	%	%	%	%	%	%	%	%
Age													
0.4	52.0	23.2	19.4	-	30.8	24.5	52.4	11.1	42.2	31.8	12.5	84.8	76.4
1.4	16.0	44.6	27.8	16.7	24.0	28.6	24.3	18.5	16.8	22.7	30.4	7.1	4.9
2.4	-	3.6	8.3	10.0	4.8	4.1	3.9	7.4	14.1	6.8	19.6	0.9	4.2
3.4	4.0	3.6	8.3	23.3	10.6	8.2	3.9	14.8	4.9	11.4	10.7	0.9	-
4.4	-	3.6	5.6	13.3	3.8	2.0	2.9	9.3	5.9	15.9	8.9	0.9	1.8
5.4	-	-	2.8	-	9.6	8.2	1.9	3.7	3.6	-	1.8	1.8	1.2
6.4	4.0	3.6	4.2	6.7	3.8	2.0	3.9	7.4	2.2	2.3	-	-	2.4
7.4	4.0	1.8	5.6	3.3	1.0	-	2.9	1.9	2.2	2.3	5.4	0.9	1.2
8.4	-	1.8	1.4	3.3	2.9	4.1	1.0	3.7	1.6	-	-	-	-
9.4	8.0	-	1.4	3.3	1.9	2.0	-	5.6	-	-	-	-	-
10.4	-	1.8	-	-	-	2.0	-	1.9	0.5	-	3.6	-	-
11.4	4.0	-	-	-	1.0	-	-	3.7	-	2.3	1.8	-	-
12.4	-	-	1.4	-	-	-	-	3.7	0.5	-	-	-	1.2
13.4	-	-	2.8	-	1.0	2.0	-	3.7	-	-	1.8	-	-
14.4	-	1.8	1.4	6.7	-	-	-	-	-	-	-	-	-
15.4	-	-	-	-	-	-	-	-	1.1	-	-	-	0.6
16.4	4.0	1.8	2.8	-	-	-	1.9	-	-	-	1.8	-	0..
17.4	-	-	-	3.3	1.0	2.0	-	-	0.5	-	-	-	-
18.4	-	1.8	1.4	3.3	1.9	2.0	-	-	-	2.3	-	-	0.6
19.4	-	-	-	-	1.0	-	-	-	-	2.3	1.8	0.9	-
20.4	-	-	-	-	-	-	-	-	0.5	-	-	-	0.6
21.4	-	-	1.4	3.3	-	-	-	-	-	-	-	-	1.2
22.4	-	3.6	2.8	3.3	-	-	-	-	-	-	-	-	-
23.4	-	3.6	-	-	-	2.0	-	-	0.5	-	-	0.9	0.6
24.4	-	-	-	-	-	-	-	-	0.5	-	-	-	0.6
25.4	-	-	-	-	-	-	-	-	-	-	-	-	0.6
26.4	-	-	-	-	-	-	-	1.9	0.5	-	-	-	-
27.4	4.0	-	-	-	1.0	-	1.0	-	-	-	-	-	-
28.4	-	-	-	-	-	2.0	-	1.9	-	-	-	-	0.6
29.4	-	-	1.4	-	-	2.0	-	-	0.5	-	-	-	0.6
30.4	-	-	-	-	-	-	-	-	-	-	-	-	-
+30.	-	-	-	-	-	2.0	-	-	1.1	-	-	0.9	-
Sum	100	100	100	100	100	100	100	100	100	100	100	100	100
No.	25	56	72	30	104	49	103	54	185	44	56	112	165

Note. Age o.4, 1.4, etc. indicates that most animals were caught 3-6 months after breeding period.

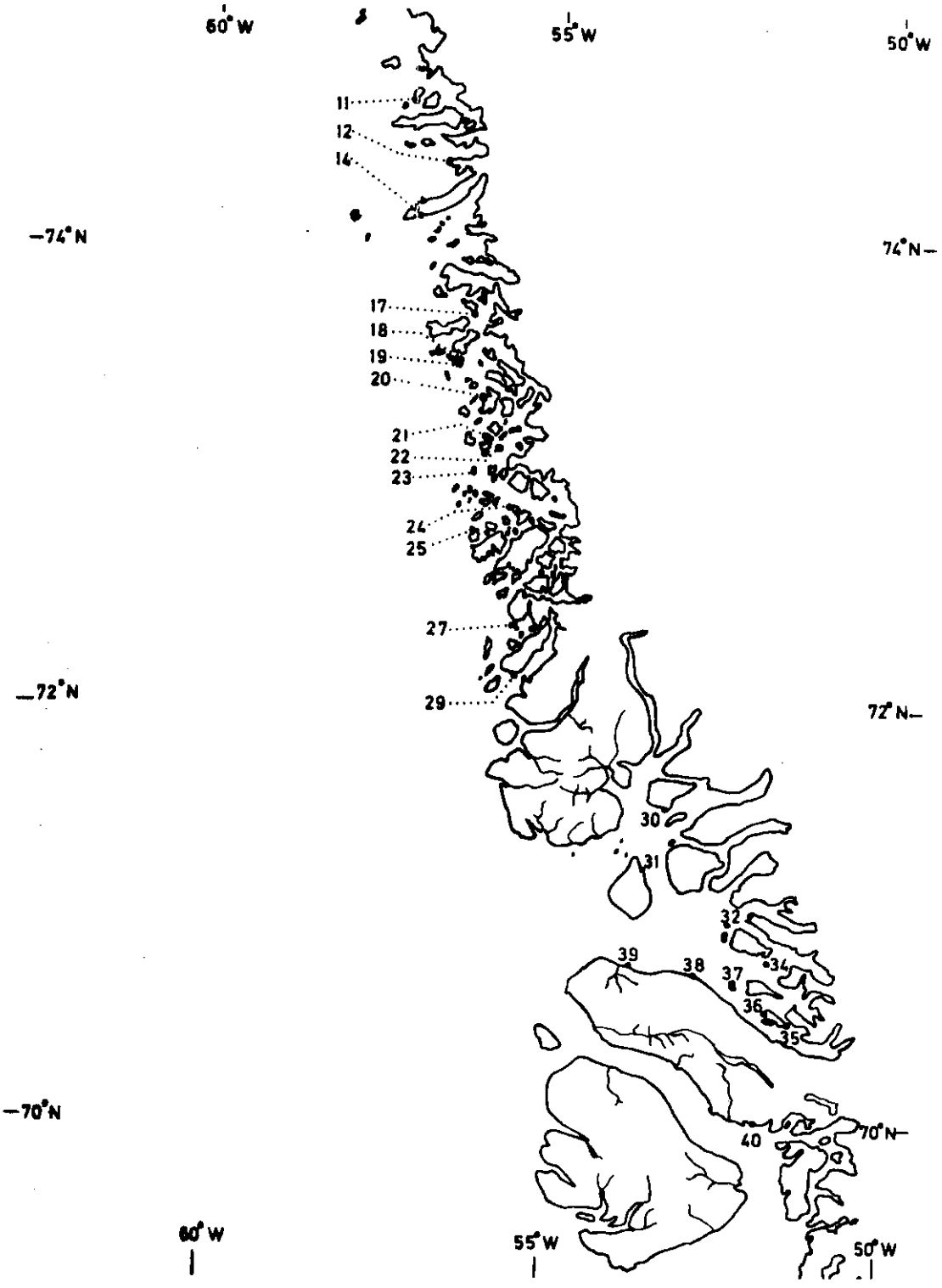

Fig.1 Map of localities

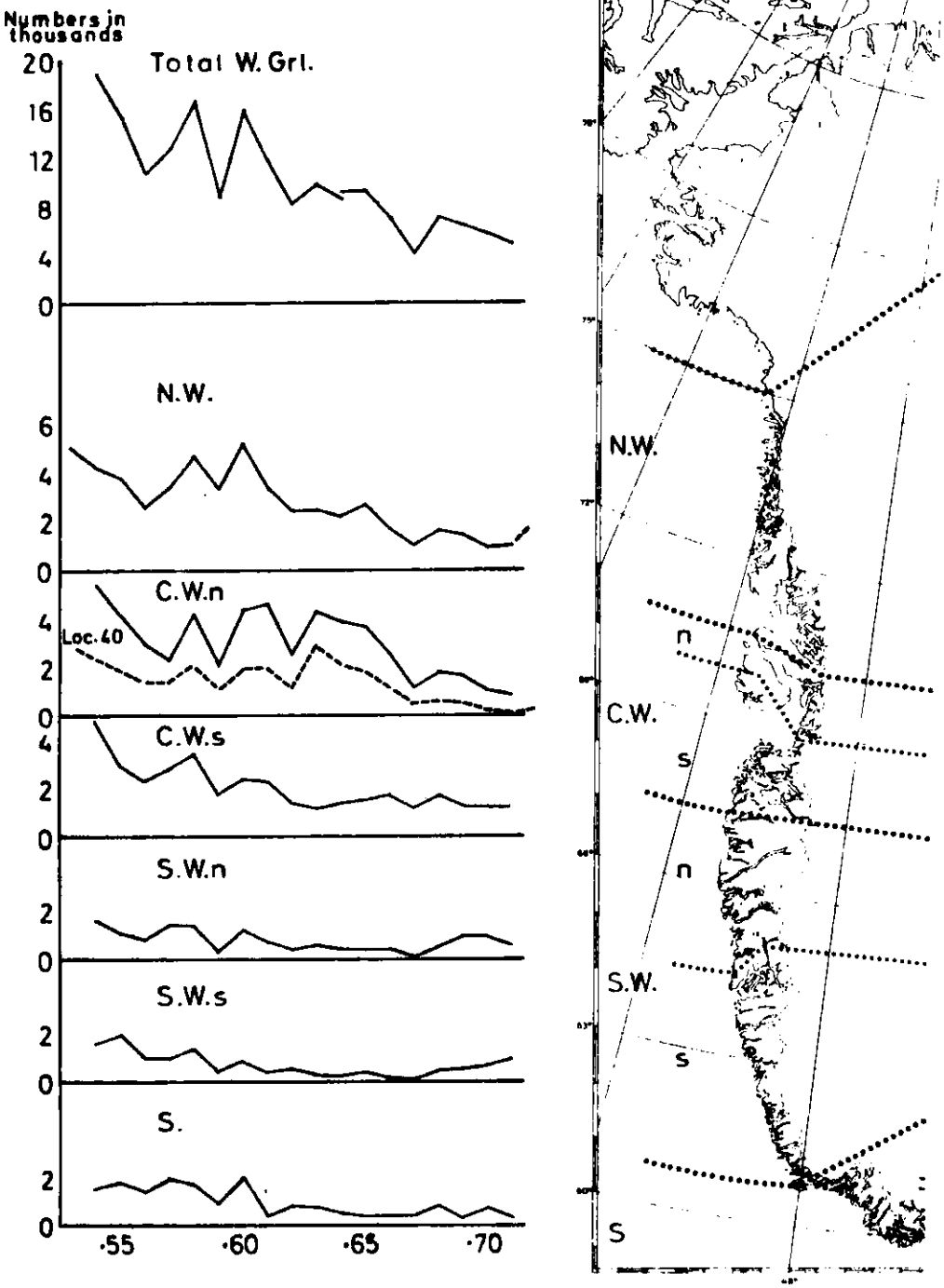

Fig.2 Catch of harp seals in West Greenland

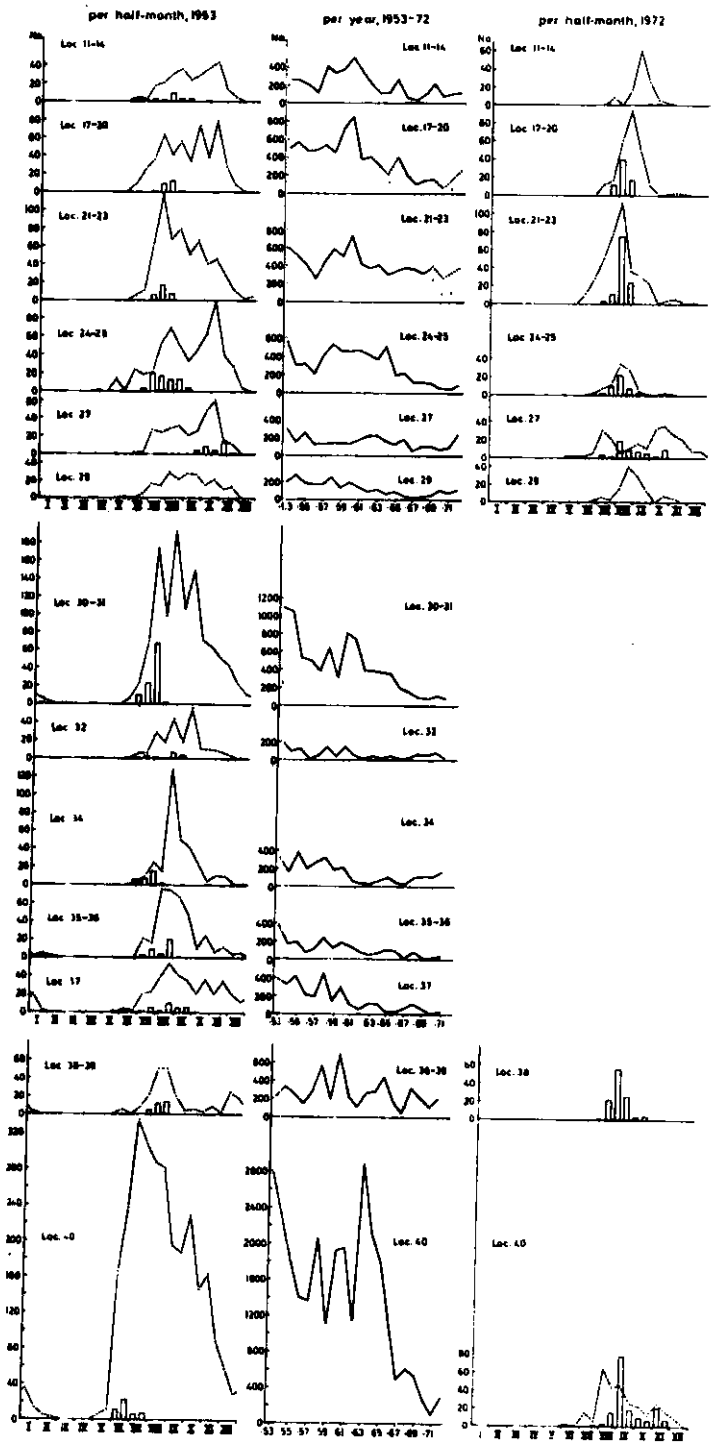

Fig. 3 Catch of harp seals on different localities in Northwest Greenland

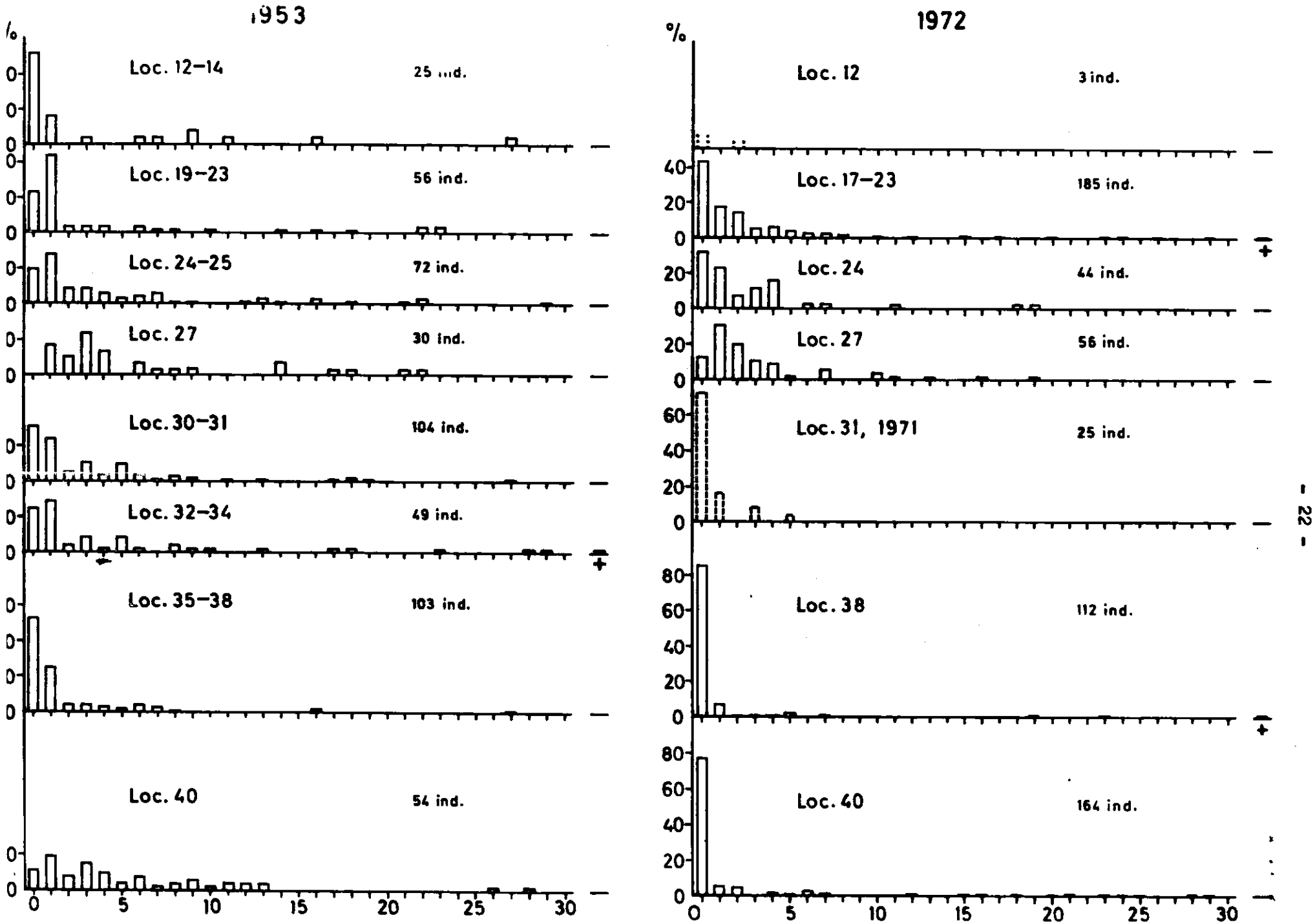

Fig. 4 Age composition of harp seals caught in Northwest Greenland

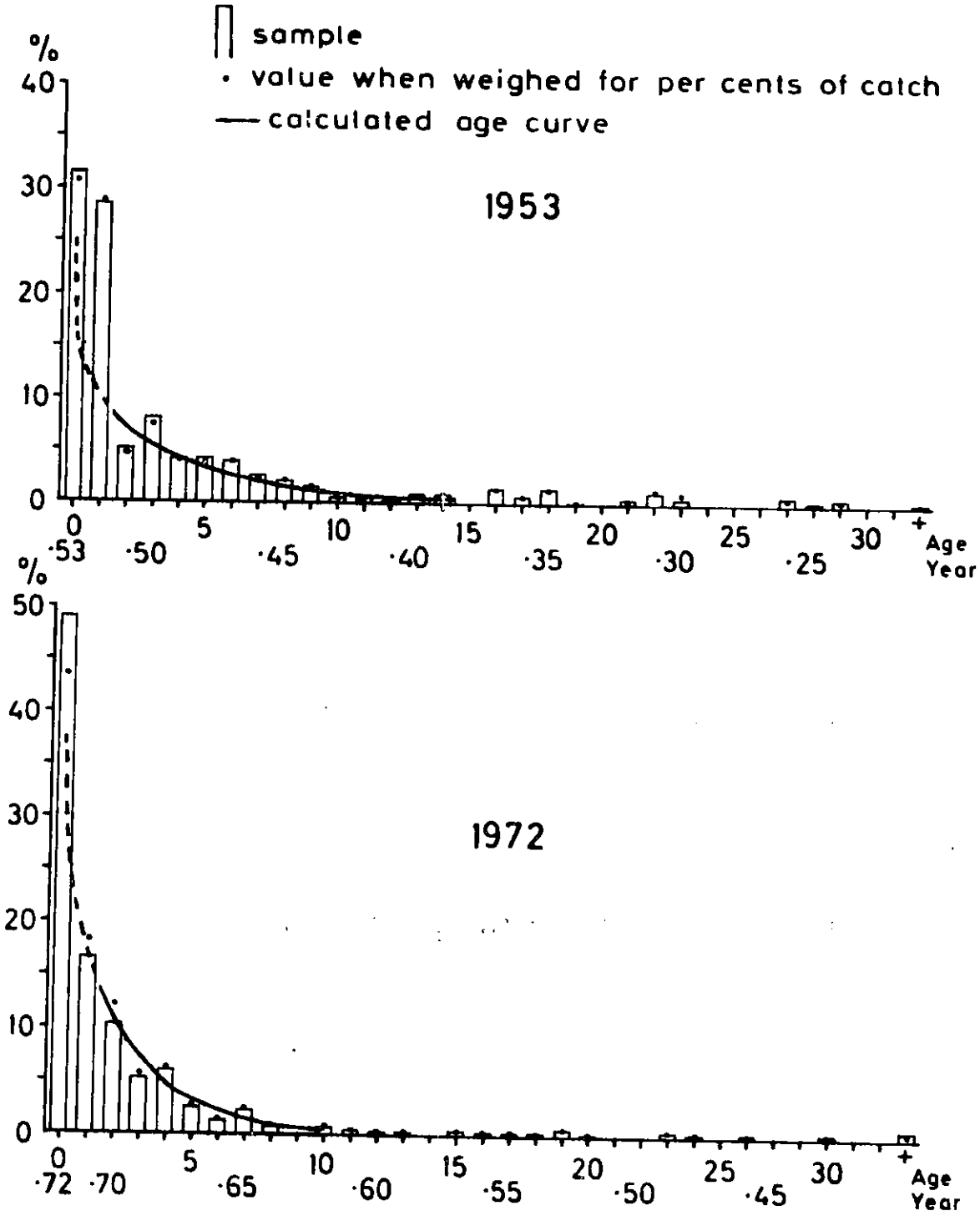

Fig.5 Age composition of harp seals in Upernavik and Umanak districts