

The polar bear hunt in Greenland



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By

Aqqalu Rosing-Asvid



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Eqikkaaneq

Nannut ukiumut pisarineqarsinnaasut qassiunisaat aalajangersarneqanngilaq. Piniarnermili atorlut aalajangersaaffigineqarsimapput soorlulu nannut arnaviat piaraasalu piniarneqarsinnaaneratt immikkut aalajangersaaffigineqarsimasoq. Aalajangersakkat pissutaallutik sumiiffiik piniarfiusoq annertusinngilaq, sumiiffinnili piniarfiusuni imminermi maleruagassat sunniutaat annikippoq.

Nannut pisarineqartut ukiuunerani upernaajuneranilu qimussimik pisarineqartarput, amerliartuinnartulli aasaanerani ukiaaneranilu umiatsiaaqqat atorlugit pisarineqartalerput.

Ukiut qulikkaar qaangiuttut ingerlaneranni Tunumi pisisartakkat amerlassutsimikkut taamaa-

ginnartut 1980-ikkut qiteqqunneranniit Kitaani Avannaanilu pisarineqartartut amerliartorput, taamaani nannut amerliartornerat patsisaasinnaalluni. Avannersuarmut sanilliullugu nannut utoqqaat Illoqqortoormiuni pisarineqartartut amerlaneruppuput; suiaassusaat utoqqaassusaallu eqqarsaatigalugit uumasooqatigiit sinerissami naammattuugassaasut imminnut attuumassuteqanngitsut ilimanarsinnaalluni.

Nannut piniarneqarnerannik nakkutiginninnermut atatillugu pisanik nalunaarsuineq pingaaruteqarlunarpooq - nalunaarsueriaaserli atornerqartoq amigaateqarsinnaasarpoq tamannali iliuuseqarfigineqarsinnaavoq.

Sammenfatning

Der er ingen øvre grænse for den årlige fangst af isbjørne i Grønland. Der er dog begrænsninger for hvad type jagtudstyr der må bruges, og der er restriktioner på fangst af hunbjørne og unger. Disse restriktioner har på en effektivt måde forhindret, at fangerne har forøget deres jagtområde, men inden for det anvendte fangstområde har reglerne kun begrænset effekt.

Som tidligere bliver de fleste isbjørne fanget fra hundslæde om vinteren og foråret, men et stigende antal isbjørne fanges nu om sommeren og efteråret fra joller eller små motorbåde.

Den totale fangst i Østgrønland har været stabil gennem de sidste årtier, men fangsten er siden midten af 1980'erne steget i Central- og Nordgrønland - sandsynligvis fordi der er flere isbjørne i området. Der bliver fanget flere gamle isbjørne i Ittoqqortoormiit end i Avannersuaq, og langs kysten syntes der at være flere udspaltninger af køns- og aldersgrupper.

Fangststatistikken er et vigtigt redskab til brug for forvaltningen af denne art, men det nuværende system fejler i visse situationer, og kan forbedres.

Abstract

The hunt for polar bears (*Ursus maritimus*) in Greenland has no restrictions as to the number of bears that can be killed each year. There are, however, limitations in the type of hunting gear that can be used, as well as restrictions in the hunt of females and cubs. These restrictions effectively prevent the increase of the range of the hunters, but they have only limited effect within the hunting area.

Most polar bears are hunted with dog sledges during winter and spring as in earlier days but an increasing number of bears are caught from small skiffs in summer and fall.

The total yield has been stable in East Greenland during the last decades, whereas Central and Northwest Greenland have experienced an increase since mid 1980's, probably as a result of more bears in the area. More old bears are caught in Ittoqqortoormiit than in Avannersuaq, and along the coast, there seems to be several segregations between sex and age groups.

Catch statistics are an important tool in the management of the species but the present system for registering the polar bear catches does fail in some instances and can be improved.

Introduction

Polar bears have probably been hunted in Greenland for as long as the Inuit have inhabited the island. Today modern rifles execute the final kill, but the majority of the hunts are still likely to involve dogs and sledges, as in earlier times. There is no limit to the number of bears that can be taken but vehicles (including snow mobiles) and boats larger than 40 BRT may not be used in the hunt or as transportation to or from the hunting place. It is not allowed to use poison, any kind of trap, small caliber rifles, shotguns or semi- and fully automatic rifles. In the municipalities Avanersuaq, Upernavik, Ammassalik and Ittoqqortoormiit, cubs up to one year of age and their mothers are protected throughout the year, a rule that applies for mothers and 2

year old cubs in the rest of Greenland. The hunting season for females lasts from September to July, except in Ammassalik, where the hunting season is from October to August. Adult males may be hunted throughout the year (Anon 1994).

These regulations prevent the hunters from improving their efficiency with modern technology, while at the same time allowing a relatively free and uncontrolled hunt in areas where enforcement of the law is difficult anyway. The present paper describes and discusses trends in the yield of polar bears on the basis of available information about the catch numbers and the geographical, seasonal and demographical distribution of the kills along the coast.

Material and methods

Data overview

For each of the described areas a comprehensive overview of the available polar bear trade and catch statistics is given by extraction from the following sources: Data from Disko Bay to Upernavik (1796-1882) is skin purchase extracted by Christian Vibe from "Koloniregnskaberne" and "Ske-matiske indberetninger" and published in his doctoral thesis (1967). Data on skin purchase (1882-1908) are from "Meddelelser fra Direktoratet for den kongelige grønlandske handel" and data for the period 1909-37 are from "Beretninger og kundgørelser vedrørende Kolonierne I Grønland". From 1938 to 1953, data are from "Beretninger vedrørende Grønlands styrelse" and data from 1954 to 1983 are from the official catch statistic ("List of Game"). The period 1984 to 1998 is a mixture of unpublished data collected for the official catch statistic

(1984-87), skin purchase, data from interviews and a sample-collection, data from "Piniarneq" (1993-98) and data from the hunting reports (1995-98) (see below).

The official hunting statistics ("List of Game" and "Piniarneq")

The "List of Game" (Anon 1954-83 & unpublished data 1984-87) is based upon the principle that an appointed person from each settlement kept account of the kills made by all the hunters in his settlement and reported these to the central authorities on a form for each hunter (Kapel & Rosing-Asvid 1995). When such reports for some reason were missing, an estimate of the yield was made based upon "other information". These reports were made for most hunters until mid 1970's, after which the reporting slowly deteriorated and stopped in 1987. "Piniarneq" was initiated in

October 1992 and is still ongoing. The principle of this system is that each hunter, to renew his hunting license, has to report his kills once a year by filling out a form that specifies kills/species/month. This is done in September and the total numbers for a given year are published with a delay of approximately two years. Since 1995, hunters have also been obliged to go to the local office to fill in a hunting report with date, position, sex and approximate age of any killed polar bear.

The purchase of hides

Most polar bear hides from the East Coast of Greenland are sold to a government owned company and their records provide a good minimum estimate of the polar bears caught in the area. The "Royal Greenland Trading Department" (KGH) monopolized this trade until 1953 where Greenland changed status from a Danish colony to a county within the Danish kingdom. Although the fur market was now open for others, KGH continued as the only fur trader in Greenland but the increasing number of Danes working in Greenland is likely to have increased the number of hides that were sold directly to private persons. Shortly after the establishment of a home rule government in Greenland in 1979, a tannery was built in Southwest Greenland (Kalaallit Nunaatta Ammerivik - now also known as Great Greenland). In 1987 it adopted the fur trade and the Greenland Statistical Office (GSK) annually announces their purchases of polar bear hides.

Information from a tissue sampling program

Between 1988 and 1996, the hunters in the municipalities of Ittoqqortoormiit (Scoresby Sund) and Avanersuaq (Thule) were provided with sample bags in order to collect various tissue samples from freshly killed bears. Along with this went a questionnaire about date and position of the kill, hunting method, sex and age category of the bear (young, adult, old), and, for family groups,

the number of cubs and their approximate age. A total of 275 samples from Ittoqqortoormiit and 97 samples from Avanersuaq were collected. Additionally, 39 similar data sets from Ittoqqortoormiit, collected by the Greenland Environmental Research Institute in the period 1983-87, are included in the analysis presented here. For all the samples where a tooth was delivered, an estimated age was determined by counting the annuli in the tooth cementum, according to Calwert and Ramsay (1998).

Interviews and questionnaires

In 1988, three very active polar bear hunters from Ittoqqortoormiit filled in questionnaires about the bears they had hunted. Some of these data are used in the section about the demographic composition of the kills in Ittoqqortoormiit.

In 1989, seventy hunters from Avanersuaq were interviewed about their polar bear hunts. These hunters represented approximately 60% of the hunters in the municipality and close to 100% of the experienced polar bear hunters. The interviews were conducted in Greenlandic and the hunters were asked to give detailed information about time and place of as many polar bear kills as possible. Furthermore, information was collected on sex and approximate size of the bears by categorizing the kills as "small", "medium" or "large". An approximate age was recorded for the cubs and it was noted whether the adult bears had been alone, in a family group, or together with a mate. The hunters also had to name other participants in the hunt.

Later, the notes were summarized for each hunter and the information crosschecked with that of the other hunters. Some hunters only remembered details from the last 2-3 years and complete coverage was only possible for 1988-89. A total data set of 150 polar bear kills from the period 1980-89 was obtained.

In 1990, twenty-one hunters from Upernavik (representing 7-8% of the occupational hunters of the municipality) were interviewed. This provided similar information

about 47 polar bears killed in the period 1984-90. Results from both series of interviews can be seen in more details in Rosing-Asvid & Born (1990).

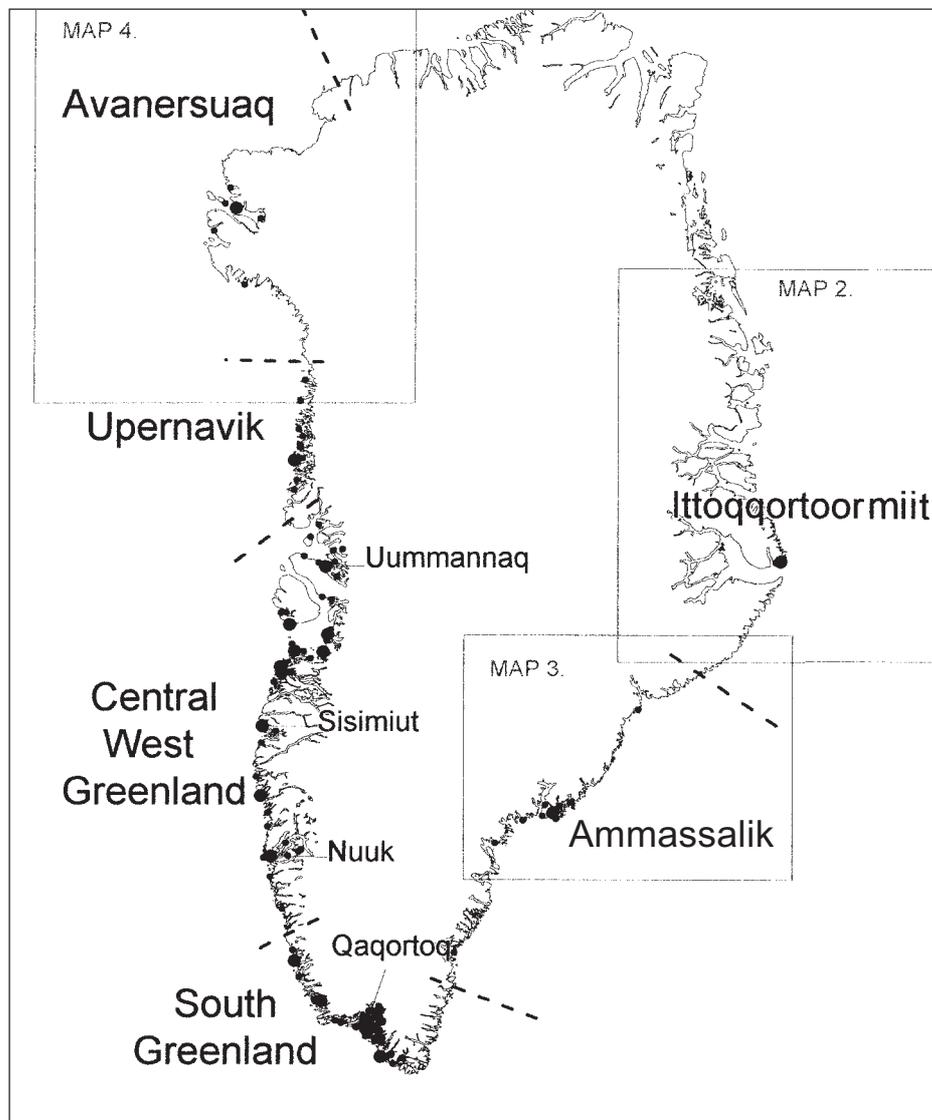


Figure 1. The Greenland coastline with names of areas mentioned in the text (Map 1).

The polar bear hunt in Ittoqqortoormiit

Catch history

Scoresby Sund (later known as Ittoqqortoormiit) was established in 1925 and more than 100 polar bears were taken in the first year. The catches were high for the first 5 years, but then slowly dropped to a level of around 20/year in the beginning of the 1960's. Prices on polar bear hides were very low in the beginning of the 1960's but increased from 500 DKK in 1967 (Sandell & Sandell 2001) to 6.300 DKK in 1972 (Anon. 1973). The catches also increased a little but quickly stabilized with an average around 30/year. (Figure 2).

Trends in the recent years catch numbers

The "List of Game" from 1972-86 has an average of 42 polar bears killed in Ittoqqortoormiit annually (range: 19-69) and "Piniarneq" 1993-98 has an annual average yield of 32 (range: 26-43). However, by comparing data from the tissue sampling program with data about the reported kills, a minimum estimate was obtained for the years 1993-95 that is higher than the reported kills (Figure 3).

Sandell & Sandell (1996) found that 46 bears were killed in 1993 and Sandell et al. (2001) found by interviewing 30 hunters that the catches in the period 1994-98 had been at least; 49, 58, 28, 27 and 50 respectively. Using these numbers, together with our minimum estimate for 1995 and the hide purchases in 1996, an annual average of 52 killed polar bears is obtained for 1993-98 (range: 34-68) (Figure 4).

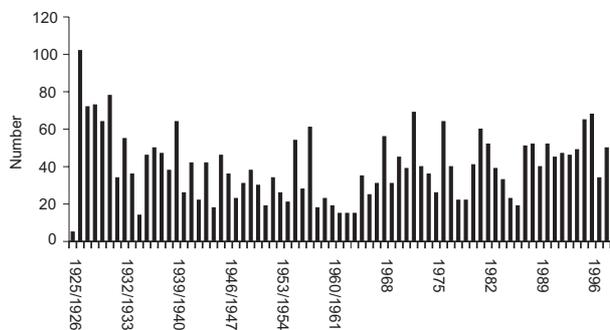


Figure 2. The number of polar bears caught in Ittoqqortoormiit 1925-98 (data is a mixture of hide purchase and catch statistics).

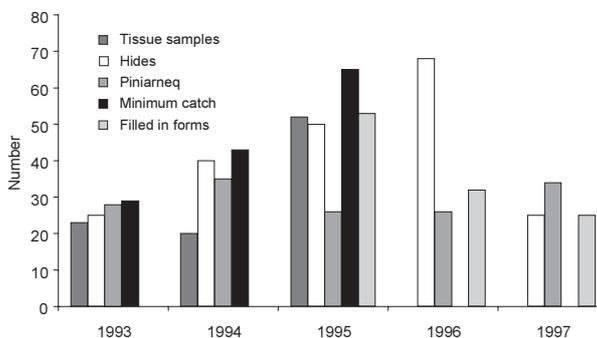


Figure 3. The number of tissue samples collected in Ittoqqortoormiit compared with the number of hides sold to Great Greenland, the reported kills ("Piniarneq") the hunting reports from the period 1993-96 and a minimum yield obtained by combining these datasets.

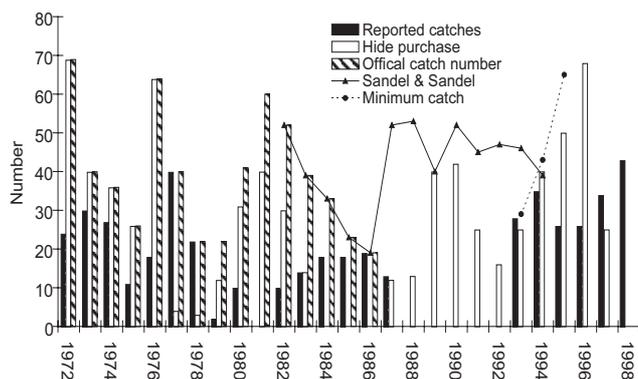


Figure 4. Trends in the number of reported kills of polar bears, the number of hides purchased to KGH/ Great Greenland, the official number of kills, the numbers given by Sandell & Sandell (1996) and the estimated minimum kill given in fig.1.

Hide purchase is the most consistent data set for the period 1972-97. A linear regression analysis between year and hide purchase gives a stable catch of around 31.1 hides without any trend ($y = 0.03x + 31.1$; $r^2 = 0.0002$; $df = 22$; $P = 0.95$).

Comments: Following old East Greenland traditions, the hide of a polar bear belongs to the person who first spots the bear, no matter if he/she participates in the hunt. Most hides are sold and the purchase records for Ittoqqortoormiit and Ammassalik give a good minimum estimate of the total yield, especially after the increased prices in the late 1960's. Sandell & Sandell (1996) studied resource utilization, with special emphasis on the polar bears in Ittoqqortoormiit. From 1972 to 1995, they visited the area each year (with few exceptions), and found the official number of kills

offered by "List of Game" is quite reliable, despite poor reporting in some years. For the period without statistics (1987-92), their notes about the numbers of kills (Sandell & Sandell 1996) are used in Figures 2 and 4. Both their and our data shows that the new official catch statistic, "Piniarneq", fails in some years (see discussion).

The polar bear hunting practice in Ittoqqortoormiit

There are three main areas for polar bear hunts in Ittoqqortoormiit: 1) near the settlements. 2) on the Blossville Coast, south of the settlements. 3) along the coast far north of the settlements (Figure 5).

Kills near the settlements and on the Blossville coast take place in all seasons but the hunting far north of the settlements is only in spring (March-June) (Fig. 6).

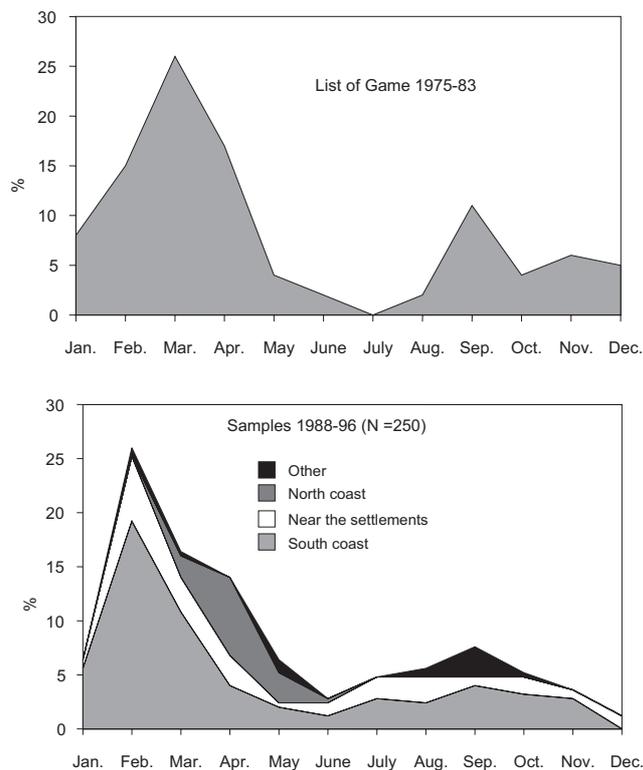


Figure 6a + b. a) The seasonal distribution of all reported polar bear kills in Ittoqqortoormiit reported in the "List of Game" (1975-83) and b) The seasonal distribution of the catches from the sampling program in Ittoqqortoormiit divided by area (1988-96).



Figure 5. The positions of 267 polar bear kills in Ittoqqortoormiit from the period 1983 to 1996 (data from the sampling program).

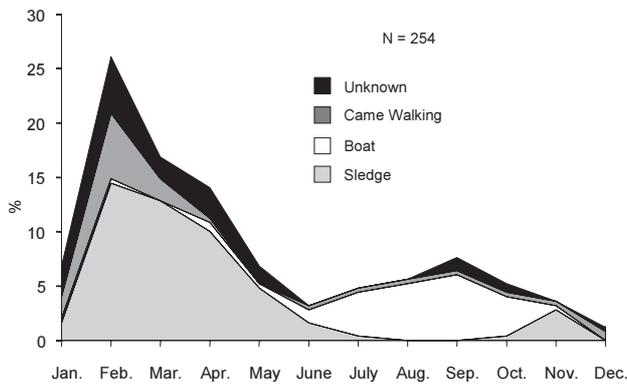


Figure 7. The hunting method in relation to season in Ittoqqortoormiit.

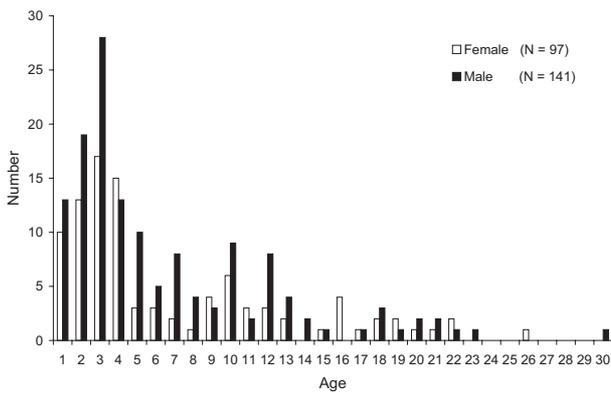


Figure 8. Age composition of 238 polar bears from Ittoqqortoormiit, aged by counting annuli in a premolar tooth.

Occasionally, bears also get shot when they walk into settlements or hunting camps but most kills are made by dog teams actively seeking out polar bears in winter and spring or when an opportunity arises during other hunting activities (Fig. 7). Sometimes small skiffs are taken on the sledge to pick up seals shot from the edge of the ice and occasionally these skiffs are also used to catch polar bears. From late June to late October, 15-17 ft. fiberglass skiffs



A single dog can sometimes slow the bear and allow the sledge to catch up.

with outboard motors replace the sledges. Bears shot near the settlements and on the northern part of the Blosseville coast during this period are usually hunted from boats.

Comments: There is no daylight in December in Ittoqqortoormiit and the samples indicate that only bears that come into town are taken during this month. When the light returns in January, ice has settled in the fjords and hunters can go by dog sledge to the northern part of the Blosseville Coast, where they hunt polar bears on the relatively narrow strip of fast ice that forms in sheltered bays on the otherwise very exposed coastline. Many bears are taken here during February and March, when polar bears from the drifting pack ice seem to be attracted to the land ice. In 1928, a few years after the establishment of the settlement, a total of 52 polar bears moving

Table 1. The demographic distribution of the sample data from the three main areas in Ittoqqortoormiit.

	Adult males	Adult females	Sub adults	Dependent Cubs	Total
North of Ittoqqortoormiit	18	9	8	3	38
Near the settlements	20	18	26	11	75
The Blosseville Coast	56	26	48	16	146
Total	94	53	82	30	259

northward along the Blossville Coast were observed in a period of only four days in March (Petersen 1931). It is likely that these bears and the ones that are hunted nowadays follow the land ice in search of ringed seals and their breeding lairs. At the northern end of the fjord entrance, bears have to pass the settlements to come into the fjord and the polar bear kills peak here in early spring. April provides long days with good ice conditions and some hunters now travel up along the coastline in search for polar bears. These hunts all end before mid-June where the ice condition for dog sledges deteriorate rapidly and fiberglass skiffs replace the sledges.

The demography of the polar bears killed in Ittoqqortoormiit

In 1988, three active polar bear hunters from Ittoqqortoormiit filled in questionnaires about their polar bear kills of which 30 were from the northern area (7 adult males, 14 adult females, 5 subadults and 4 cubs). When these data are pooled with the data from the sampling programme (Table 1), the demographic composition in the northern area differs significantly (*c*-test, *df* = 3, *P* < 0.04) from what is observed further south, primarily due to fewer subadults. Both data sets also show that mating pairs tend to stay on the fjord ice from

Kejser Franz Josephs Fjord to Daneborg, whereas females with cubs concentrate in the coastal area near the mouth of Vega Sound (Fig. 5). Sixteen of the eighteen bears taken on the fjord ice were together with a mate; eight of the eleven bears caught in the Vega Sound area were mothers and cubs. A high concentration of females with cubs in Vega Sound was also found during a tagging study in the area (Vibe 1974). Fourteen bears were tagged near Vega Sound - one adult male two subadults and three adult females with a total of eight cubs (one female had four cubs, of which two were adopted).

The various age and sex categories are more or less equally distributed when catches are categorized by month. Mother-cub pairs had the most biased pattern with 50% caught in February. All groups, however, peaked in February and the low number of mother-cub pairs (*N* = 16) did not represent a significantly different distribution. Bears that walked alone into settlements or hunting camps had a bias toward being very young or very old bears compared to those that were caught by sledge or boat. A tooth for age determination was obtained from a total of 238 bears from Ittoqqortoormiit and their age distribution is shown in Figure 8.

The polar bear hunt in Ammassalik

Catch history

Ammassalik with its 400 inhabitants was discovered in 1884 and a colonization of the area was initiated in 1894. The first skin records are from 1901 and the catches of polar bears were much higher in the beginning of the century than they are today. Especially the period 1903 to 1925 were good years for the polar bear hunt, with a record of 183 hides in the 1920/21 season. After the establishment of Ittoqqortoormiit in 1925, the catches dropped to a lower level of 20-30/year (Fig. 9).

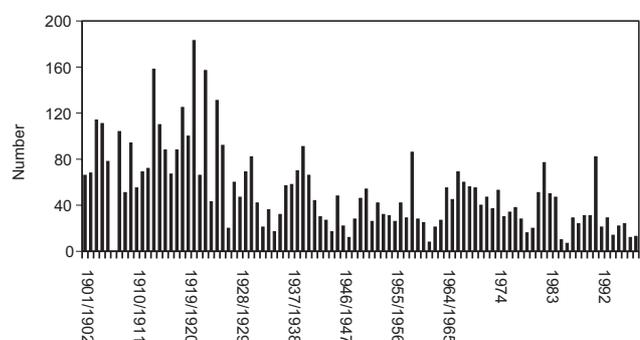


Figure 9. Number of polar bears caught in Ammassalik 1901-98 (data is a mixture of hide purchase and catch statistics).

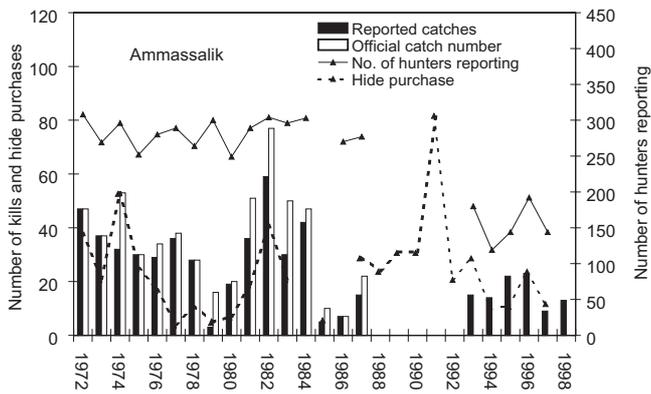


Figure 10. Trends in the number of hunters reporting, reported kills, hide purchases and the official number of kills in the municipality of Ammassalik.



The bear intake a defensive position.

Trends in the recent years catch numbers

The “List of Game” from 1972-86 has an annual average of 39 polar bears caught in Ammassalik district (range: 3-59) “Piniarneq” from 1993-98 has an average of 16 (range: 9-23). Twenty-nine polar bear hides were purchased in 1993, but only 15 bears were reported, so “Piniarneq” might also underreport the number of killed bears in Ammassalik in some years (Fig. 10).

The most consistent data set for the period 1972-97 is the hide purchase and a stable catch of 23.3 hides without any trend was found by linear regression ($y = 0.04x + 23.3$; $r^2 = 0.0004$; $df = 23$; $P = 0.93$).

Comments: The “List of Game” seems to have functioned well in Ammassalik where the number of reports was very constant. The number of kills reported was higher than the number of hide purchased except in two years, but a few extra bears were added to the records in most years based upon “other information”. The five years without other data than skin purchase (1988-92) seem to have been above average with exceptional 82 hides sold in 1991. The new official catch statistic “Piniarneq” seems to have underreported the catch in 1993, but I do not have data to do a more extensive validation of the system in this area.

The polar bear hunting practice in Ammassalik

The polar bear hunt in the municipality of Ammassalik is nowadays concentrated in the areas around the settlements and the outpost camps in the mouth of the Kangerlussuaq Fjord system (Fig. 11.). After 1970 the “List of Game” unfortunately merged the two areas by registering kills made in Kangerlussuaq to the settlement from which the hunter originated. However, there were no hunters in Kangerlussuaq in 1981-82-83. The seasonal distribution of the harvest these years is given in Figure 11., together with the seasonal distribution of the catches from Kangerlussuaq 1986-91, according to Glahder (1995).

No quantitative data are available on hunting methods, but the hunters usually shift from sledges to boats in June. In the Kangerlussuaq area polar bears are hunted by boat until November (Glahder 1995).

Comments: The climate in Ammassalik is milder than in Ittoqqortoormiit, with an ice-free period from late summer to late fall. The fjord ice disappears some weeks earlier than in Ittoqqortoormiit and the formation of fast ice is less. Normally the band of drift ice in Ammassalik is rather narrow compared to further north and most of the large ice pans are broken up

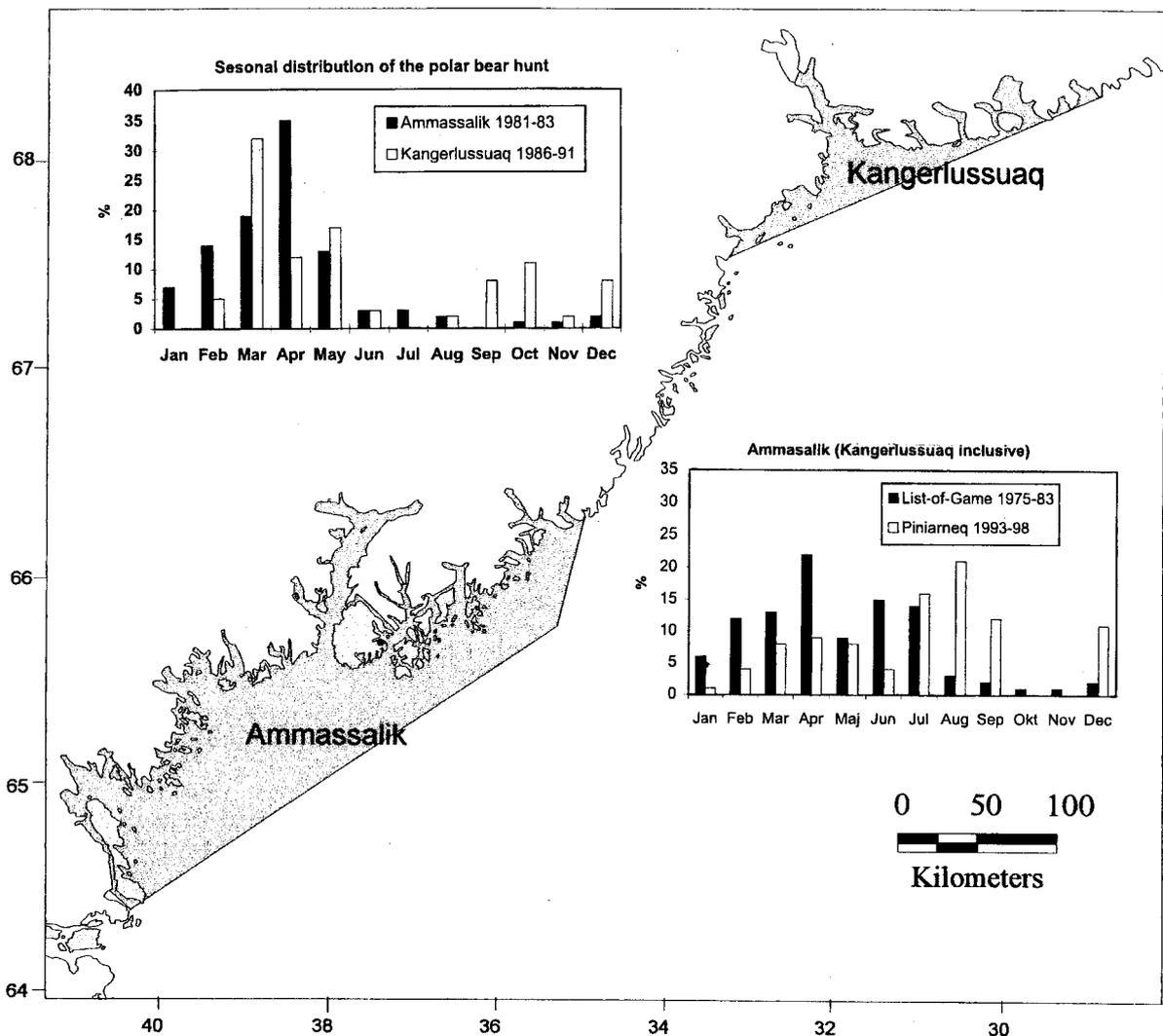


Figure 11. The two main areas for polar bear hunting in Ammassalik district. The top graph shows the seasonal distribution of the catches in the two areas (see text). The bottom graph shows the seasonal distribution of all catches from the Ammassalik district reported to “List of Game” (1975-83) with all catches reported to Piniarneq (1993-98).

into smaller pieces that rarely exceed one kilometer in diameter (Valeur 1995). The Irminger Current, a branch of the warm Golf Current, mixes with the cold East Greenland Current off the coast of Ammassalik, which makes the ice conditions in the area highly unstable and variable from year to year. Most bears around the settlements are killed during the period when fjord ice is present (January-May) and bears in fall are rare around the settlements, whereas approximately 1/3 of the bears from Kangerlussuaq are killed in fall. This indicates that Kangerlussuaq has polar bears all year around, whereas Ammassalik mainly has bears in winter and early spring. According to “Piniarneq” bears taken in

August-September now constitute a higher fraction of the catches (Fig. 11). This new trend is probably due to more and better boats in the area. Hunting trips to Kangerlussuaq for polar bears and narwhales are now common in these months, also in years when no people winter in the area. This has altered the seasonal distribution of the catches (Fig. 11) but it doesn't seem to influence the total number of bears killed.

The demography of the polar bears killed in Ammassalik

No data on the sex and age of the kills are available from this study, but published data from Glahder (1995) and Sandell et

al. (2001) are used to compare the demography of the catches from Ammassalik with data from Ittoqqortoormiit and Avanersuaq (Table 2). This comparison shows that the

proportion of females with cubs was higher in the Kangerlussuaq area than found anywhere else in Greenland.

Table 2. A comparison of the demographic composition of the catches from four areas. Data from Kangerlussuaq and Ammassalik are from Glahder (1995) and Sandell *et al.* (2001) respectively. χ^2 - tests are the distribution in Kangerlussuaq compared with the other areas.

	Independent Males	Independent Females	Dependent Cubs	χ^2 - test
Kangerlussuaq (N = 142)	36%	42%	22%	P = 1
Ammassalik (N = 111)	53%	32%	15%	P = 0.024
Ittoqqortoormiit (N = 168)	53%	32%	15%	P = 0.034
Avanersuaq (N = 155)	58%	31%	11%	P = 0.0004

The polar bear hunt in South Greenland

Catch history

Southwest Greenland seemed to have had a steady supply of polar bears when the skin purchase started in 1800. The period 1876 to 1925 was especially good for the polar bear hunt, with 73 hides in the 1907/08 season as the record. After 1925, the hunt stabilized, with catches lower than 10 as the most common (Fig. 12.).

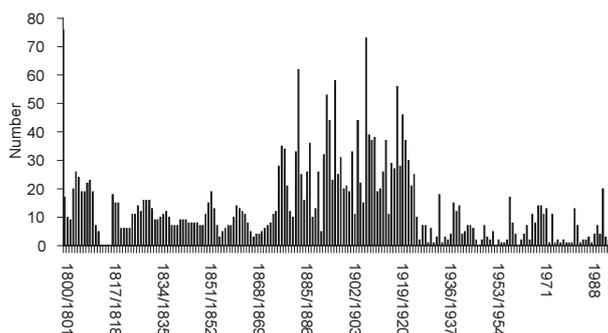


Figure 12. Number of polar bears caught in Southwest Greenland 1800-1998 (data is a mixture of hide purchase and catch statistics).

Trends in the recent years catch numbers

The “List of Game” for 1970-84 has an annual average of 5.3 polar bears (range: 1-14) and “Piniarneq” 1993-97 has an average of 7.5 (range: 2-14). In 1995, however, 12 hides were purchased and only 9 bears reported (Fig. 13)

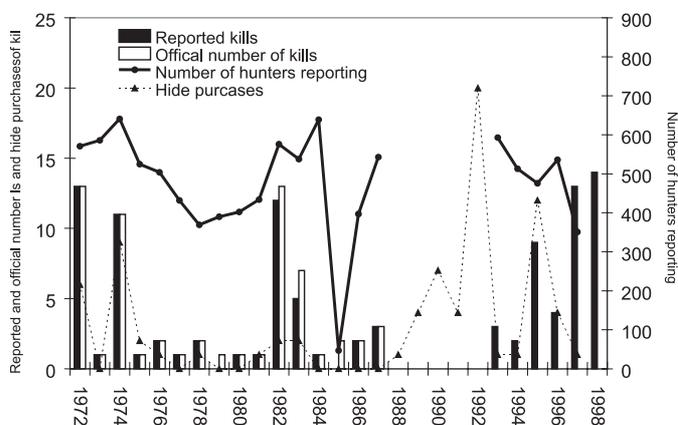


Figure 13. Trends in the number of hunters reporting, hide purchases, reported kills and the official number of kills in South Greenland.

Comments: Polar bears are relatively rare in Southwest Greenland nowadays and there is no tradition for polar bear hunting or for how to share meat and hides, therefore it is most often the one who kills the bear who gets the hide. A polar bear in this area has, since the 1920's, been such an event, that most kills were likely to be registered in the “List-of-Game” where other

information also was included. “Piniarneq” gets more reports from the hunters and should have a better basis than “List of Game” in this area, but the new system seems to face new problems, especially in South- and Central West Greenland (see discussion).

The polar bear hunting-practice in Southwest Greenland

Polar bears reported by hunters from Southwest Greenland used to be bears that came with the drift ice from the East Coast in early spring. In recent years, more bears are caught during summer and fall by hunters or fishermen that travel up along the southern part of the East Coast in small boats (Fig. 14).

Comments: Fjord ice in Southwest Greenland is normal during the coldest winter months, but coastal fast ice is a very rare phenomenon. In late winter and spring, large quantities of drift ice from the East Coast fills the bays and coastal waters, where it usually melts during the summer. Bears that come with this drift ice will sooner or later expose themselves to hunters in this relatively densely populated area.

The demography of the polar bears killed in Southwest Greenland

There are no published data about the

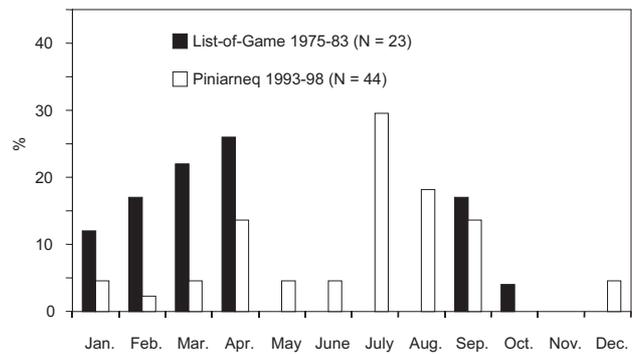


Figure 14. Seasonal distribution of the polar bear kills from South Greenland, according to the “List of Game” 1975-83 and Piniarneq 1993-98.

demographic structure of the polar bears caught in South Greenland, but of 19 polar bears checked for trichinoses by officials in Qaqortoq during 1969-83 (Charles Rose pers. com.). Eight were family groups (two with 2 cubs and one with 1 cub), three were adult single bears (2 males and 1 female) and eight were single young animals (of unknown sex). According to the 13 hunting reports so far made in Southwest Greenland, two were of unknown age and sex, one bear was an adult male and the 10 others were young bears (four female and six males). Pooling these data gives a total of 3 adult males, 3 adult females, 18 subadults and 5 cubs, a distribution that is significantly different from the samples from Ittoqqortoormiit ($\chi^2 = 14.2$; $df = 3$; $P = 0.0026$), due to the high number of subadults.

The polar bear hunt in Central West Greenland

Catch history

Polar bear catches on the West Coast between Nuuk and Upernavik have always been rare events and, if the catch statistics from the latest years are true, we have a new trend for this area (Fig. 15).

Trends in the recent years catch numbers The “List of Game” from 1970-87 has an average of 2 polar bears/year caught along the coast of Central West Greenland from Nuuk

to Uummannaq (range: 0-11), whereas “Piniarneq” 1993-98 has an average of 21 (range: 12-45) (Fig. 16).

Comments: There are several indications of over-reporting in this area (see discussion).

The polar bear hunting-practice in Central West Greenland

Most bears are killed during spring, when the consolidated pack ice in Baffin Bay and

Davis Strait gets close to the Greenland coast. Some bears are killed near the coast, others by hunters searching for walrus and beluga along the edge of the Baffin Bay pack ice. It is not possible to quantify the use of hunting methods in the area, but most bears are probably shot from boats. In the latest years “Piniarneq” has reported several bears from August to October

(Fig. 17), which is very unusual, and most likely to be an error (see discussion).

Comments: The fjord and land ice conditions from Nuuk to Sisimiut are very similar to those further south with open water in most coastal areas, but from Sisimiut to Uummannaq both fjord ice and coastal fast ice is formed in most areas. The drift ice from the East Coast seldom reaches as far north as Nuuk and close to all bears are believed to come from the Baffin Bay/Davis Strait pack ice.

The demography of the polar bears killed in Central West Greenland

The only data on the demographic structure of the bears from Central West Greenland is the information from 13 hunting reports from 1995-98. One of these bears was probably 2-years old, three were young bears, and nine were adult bears, of which four consisted of two mating pairs.

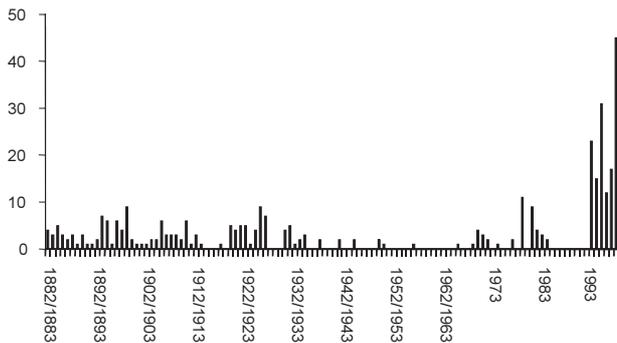


Figure 15. Number of polar bears caught in Central West Greenland (Nuuk-Uummannaq) 1882-1998 (data is a mixture of hide purchase and catch statistics).

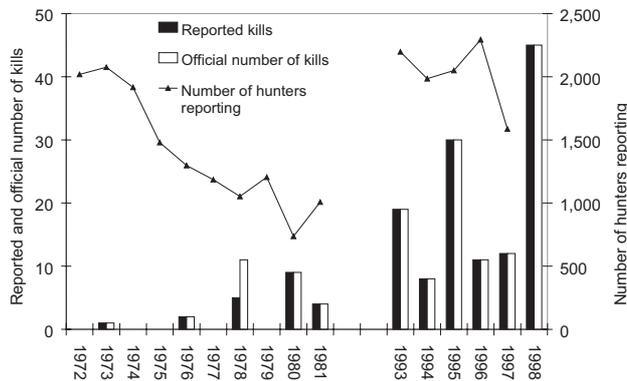


Figure 16. Trends in the reported kills of polar bears, the official number of kills and the number of hunters reporting in Central West Greenland.

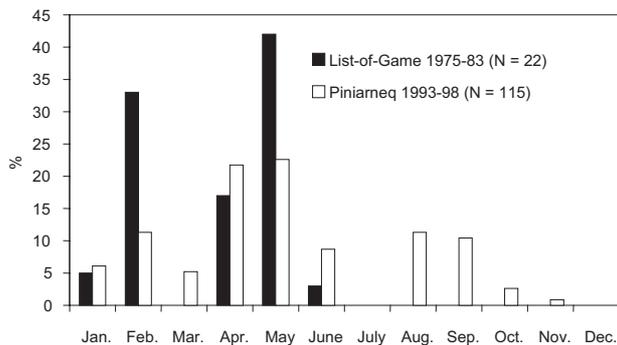


Figure 17. Seasonal distribution of the polar bear kills from Central West Greenland, according to the “List of Game” 1975-83 and Piniarneq 1993-98.

The polar bear hunt in Upernavik

Catch history

The Baffin Bay pack ice comes close to the coast in the northern part of Upernavik district, where polar bears hunts take place on a regular basis. The catches were low during the warm period, 1925 to 1970; they stayed low during the colder 1970's, where the population probably was diminished

after a period with overexploitation of the stock on the Canadian side during the 1960's. In mid 1980's, the catches increased to a level around or slightly higher than the level around the beginning of the last century (Fig. 18).

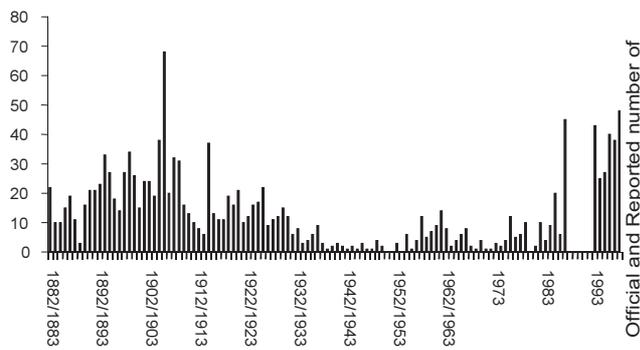


Figure 18. Number of polar bears caught in Upernavik 1882-1998 (data is a mixture of hide purchase and catch statistics).

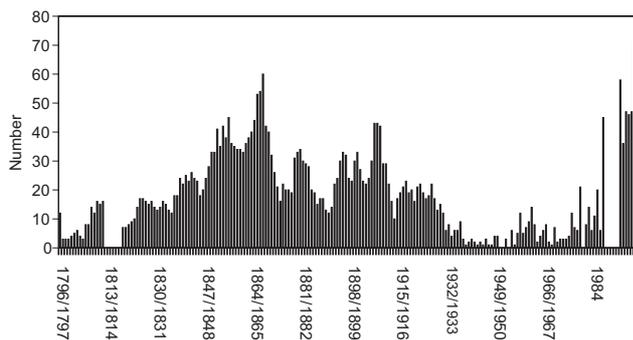


Figure 19. Number of polar bears caught from Disko Bay to Upernavik 1796-1998 (data is a mixture of hide purchase and catch statistics).

The hide purchase statistics goes further back than shown on Figure 18, but for the period 1800 to 1982, I have only been able to come up with the combined data from the area Disko Bay to Upernavik (Fig. 19).

Trends in the recent years catch statistics

According to the "List of Game" for the period 1970-87, an annual average of 9 polar bears were killed in the Upernavik municipality (range: 1-41). "Piniarneq" 1993-98, gives an annual average of 37 (range: 25-48) (Fig. 20).

Comments: The "List-of-Game" has functioned well in Upernavik and in only two of the latest years was the official number of kills adjusted for non-reported bears. During the 1980's many hunters from Upernavik seems to have adopted the tradition from Avanersuaq of wearing polar bear pants and therefore they have also adopted the Avanersuaq tradition of dividing the

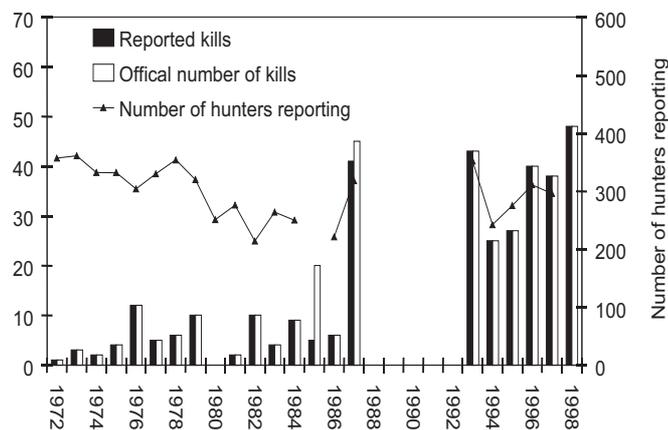


Figure 20. Trends in the number of reported kills of polar bears, the official number of kills and the number of hunters reporting in Upernavik.

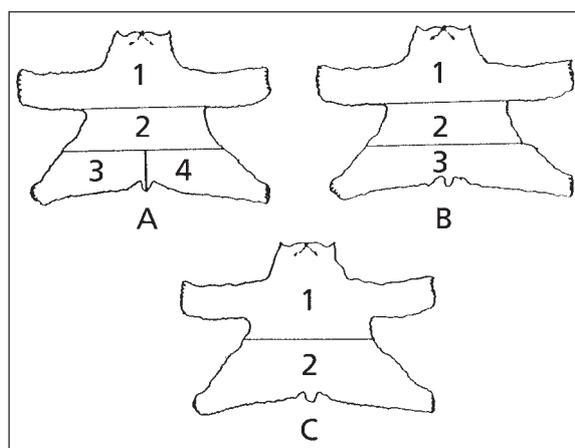


Figure 21. Division of the polar bear hides in Avanersuaq and Upernavik. Most hides are used for polar bear pants. Following the tradition, four hunters get a part of the hide, according to the order in which they arrived to the bear; a fifth hunter only gets a part of the meat.

If four hunters kill a bear, the one who caught up with the bear and kills it gets: Hide part 1 + the skull + meat part (the back and left foreleg). Hunter no. 2 gets: Hide (2) + meat (right foreleg). Hunter no. 3 gets: Hide (3) + meat (one hind leg). Hunter no. 4 gets: Hide (4) + meat (one hind leg). A, B and C shows how the hide is divided if the number of hunters is 4, 3 and 2, respectively.

outcome of a polar bear hunt in (Fig 21) so only few hides has been purchased from Upernavik during the latest decades. Most ringed seal skins, however, are sold to Great Greenland and there is a good correlation between the number of reported ringed seals and the skin purchase. This indicates that "Piniarneq" works well in Upernavik.

The polar bear hunting practice in Upernavik

Several hunters from Upernavik moved to the settlement of Savissivik in Avanersuaq during the 1960's and 1970's and strong family ties now connect these two former relatively separate areas. Back then, there were only few polar bears around Upernavik. The hunt peaked in April and many of these bears were taken during hunting trips by hunters together with new friends or relatives from Avanersuaq (information from the interviews), or on route to or from visits in Savissivik. In the last half of the 1980's, the number of bears caught around Upernavik has increased, especially in the dark months of December and January. Many bears are now found in early spring around the shallow banks off Upernavik (Fig. 24), where many of the bears have been shot in the latest years (Fig. 22). Another new trend, according to "Piniarneq" is that more catches are made from August and September.

Most polar bears are hunted by sledge and the demographic composition obtained is very similar to that from the southern part of Avanersuaq (table 3).

Comments: The ice conditions along the coast of Upernavik are not very different from areas farther south. But the gap between the consolidated pack ice of Baffin Bay and the coastal fast ice is narrowing considerably in the northern part of the district, where a shift from a sub-arctic to a high-arctic marine fauna occurs. The two ice habitats are separated by drift ice that can be crossed here by dog sledge, hereby accessing an area with a high density of bears. According to some of the older hunters the shallow banks off the coast of Upernavik, now have many bears, as compared to their visits back in the 1970's, when not many bears were seen.

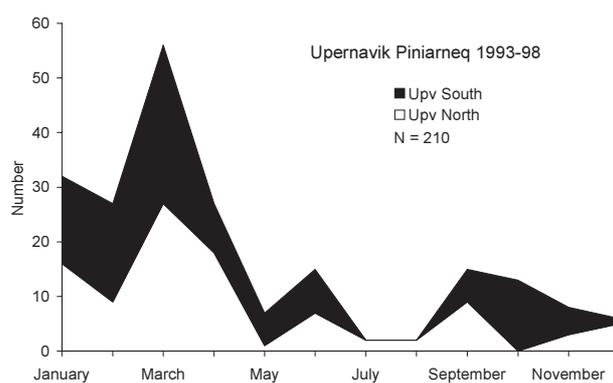
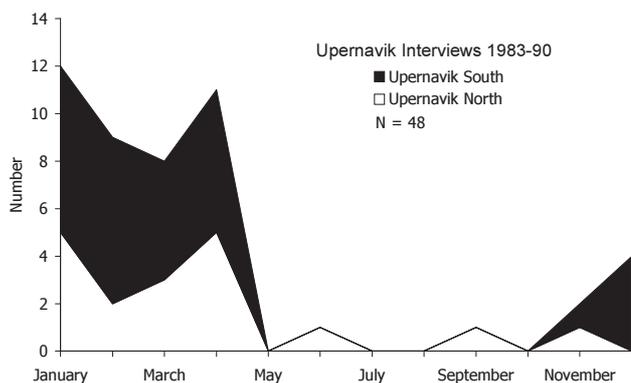
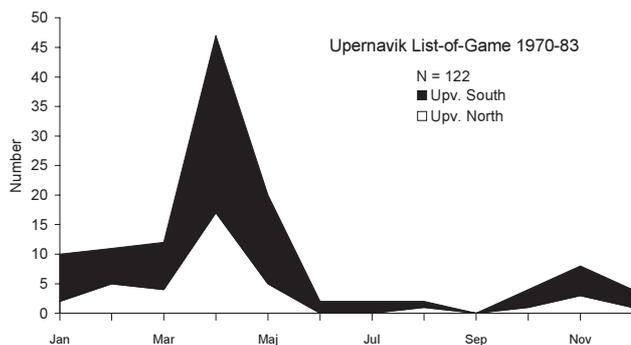


Figure 22. The seasonal distribution of the kills in Upernavik, according to the data from a) "List of Game" 1970-83, b) The interviews 1983-90 and c) "Piniarneq" 1993-98.

The polar bear hunt in Avanersuaq

Catch history

Catch statistics from Avanersuaq are very scarce. Hunters from this area use the polar bear hide to make the traditional polar bear pants and skin purchase statistics give no indication of the number of bears taken. Furthermore, the "List of Game" never functioned properly in this region and it only offers information for some years. Born (1987) estimated, on the basis of information from local hunters, who kills since mid 1970's were in the order of 30 per year. Based on interviews with hunters, Rosing-Asvid & Born (1990) estimated the number of kills in 1988 and 1989 to have been 24 and 48, respectively. Both of these years, however, were said to be unusual. In 1988, the distemper virus killed many of the dogs in the area, thus only few hunters could hunt polar bears that year. On the contrary 1989 was said to have been a year with extraordinarily high numbers of bears and a yield above normal. The average number of kills for the 1980's is, therefore, likely to have been somewhere between the yields of 1988 and 1989, probably close to 30 per year.

Trends in the recent years catch statistics

The "List of Game" has an annual average of 25 polar bears killed in Avanersuaq during 1978-85 (range: 16-35), mostly based on "other information", whereas "Piniarneq" 1993-98 has an average of 29 (range: 22-41) (Fig 23).

The polar bear hunting-practice in Avanersuaq

The polar bear hunt in Avanersuaq can be divided into the following three geographical areas: 1) Kane Basin, 2) The area between Kane Basin and Melville Bay, 3) Melville Bay and the Northeastern part of the consolidated pack ice of Baffin Bay (Fig 24).

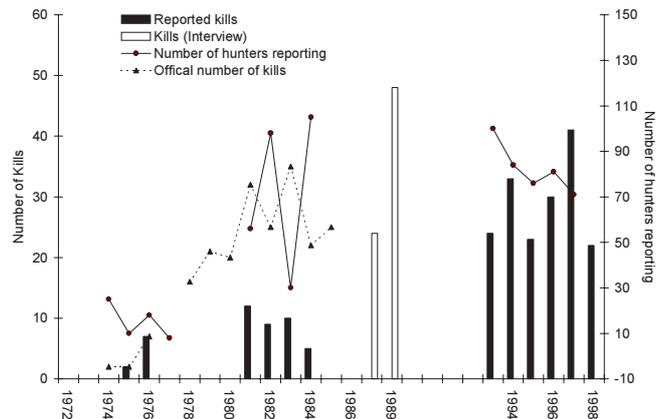


Figure 23. Trends in the reported kills of polar bears, the official number of kills and the number of hunters reporting their kills in Avanersuaq.



Figure 24. The most important areas for polar bear hunting in Avanersuaq and Upernavik. The hatched area is where nearly all catches are done. The reticulated areas are most often searched by the polar bear hunters.



Photo: Aqqalu Rosing-Asvid

Icebergs stranded in Melville Bay.

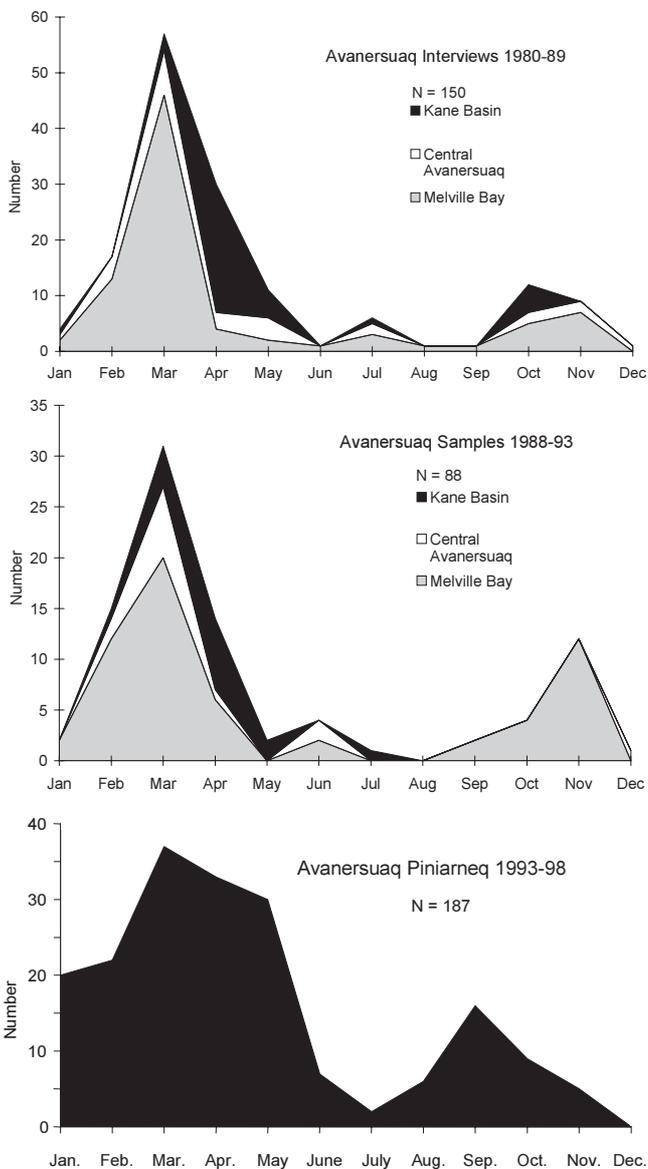


Figure 25 a+b+c. The seasonal distribution of the kills in Avanersuaq according to: a) The interviews (1980-89), b) The sampling program (1988-93) and c) "Piniarneq" 1993-96.

The polar bear hunts in Kane Basin take place mainly in April, along the northern edge of the North Water polynia. According to the interviews, these hunts produce approximately 25% of the harvest in Avanersuaq (5-10 per year). Most bears are likely to be discovered and shot (approximately 5 per year) on the stretch between Kane Basin and Melville Bay due to the limited ice cover and relatively dense traffic. There is no peak season for these kills. The annual number of kills by hunters from Avanersuaq in the Melville Bay/Baffin Bay area is usually around 10-20. Some bears are killed accidentally during other hunting activities or when they enter the Savissivik settlement or a hunting camp, but most bears are killed during active bear hunts in March-April. Some hunters search for polar bears along the ice edge, whereas others cross the gap of drift ice to hunt on the consolidated pack ice in Baffin Bay. The seasonal distribution of the catches in the three areas is shown in Figure 25 a-c.

Comments: The ice in Melville Bay is very stable until it breaks up in July-August. Shallow-water banks along the northern part of the bay are covered with huge icebergs from the glaciers, which dominate the inner part of the Bay. The glacier-front area is believed to be an important breeding ground for both ringed seals and polar bears and it has been protected as a sanctuary since 1980. The gap between the fast ice of Melville Bay and the consolidated pack ice of Baffin Bay can be crossed by dog sledge in March, but when weather warms up in late April the pack ice retreats toward Canada. After that, only few polar bears are left on the remaining ice along the Greenland Coast, where their number will stay low until the ice once again bridges the Baffin Bay gap in November. Some of the hunters from the central part of Avanersuaq participate in the hunt on the consolidated pack ice in Baffin Bay; others travel northward to hunt in the Kane Basin area. Previously, hunters from Avanersuaq also used to hunt polar bears, musk oxen and

caribou on Ellesmere Island. The area was considered a natural part their hunting ground and spending the summer in the eastern part of the island was normal. In 1967 however, Canada restricted the polar bear hunt with quotas and Inuit from Greenland were no longer allowed to hunt bears in Canadian territory. Therefore, the hunt is now restricted to the Greenland side, where the northern edge of the North Water polynia is considered to be the best area. This ice edge usually breaks up in July and, in late June, walrus and narwhals might concentrate at the edge because the ice blocks their migration further north. These large mammals are hunted with small boats; the meat is put in depots on the coast for dog food for the polar bear hunts during the coming spring. Only few polar bears are caught in summertime and close to all kills in Avanersuaq are made from dog sledge.

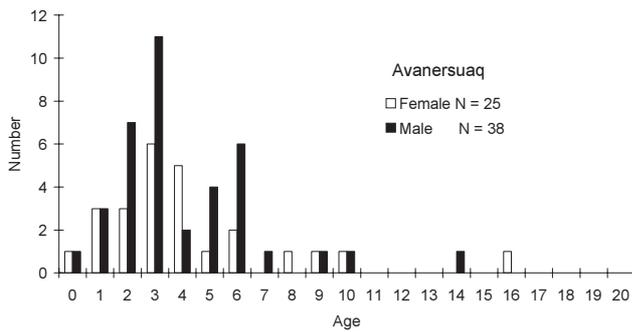


Figure 26. Age composition of 63 polar bears from Avanersuaq, aged by counting annuli in a premolar tooth.

The demography of the catches in Avanersuaq

The kills from Kane Basin include more independent males than other areas, but the data sets from the interviews and the samples have to be pooled to make the sex-/age composition in the northern area significantly different from that of central and southern Avanersuaq ($\chi^2 = 9.012$; $df = 2$; $P = 0.01$) (see Table 3)

Only four of the fifty-three aged bears from Avanersuaq were more than 10 years old (Fig. 26), whereas 28 of the aged bears from Ittoqqortoormiit ($N = 122$) were older than 10 years (Fig. 6) (Two-sided Fisher's exact test $P = 0.02$).



Polar bear pants and "women kamiks" bleaching in the sun.

Table 3. The demographic composition of polar bear kills according to data from the interviewed hunters (most kills were from 1982-89), and the tissue sampling program (kills from 1988-1996).

Area	Datasource	Independent Males	Independent Females	Dependent Cubs
Kane Basin	Interviews (N = 38)	71%	24%	5%
	Samples (N = 13)	76%	24%	0%
Kane Basin to Melville Bay	Interviews (N = 27)	52%	37%	11%
	Samples (N = 17)	39%	46%	15%
Melville Bay/Baffin Bay	Interviews (N = 90)	55%	32%	13%
	Samples (N = 63)	46%	33%	21%
Avanersuaq	Interviews (N = 155)	58%	31%	11%
Total	Samples (N = 93)	49%	33%	18%
Upernavik	Interviews (N = 47)	62%	26%	13%

Discussion

The trends in catch number and the reliability of the catch statistics

When comparing the reported polar bear kills from "Piniarneq" with "other information", it becomes clear that not all killed polar bears are reported. Unlike the previous system ("List of Game") "other information" is not used to adjust or improve the official number of kills. This is a serious weakness, which can easily give misleading numbers. This is especially true when few hunters account for most of the kills, as is the case in Ittoqqortoormiit. Of the 275 tissue samples we collected in the municipality, half of them came from only 5 hunters, and two of those delivered 38% of the samples. However, as the only place in Greenland, many hunters in Ittoqqortoormiit filled in "hunting reports" at the municipality office when this became obligatory in 1995. In the first year, the number of forms filled in was twice as high as the number of bears reported through "Piniarneq" but, in 1997, the forms accounted for only 80% of the kills reported. It is not unlikely that the high number of reports in the first year had something to do with the fact that samples for the tissue sampling program (that ended in 1996) were delivered and paid for at the same office where the forms had to be filled in.

Hunters reporting to "Piniarneq" have to fill in their kills of various animals in a table that lists all game. Simple errors like ringed seals reported as walruses or polar bears occur. These kinds of errors are negligible for species where the annual yield is several thousand, but a few seals or birds misplaced as polar bears can have a great impact on the statistics. In some cases, direct questioning of the hunter checks the kills, but checking the data is not a standard procedure and some over-reporting is found in most of the species where the annual harvest is low. This is most likely to occur

in South and Central West Greenland where more than 80 % of the hunters live and where the number of polar bear kills is low.

Another type of error occurs because the hunter does not have to report to "Piniarneq" where the bear was shot. Most polar bears are killed outside Central Greenland and if a hunter from here shoots a bear during a visit in Northwest or East Greenland, this kill will be assigned to the municipality, in which he lives and thus misplaced. These errors should be avoided by the obligatory hunting reports, but so far this system has only covered a low fraction of the bears reported through "Piniarneq". The number of polar bear kills reported in Central Greenland might be overestimated with this new reporting system, however, the trend toward more polar bears caught in West Greenland since the mid 1980'es is undoubtedly true. For the period 1970-87 the reported catches only averaged 2/year in Central West Greenland, which is less than reported through the medias the latest years or by the forms that for some kills have been filled in at the local offices since 1995. The interviewed hunters from Upernavik also reported a marked increase in the number of polar bears in the area since mid 1980's. On the East Coast there is a high annual variability in the catches, but there seems to be no overall trend in the catches since the drop that occurred during the 1920's.

Trends in the hunting practice and the effect of hunting restrictions

The relatively free and intensive hunt within the range of the hunters can only be sustained if polar bears continue to immigrate from elsewhere. The same is true for many species of whales, seals and birds. Most Inuit settlements are placed in subarctic areas or near polynias, where open water creates an important wintering area

for many marine mammal species of the high arctic and an important summerfeeding area for a number of boreal species. The production from a huge area can thus be harvested here and this favourable game condition has made permanent settlements possible for a relatively high number of people. For many species the areas will be a sink that requires net immigration from neighbouring areas to keep the hunt going. It is likely that a continuous hunt during many decades has created an equilibrium with the surplus production of polar bears from the Northeast Greenland National Park and adjacent areas on the East Coast and The Baffin Bay and adjacent waters on the West Coast.

The population of polar bears hunted in West Greenland is also hunted in Canada, especially after the establishment of several settlements along Baffin Island in the 1950's and 1960's. It was probably severely over-harvested, especially when the snowmobile was introduced in the late 1960's (Urquhart & Schweinsburg 1984). A quota system was imposed in 1968 and the increased numbers of polar bears caught in West Greenland in the beginning of the 1980's (making the catches of the same magnitude as in earlier days) is probably due to the recovery of the population.

On the East Coast, the establishment of Ittoqqortoormiit in 1925 did not amplify the total harvest. On the contrary the total number of polar bears catches from this population declined. The few families that moved to Ittoqqortoormiit killed more than 100 polar bears during their first year, where after the average number slowly dropped to around 30-40 per year. At the same time, the number of polar bear catches dropped dramatically in both Ammassalik and Southwest Greenland, where the total annual harvest was more than a hundred in the beginning of the century. The total harvest from the East Coast population decreased to around 80/year and has now been stable for more than 50 years.

This new level of polar bears in the area is likely to be a consequence of the dramatic warming and decrease in the amount of ice in the Greenland Sea, which took place in the beginning of the previous century.

The polar bear hunt in Greenland covers only a fraction of the range of the polar bear populations. On the West Coast this fraction is only a tinny strip of ice and the Canadian catch on this population, which is approximately 3 times larger is regulated by a quota system that takes into account the catches in West Greenland.

The present restrictions on the East Coast, especially the ban on the use of snowmobiles are likely to limit the range of the hunters and, thereby, the number of bears they can access. The ban on shooting mothers with cubs is also likely to save some bears; the ban on killing females during the summer is probably less important. This only concerns the few bears that have survived the spring hunt in the area. These bears are likely to be killed during the fall anyway, due to the increased number of small, fast boats. These boats, with a strong hull and lots of horsepower, can travel through new ice and have increased the range of the hunters substantially during the short days in fall. This has resulted in an increase in the number of kills for most game during this season. A higher fraction of bears are now caught in August and September, but the total number of bears killed has not increased nor have the boats increased the overall range of the hunters, which is largest in winter.

The demographical composition of the killed bears

There are significantly more old bears (10+ years) in the samples from Ittoqqortoormiit than in the samples from Avanersuaq and the fraction of young bears in Southwest Greenland is also significantly higher than in Ittoqqortoormiit. There are probably many reasons for these differences, but one im-

portant factor might be the distance from the summer habitat, which is the center for the seasonal pulse of dispersion. The bears that are killed in Northwest Greenland have their summer area near the East Canadian Coast, from where a yearly migration of bears to and from Greenland takes place. The bears that come to Greenland from Canada have to actively walk the distance and it is likely that old bears prefer a more stationary life in more stable and predictable ice conditions. For the bears that end up in Southwest Greenland, the migration has been north - south directed and these bears are also caught at the edge of the habitat.

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Reference

- Anon., 1954-87.
Summaries of "Lists of Game" until 1984 by the Danish ministry of Greenland, after 1985 by a ministry under the Home Rule Government.
- Anon., 1973.
Grønland 1971-72. Årsbetretning udarbejdet af Ministeriet for Grønland.
- Anon., 1994.
Hjemmestyrets bekendtgørelse nr. 20 af 11. maj 1994 om fangst af isbjørne i Grønland.
- Born, E.W., 1987.
Aspects of present-day maritime subsistence hunting in the Thule area, Northwest Greenland, p. 109-132. In: L. Hacquebord & R. Vaughan (eds). *Between Greenland and America. Cross-cultural contacts and the environment in Baffin Bay area. Works of the Arctic Centre No. 10.* University of Groningen, the Netherlands: 151 pp.
- Calvert, W. & M.A. Ramsay, 1998.
Evaluation of age determination of polar bears by counts of cementum growth layer groups. *Ursus* 10: 449-453.
- Glahder, C., 1995.
Hunting in Kangerlussuaq, East Greenland, 1951-1991. An assessment of local knowledge. *Meddr Grønland, Man & Soc. (Biosci., Geosci.)* 19. 1995.
- Kapel, F.O. & A. Rosing-Asvid, 1995.
Sea Hunting Statistics for Greenland 1993 and 1994, According to a New System of Collecting Information, compared to the Previous List-of-Game. NAFO SCR Doc. 95/49, Serial No. N2560 (13 pages; 8 Tables; 4 Figures).
- Petersen, A., 1931.
Fortgesetzte Beiträge zur Kenntnis der saugertier- und vogelfauna der Östküste Grönlands. *Meddr Grønland* 77 (5): 344-506.
- Rosing-Asvid, A. & E.W. Born, 1990.
Fangst af isbjørn (*Ursus maritimus*) i Avanersuaq og Upernavik kommuner: en interviewundersøgelse. With english summary. Teknisk rapport – Grønlands Hjemmestyre, Miljø- og Naturforvaltning. Rapport nr. 23 – december 1990: 64 pp.
- Sandell, H. & B. Sandell, 1996.
Polar bear hunting and hunters in Ittoqqortoormiit/Scoresbysund, NE Greenland. *Arctic Anthropology* Vol. 33, 2: 77-93.
- Sandell, H.T., B. Sandell, E.W. Born, R. Dietz & C. Sonne-Hansen, 2001.
Isbjørne i Østgrønland. En interviewundersøgelse om forekomst og fangst, 1999. Teknisk rapport nr. 40, Pinngortitaleriffik, Grønlands Naturinstitut.
- Urquhart D.R. & R.E. Schweinsburg, 1984.
Life history and known distribution of polar bear in the Northwest Territories up to 1981. Northwest Territories Renewable Resources Publication.
- Valeur, H., 1995.
Havisen omkring Grønland. In: Gregersen S. (ed). *Grønlands Fysiske Natur: 65-80.* Rhodos København.
- Vibe, C., 1967.
Arctic Animals in relation to climatic fluctuations. *Meddr Grønland* Bd. 170, No. 5. 227 pp.
- Vibe, C., 1974.
Report on the Second Danish Polar Bear Expedition to North East Greenland 1974. (A field report).

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- Nr. 17 Kalaallit Nunaanni aalisakkat, kinguppaat, assagiarsuit uiluiillu – pisuussutinut pingaarutilinnut tunngatillugu killiffik 1. oktober 1998/Grønlandske fisk, rejer, krabber og muslinger – en status over vigtige ressourcer, oktober 1998. Siegstad, H. et al., 1998.
- Nr. 18 Langsigtet monitoringsplan for lomvier i Grønland. Falk, K. & K. Kampp. 1998.
- Nr. 19 Kalaallit Nunaata kitaani saattussat (*Chionoecetes opilio*) naatsorsorneqarnerat aamma uumassusillit sigut siunnersuineq 1999-imi/Bestandsstatus af krabber ved Vestgrønland og biologisk rådgivning for 1999. Burmeister, A.D. 1998.
- Nr. 20 Pisuussutit uumassusillit pillugit isumasioqatigiinneq/Seminar om de levende ressourcer. Rydahl, K. (ed.) & I. Egede. 1998.
- Nr. 21 Avannersuarmi 1998-mi miternik kisitsineq/Ederfugleoptællinger i Avannersuaq 1998. Christensen, K.D. & K. Falk, februar 1999.
- Nr. 22 Kalaallit Nunaata Kitaani saattuaqassusianik (*Chionoecetes opilio*) killiffiliineq kiisalu biologit 2000-imit inassuteqarnerat/Bestandsstatus af krabber (*Chionoecetes opilio*) ved Vestgrønland og biologisk rådgivning for 2000. Burmeister, A.D. 2000.
- Nr. 23 Spættet sæl i Kangerlussuaq/Søndre Strømfjord. Lisborg, T.D. & J. Teilmann 1999.
- Nr. 24 Flytællinger af fugle og havpattedyr i Vestgrønland 1998. Heide-Jørgensen, M.P., M. Acquarone & F.R. Merkel 1999.
- Nr. 25 Polarlomvien i Disko Bugt og det sydlige Upernavik, 1998 - bestandsopgørelse og grundlag for fremtidig monitoring i lomviebestanden. Merkel, F.R., A.S. Frich & P. Hangaard 1999.
- Nr. 26 A photographic survey of walrus (*Odobenus rosmarus*) at the Sandøen haul-out (Young Sund, eastern Greenland) in 1998. Born, E.W. & T.B. Berg 1999.
- Nr. 27 Grønlands Biodiversitet – et landestudie. Jensen, D.B. (ed.) 1999.
- Nr. 28 The caribou harvest in west greenland, 1995-98. Sex, age and condition of animals based on hunter reports. Loison, A., C. Cuyler, J. Linnell & A. Landa 2000.
- Nr. 29 Naturbeskyttelse i Grønland. Due, R. & T. Ingerslev 2000.
- Nr. 30 Omplantning af kammuslinger, *Clamys islandica*, ved Nuuk. Engelstof, J.J. 2000.
- Nr. 31 Rensdyr og moskusokser i Inglefield Land, Nord-vestgrønland. Landa, A., S.R. Jeremiassen & R. Andersen 2000.
- Nr. 32 Monitoring af lomviekolonierne i Sydgrønland, 1999. Falk, K., K. Kampp & F.R. Merkel 2000.
- Nr. 33 Er rensdyrene på Inglefield Land mest beslægtet med de vestgrønlandske rener eller Peary rener? Landa, A., P. Gravlund, C. Cuyler & S.R. Jeremiassen 2000.
- Nr. 34 The scientific basic for managing the sustainable harvest of caribou and muskoxen in Greenland for the 21st century: an evaluation and agenda. Linnell, J.D.C., C. Cuyler, A. Loison, P.M. Lund, K.G. Motzfeldt, T. Ingerslev & A. Landa 2000.
- Nr. 35 Qilalukkat qaortat pillugit nalunaarusiaq. Qilalukkat qaortat pillugit ilisimatuussutsikkut ilisimasat pillugit Kalaallit Nunaanni piniartunut nalunaarusiaq/Hvidbog om hvidhvaler. Rapport til fangerne i Grønland om den videnskabelige viden om hvidhvaler. Rydahl, K. & M.P. Heide-Jørgensen 2001.
- Nr. 36 Græsningsvurdering af dværgbuskheder i Eqaqut ilorliit og Qasigianguit, i Ameralikfjord, jagtområde Kujataa. Lund, P.M., E.S. Hansen & C. Bay 2000.
- Nr. 37 Fødevalg hos rensdyr i Akia og nær Kangerlussuaq, Vestgrønland, vinteren 1996/97. Lund, P.M., E. Gaare, Ø. Holand & K.G. Motzfeldt 2000.
- Nr. 38 Lomvien i Grønland: mulige effekter af forskellige bestandspåvirkende faktorer, og praktiske grænser for ressourceudnyttelse. Falk, K. & K. Kampp 2001.
- Nr. 39 Kalaallit nunaata kujataani, Vatnahverfimi nuna qarajallernikup nunap assiliorneqarnera/Kortlægning af erosionen i Vatnahverfi, Sydgrønland. Jónsson, Á. & A.B. Thorsteinsdóttir 2001.
- Nr. 40 Isbjørne i Østgrønland. En interviewundersøgelse om forekomst og fangst, 1999. Sandell, H.T., B. Sandell, E.W. Born, R. Dietz & C. Sonne-Hansen 2001.
- Nr. 41 Overgrown Hooves from Muskoxen (*Ovibos moschatus*) of Kangaarsuk (Kap Atholl) Northwest Greenland. Cuyler, C. & H.S. Mølgaard 2002.
- Nr. 42 Status of the Kangerlussuaq-Sisimiut caribou (*Rangifer tarandus groenlandicus*) population in 2000, West Greenland. C., Cuyler, M. Rosing, J.D.C. Linnell, A. Loison, T. Ingerslev & A. Landa 2002.
- Nr. 43 Ederfugleoptællinger i Ilulissat, Uummannaq og Upernavik Kommuner, 1998-2001. F.R. Merkel, 2002.
- Nr. 44 Kommuneqarfinni Ilulissani, Uummannaq Upernavimmilu mitit kisinneqartarnissaannut atatillugu siunissamat ungasinnerusumut atuuttussatut pilersaarut - ilitersuineq tunuliaqutaasorlu/Langsigtet overvågningsprogram for ederfuglen i Ilulissat, Uummannaq og Upernavik Kommuner - vejledning og baggrund. F.R. Merkel & S.S. Nielsen 2002.