WHITE PAPER ON MANAGEMENT AND UTILIZATION OF LARGE WHALES IN GREENLAND

THE GOVERNMENT OF GREENLAND
MINISTRY OF FISHERIES, HUNTING & AGRICULTURE
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Foreword by Honourable Minister of Fisheries, Hunting & Agriculture Mrs Ane Hansen:

The term *Aboriginal Subsistence Whaling* carries out an image of timelessness, of people trapped in the past, living in poverty and risking their lives in order to survive by hunting whales with primitive tools. The truth is that we have moved a long way since whaling by aborigines was first given a special status in 1931 by the International Convention for the Regulation of Whaling (ICRW) that preceded the IWC. Denmark signed the ICRW 23th of May 1950 and has on behalf of the kingdom been an active partner in the organisation ever since.

The aim of this document is to give an overview of the hunting for large whales in Greenland as it is done today.

The document includes:

- A brief review of our long whaling history
- An update of the current status of the stocks of large whales found around Greenland
- A summary of our legislation and monitoring system regarding hunting of large whales
- An explanation of our work aimed at improving the welfare aspects of the hunt, with updated statistics
- A discussion of our current need of whale meat and our motivation for whaling
- A mention of our future plans regarding hunting of large whales.

Since the last half of the 20th century, Greenland has gone through enormous changes. We have become a relatively modern nation that depends to a large degree on fishing and hunting. We have always regarded whales as a natural resource, and sustainable whaling is vital for our culture and for our local economy. Greenland needs the fresh meat from large whales for food security, too.

We make efforts to keep up with technology and to train our hunters in order to ensure that large whales are killed as humanely and effectively as possible, while at the same time taking into consideration the safety of our crews.

Currently, West Greenland has an aboriginal subsistence quota of 178 minke whales, 10 fin whales, 2 bowhead whales and 9 humpback whales per year according to the Commissions decisions in 2007 and 2010. This quota brings approximately 570 tons of edible products from large whales to our people. However, the IWC has based on documentation from Greenland adopted the estimated amount of whale meat required from large whales to satisfy West Greenland's need to be 670 tons/year. Thus, we are operating with 100 tons of meat less of what has been approved in order to satisfy our yearly need. We would like to find a solution

to this problem in the form of quotas of fin and humpback whales following the recommendations from the Scientific Committee.

I hope that this paper will give the reader a better understanding of the hunting of large whales in our modern and globalised Greenland of today. We need this understanding in order to obtain international approval for the continuation of sustainable catches of large whales in future years.

Inussiarnersumik Inuulluaqqusillunga
Best regards

Ane Hansen
Nuuk, May 2012

The Inuit of Kalaallit Nunaat would deeply appreciate your understanding and your support to protect our way of life and culture.
Qujanaq

Humpback whale in Nuuk fjord, Greenland. (Photo: Inunnguaq Mulvad Jessen).

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1. Summary

1. Introduction:
Within the IWC context, Greenland's hunt of large whales falls in the category of Aboriginal Subsistence Whaling (ASW) together with the whaling of the Russian Federation, St. Vincent and The Grenadines and the USA.

For aboriginal subsistence whaling the IWC has the following objectives:

- ensure risks of extinction not seriously increased (highest priority);
- enable harvests in perpetuity appropriate to cultural and nutritional requirements;
- maintain stocks at highest net recruitment level and if below that ensure they move towards it.

The Greenland hunt for large whales respects those objectives.

2. Historical overview:
The ancestors of the modern Greenlanders that migrated from Arctic Canada at the turn of the first millennium were skilled hunters of bowhead and humpback whales. These Thule Inuit brought with them specialized tools used in whaling, which included the *umiaq* skin boat, distinctive whaling harpoons made of whalebone, floats, hunting lines and the *atallaaq*. The *atallaaq* was a dry suit made of waterproof seal skin that allowed the hunters to crawl upon the back of the whale in order to deliver the final strike and to aid in flensing.

The hunting of large whales is still today a vital component of everyday life and culture in Greenland. It is an important part of the Greenland food security system and provides a significant amount of nutritious food and income to families living in the cities as well as in remote coastal communities. The baleen whales are important species; they are hunted in every part of Greenland as an activity from small boats or by the use of fishing vessels with harpoon canons.

Therefore, whaling and Greenland are inseparable. There are still parts of Greenland where whaling is one of the very important component of people's livelihood, combined with other forms of hunting. Whaling acts also as a supplement to fishing activities and is an economic buffer for families when no other income sources are available. It is documented that whale meat and other whale products such as organs, blubber and *mattak* are a vital source of proteins and omega-3 fatty acids. So what may not be so obvious for everyone else is that consuming whale meat has huge advantages for the environment, for the health of *Kalaallit* - Inuit in Greenland and as food security.

3. Status of large whales around Greenland:
There are, all together, 15 species of whales to be found in the waters of Greenland. Of the large whales can be mentioned five species of the family balenopteridae, or rorquals, which

can be regularly found in Greenland waters: common minke whale (*Balaenoptera acutorostrata*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae)*, sei whale (*Balaenoptera borealis*) and blue whale (*Balaenoptera musculus*). All five species migrate to southern breeding grounds during the winter and return to feed in the ice-free waters of Greenland during summer. Two species from the family balaenidae, or right whales, can also be seen in Greenland waters: the North Atlantic right whale (*Eubalaena glacialis*) and the bowhead whale (*Balaena mysticetus*). The North Atlantic right whale is highly endangered. The bowhead whale can be found in Disko Bay and adjacent waters from around February until the break-up of the ice in April or May. Bowhead whales are sometimes seen in Northeast Greenland. The last species of large whale found in Greenland waters is the sperm whale (*Physeter macrocephalus)*, from the physeteridae family. Sperm whales are relatively abundant in deep waters of both West and East Greenland.

In order to estimate the abundance of large whales, the Greenland Institute of Natural Resources carried out two summer surveys in September 2005 and one winter survey in March and April 2006. The ship survey of 2005 yielded abundance estimates that supported the results of the aerial survey in West Greenland. In addition, the ship survey provided estimates of minke, fin, humpback and sei whales for East Greenland. Blue and right whales were observed in East Greenland, but the sample size was not large enough to derive abundance estimates.

Earlier abundance estimates of large whales in Greenland waters include a series of aerial surveys carried out between 1983 and 1993, photo-identification surveys of humpback whales from 1988 to 1993 and aerial photographic surveys from 2002 and 2004.

4. Regulation and Monitoring:

In Greenland, there is no private ownership of land, sea or living resources. Hunting grounds and game animals are open to harvest and use by Greenlandic citizens, subject to hunting licenses. However, only persons with a full-time occupational hunting license are allowed to hunt large whales, and there are a number of important conditions and limitations, including those related to catch limits, methods of hunting, training and reporting. In addition to Greenland Government's executive orders there may also be additional local rules set by the municipality.

Hunting is regulated and administered by the Ministry of Fisheries, Hunting and Agriculture, and supervised by the Fisheries Licence Control Authority. Locally, a team of wildlife officers control hunting and coastal fishing activities, making sure that conservation measures of protected areas and species are observed, and passing on information to the local community. The wildlife officers work in close cooperation with the municipalities, the police, Island Command Greenland, and the Government of Greenland.

The Government of Greenland has issued one act in 1999, with several later amendments that affects hunting of all animals, including whales. Other acts that indirectly affect whaling include an act on animal welfare from 2003 and an act on nature protection from the same year.

In addition, there are 3 executive orders that directly affect the taking of large whales: one on maintenance and approval of harpoon cannons, one on the reporting of the hunt and one on the hunt itself. Furthermore, whaling is indirectly affected by an executive order that regulates the issuing of hunting certificates.

The Home Rule Act on Hunting and its revisions have the goal to ensure a responsible and sustainable harvest of wild mammals and birds. There is a well-developed process for stakeholder participation in harvest management that includes the Organisation of Fishermen and Hunters, the KNAPK, the municipalities, the Greenland Institute of Natural Resources and the Department of Domestic Affairs, Nature and Environment. It also mentions that only persons with a hunting certificate can hunt, specifies the types of weapons that can be used for hunting and describes the mechanisms to choose leadership in the case of collective hunts.

5. Animal welfare; hunting methods, time to death and loss rates:
The IWC Convention and the Schedule do not contain rules relating to ASW in regard to animal welfare issues. IWC rules only outlaw the cold harpoon in the commercial hunt for whales. The Government of Greenland has, nevertheless, on its own introduced comprehensive regulation and information requirements in order to address the question of animal welfare.

A central element is that humans should make every effort to avoid causing unnecessary distress to animals. This principle is brought into the legislation in Greenland by the Home Rule Act on Animal Welfare.

In the case of whaling, the main goal from an animal welfare point of view is to cause death as quickly as possible. An ideal situation is when the whale is killed instantaneously. However, when hunting a large mammal in the wild, this goal may be difficult to attain in some situations. Another important goal of whaling is to ensure that as many of the wounded animals are killed and landed.

In order to monitor the welfare aspects in the hunting of large whales, Greenlandic whalers report the time passed between the first hit and the moment when the whale is considered to be dead or unconscious. In addition, hunters are required to report all incidences of large whales that were struck but lost.

6. The future of whaling in Greenland:
The reasons why whaling is important for Greenlanders include:

- Whales and whaling are fundamental part of the culture and the history
- Large whales are a substantial source of food for the majority of the population
- The selling, sharing and distribution of whale meat provide a necessary source of food security and income for many people
- There are well documented health reasons to promote the consumption of whale products
- In a country surrounded by highly productive seas, where the climate seriously restricts farming and agriculture, whaling provides large amounts of food at very low costs for the environment.

For these reasons, the Greenland Government is committed to continue harvesting a sufficient number of large whales in a sustainable way in the foreseeable future.

Greenland's hunt of large whales falls in the category of Aboriginal Subsistence Whaling (ASW) in an IWC context. Where commercial whaling proper aims at maximizing profits ASW aims at satisfying the local need (food security) of whale meat and to secure the continuation of cultural practices.

The discussion of Greenlandic need for whale products and its multispecies component dates back to discussions within the IWC from the late 1970s and considerable documentation has been presented over the years and discussed at the IWC Annual Meetings.

The Greenlandic hunt is a multispecies hunt and for this reason, the 'need' statement has traditionally been expressed in terms of tons of meat / edible products of large whales, rather than in individual animals by species.

The catch of individual species varied over the years due to a number of factors (ice and climatic conditions, weather, availability). If the result of the hunt, on one individual species, lead to an unsatisfactory result, then the hunt on other species might help to attain the objective of overall food security or an approximation to that objective.

West Greenland's need of meat from large whales was evaluated and endorsed by the IWC in 1990 and 1991, with basis on the catches previous to 1986 (IWC/TC/43/AS3).

According to the estimates accepted by the IWC, the average yearly catches in West Greenland before 1986 were 14 humpback whales, 9 fin whales and 232 minke whales. Using different sources of information, the IWC Aboriginal Subsistence Whaling Sub-committee

agreed that the best available estimates for conversion of number of whales to weight of whale meat in this area were 8 metric tons for humpback whales, 10 tons for fin whales and 2 tons for minke whales.

Thus using the conversion factor available, the yearly catches of West Greenland, before 1986, yielded 112 tons of humpback whale meat, 90 tons of fin whale meat and 464 tons of minke whale meat. This means that previous to 1986, approximately 670 tons of meat of large whales was consumed yearly in West Greenland.

The aggregated "need for whale meat" as such has never changed. The ways to attain the objective of 670 tons meat could and can however be fulfilled by a number of various combinations of the catch quotas for the individual species.

The established need for whale meat has been based on historical catches. The different species can, to a certain extent, substitute each other and consequently Greenland have had to establish a common definition of needs, i.e. tons. The need for whale meat is administratively, during the IWC process, changed into the normal catch limits for the different species and that only after the Scientific Committee has had the opportunity to review the possibility of the various species to sustain a certain hunting pressure. So the catch limits is expressed as number of whales and not as tons.

7. Concluding remarks:

Greenlandic whaling is the continuation of a very old tradition performed according to needs in a contemporary society. Hunting in general and hunting of large whales in particular are integral parts of the culture and the economy of the country. A Greenland without whale hunting is therefore unimaginable. For this reason, Greenland has the intention to hunt large whales both in the near-term and in the long-term future.

The prospects of obtaining approval from IWC for quotas for 2013 – 2018 are particularly good for a number of reasons:

- IWC scientific committee has recently approved estimates of abundance for the relevant stocks.
- The control and monitoring systems are functioning well and the block quotas for the period 2008 – 2012 have not been exceeded.
- With the current quotas, Greenland is 100 tons short of the documented need of 670 tons of meat from large whales that was approved by the IWC in 1991.

With a robust advice from the Scientific Committee, the IWC should be able to approve quotas for Greenland that are following the biological recommendation. These quotas would be sustainable and the hunt will continue to be well regulated. Furthermore, Greenland will continue working actively on improving the welfare aspects of whale hunting.

From Appendix II: The importance of whale meat and blubber to the diet of Greenlanders:

Public information service from the Nutrition Council: A discussion on contamination of Greenlandic food. Knowledge is needed when choosing healthy food, 2011.

Consuming marine mammals with regard to contaminants

If you have passed child-bearing age or no longer wish to have more children, you can eat marine mammals with no consequences for your health, despite the contamination of the marine food chain. Since contaminants from the marine food chain accumulate over a lifetime, and a number of them are not excreted, consuming marine mammals will generate levels during pregnancy that can affect the health of the foetus, as has been ascertained in cases in Greenland.

Therefore, until you have had the children you plan to have, the Greenland Nutrition Council would suggest exercising restraint in consuming marine mammals. If you want to be completely sure of not exposing the foetus to such contaminants, consumption of marine mammals should be avoided until you have had the children you wish. After this there is no risk to health, given the doses measured and the knowledge available in this area. At the same time, **the Nutrition Council recommends that work be done in all the necessary fora to avoid contaminating the food chain, i.e. banning the substances causing the health risk.** A ban on PCB has measurably succeeded in reducing its occurrence in the Arctic marine food chain.

Sammenfatning

1. Indledning:
Inden for rammerne af IWC (Den Internationale Hvalfangstkommission) hører Grønlands jagt på store hvaler under kategorien "oprindelige befolkningers hvalfangst" (*Aboriginal Subsistence Whaling (ASW))* sammen med hvalfangsten i Den Russiske Føderation, Saint Vincent og Grenadinerne samt USA.

IWC har opstillet følgende mål for de oprindelige befolkningers traditionelle hvalfangst:

- sikre, at risikoen for udryddelse ikke øges væsentligt (højeste prioritet)
- sikre, at der også kan jages i fremtiden i overensstemmelse med kulturelle og ernæringsmæssige krav
- fastholde eller bringe bestanden op på det højeste niveau for nettotilgang.

Den grønlandske jagt på store hvaler overholder disse mål.

2. Historisk oversigt:
De moderne grønlænderes forfædre, som indvandrede fra Arktisk Canada ved indgangen til det første årtusinde, var dygtige jægere, som fangede nordhvaler og pukkelhvaler. Disse Thule inuitter medbragte specialiserede redskaber, som blev anvendt til hvalfangst, bl.a. *umiaq* skindbåde, hvalharpuner lavet af hvalben, flåd, fangstliner og *atallaaq. Atallaaq* var en tørdragt lavet af vandtæt sælskind, som gjorde det muligt for jægerne at kravle op på hvalernes rygge for at give dem dødsstødet, og som gjorde det nemmere at flænse dem.

Jagt på store hvaler er stadig en vigtig del af den grønlandske hverdag og kultur. Det er en vigtig del af forsyningssikkerheden i Grønlands fødevaresystem og en væsentlig kilde til ernæring og indkomst for familier i byerne såvel som i de fjerne kystsamfund. Bardehvalen er en vigtig hvalart; den jages i hele Grønland, enten fra små både eller fra større fiskerbåde med harpunkanoner.

Derfor udgør hvalfangst og Grønland en uadskillelig enhed. Der er stadig steder i Grønland, hvor hvalfangst sammen med andre former for jagt er en af de vigtigste indtjeningskilder. Hvalfangst er også et supplement til fiskeriet og sikrer økonomien for familier, når der ikke er adgang til andre indtægtskilder. Det er dokumenteret, at hvalkød og andre hvalprodukter, som f.eks. organer, spæk og *mattak,* er vigtige kilder til protein og omega-3-fedtsyrer. Det er måske ikke et velkendt faktum, men indtagelsen af hvalkød har store fordele for miljøet, for *Kalaallit* - inuitfolkets sundhed og for fødevaresikkerheden.

3. Situationen for store hvaler i havene omkring Grønland:
Havene omkring Grønland huser i alt 15 forskellige hvalarter. Fem af de store hvalarter af familien balenopteridae, også kaldet finhvaler, færdes regelmæssigt i de grønlandske farvande: almindelig vågehval (*Balaenoptera acutorostrata*), finhval (*Balaenoptera physalus*), pukkelhval (*Megaptera novaeangliae)*, sejhval (*Balaenoptera borealis*) og blåhval (*Balaenoptera musculus*). Alle fem arter migrerer sydpå for at yngle om vinteren og vender tilbage for at finde føde i de isfri grønlandske farvande om sommeren. Man kan også finde to hvalarter fra familien balaenidae, også kaldet rethvaler, i havene omkring Grønland: nordhvalen (*Eubalaena glacialis*) og grønlandshvalen (*Balaena mysticetus).* Nordhvalen er meget udrydningstruet. Grønlandshvalen lever i Diskobugten og de tilstødende farvande fra omkring februar til isen bryder op i april eller maj. Grønlandshvalen kan undertiden også ses i Nordøstgrønland. Den sidste af de store hvaler, som lever i de grønlandske farvande, er kaskelothvalen (*Physeter macrocephalus*) fra physeteridae-familien. Kaskelothvaler er forholdsvis udbredte i de dybe have omkring både Vest- og Østgrønland.

For at vurdere forekomsten af store hvaler udførte Grønlands Naturinstitut to sommermålinger i september 2005 samt en vintermåling i marts og april 2006. Målingen i 2005, som foregik med skib, viste en stor udbredelse, og understøttede dermed resultaterne af luftmålingen, der blev foretaget i Vestgrønland. Derudover påviste skibsmålingen forekomst af vågehvaler, finhvaler, pukkelhvaler og sejhvaler ved Østgrønland. Der blev observeret blåhvaler og rethvaler i Østgrønland, men den bestand, der blev målt ud fra, var ikke stor nok til, at der kunne foretages en vurdering af deres udbredelse.

Tidligere vurderinger af udbredelsen af store hvaler i de grønlandske farvande inkluderer en række luftmålinger udført mellem 1983 og 1993, målinger af pukkelhvaler, som bygger på fotoidentifikation, og som blev udført fra 1988 til 1993, samt målinger foretaget i 2002 og 2004 baseret på luftfoto.

4. Regulering og overvågning
I Grønland er der ingen privat ejendomsret over land, hav eller levende ressourcer. Jagtområder og byttedyr kan jages og anvendes af alle grønlandske borgere, der har jagttegn. Det er dog kun personer, der er professionelle jægere på fuld tid, og som har jagttegn, der må jage store hvaler, og de er underlagt en række vigtige betingelser og begrænsninger, herunder vedrørende fangstbegrænsninger, jagtmetoder, uddannelse og rapportering. Ud over lovene udstedt af den grønlandske regering kan kommunerne også have fastsat lokale bestemmelser.

Jagt reguleres og forvaltes af Ministeriet for Fiskeri, Fangst og Landbrug og er under opsyn af myndigheden for fiskerilicens kontrol. I lokalområderne er det et team af jagt- og fiskeribetjente, der kontrollerer jagten og kystfiskeriet, og som sikrer, at foranstaltningerne til bevaring af beskyttede områder og arter overholdes, samt formidler oplysninger til

lokalsamfundet. Jagt- og fiskeribetjentene arbejder tæt sammen med kommunale myndigheder, politiet, Grønlands Kommando og Grønlands Selvstyre.

Grønlands Hjemmestyre vedtog i 1999 en lov, som efterfølgende er ændret adskillige gange, og som vedrører jagt på alle dyr, også hvaler. Der er vedtaget en række andre love med en indirekte betydning for hvalfangst, herunder en lov om dyrevelfærd fra 2003 samt en lov fra samme år om naturbeskyttelse.

Derudover er der 3 bekendtgørelse, som har direkte betydning for jagt på store hvaler, henholdsvis vedrørende vedligeholdelse og godkendelse af harpunkanoner, indberetning af jagt samt vedrørende selve jagten. Hvalfangst er desuden indirekte berørt af en bekendtgørelse om udstedelse af jagttegn.

Hjemmestyreloven om jagt samt ændringerne heraf har til formål at sikre en ansvarlig og bæredygtig jagt på vilde pattedyr og fugle. Der er indført en gennemarbejdet procedure for de berørte parters deltagelse i jagtforvaltningen, som omfatter Organisationen af Fiskere og Fangere, KNAPK, de kommunale myndigheder, Grønlands Naturinstitut og Departementet for Indenrigsanliggender, Natur og Miljø. Det anføres endvidere i loven, at kun personer med jagttegn må jage, hvilke våbentyper, der må anvendes til jagt, og mekanismerne til at udpege en leder i tilfælde af kollektive jagter beskrives.

5. Dyrevelfærd, jagtmetoder, drabstid og tabsrater:
IWC-konventionen indeholder ingen bestemmelser vedrørende oprindelige befolkningers hvalfangst, for så vidt angår dyrevelfærd. IWC's bestemmelser forbyder den såkaldte "kold-harpun" til kommerciel hvalfangst. Grønlands regering har ikke desto mindre på eget initiativ indført omfattende regulerings- og informationskrav for at sikre dyrevelfærden.

Centralt for disse krav er, at mennesket skal gøre alt, hvad det kan for at undgå at påføre dyr unødig lidelse. Dette princip er indført i Grønlands lovgivning med hjemmestyreloven om dyrevelfærd.

Hvad angår hvalfangst, er det vigtigste mål i forbindelse med at sikre dyrevelfærd at dræbe dyret så hurtigt som muligt. Det ideelle er, at hvalen slås ihjel øjeblikkeligt. Det kan dog undertiden være svært at opfylde dette mål, når man jager et stort pattedyr i den vilde natur. Et andet vigtigt mål i forbindelse med hvalfangst er at sikre, at flest muligt af de sårede dyr dræbes og bjærges i land.

For at kunne kontrollere dyrevelfærden i forbindelse med jagt på store hvaler skal de grønlandske hvalfangere indberette, hvor lang tid der gik fra det første slag til det øjeblik, hvor hvalen blev konstateret død eller bevidstløs. Derudover skal fangerne indberette alle tilfælde, hvor store hvaler er blevet anskudt, men tabt.

6. Den grønlandske hvalfangsts fremtid:
Hvalfangst er vigtig for Grønland af en række grunde, herunder:

- Hvaler og hvalfangst er en grundlæggende del af Grønlands kultur og historie
- Store hvaler er en vigtig fødevarekilde for størsteparten af den grønlandske befolkning
- Salg, deling og distribution af hvalkød er for mange mennesker nødvendig for deres fødevaresikkerhed og indkomst
- Det er veldokumenteret, at indtag af hvalprodukter er godt for sundheden
- I et land omgivet af meget produktive have, hvor klimaet i høj grad begrænser mulighederne for at dyrke landbrug, giver hvalfangst mulighed for at skaffe store mængder mad uden at belaste miljøet nævneværdigt.

Grønlands Selvstyre har derfor forpligtet sig til at sikre, at der også i den nærmeste fremtid fanges et tilstrækkeligt stort antal hvaler på en bæredygtig måde.

Grønlands jagt på store hvaler hører inden for rammerne af IWC under kategorien "oprindelige befolkningers traditionelle hvalfangst" (ASW). Mens den kommercielle hvalfangst reelt har til formål at øge fortjenesten, sigter de oprindelige befolkningers hvalfangst på at dække det lokale behov for hvalkød (fødevaresikkerhed) samt på at bibeholde kulturen og lokale skikke.

Drøftelsen om Grønlands behov for hvalprodukter og flerarts-betragtningen stammer tilbage fra drøftelser i IWC sidst i 1970'erne, og der er i årenes løb blevet fremlagt store mængder dokumentation, som er blevet behandlet på de årlige møder i IWC.

Den grønlandske hvalfangst er en jagt på flere arter, og behovet for hvalkød er derfor traditionelt blevet udtrykt i tons spiselige produkter af store hvaler, frem for i individuelle dyr efter art.

Fangsten af individuelle arter har været varierende over årene, hvilket skyldes en række faktorer, såsom is- og klimaforhold, vejret og tilgængeligheden. Hvis resultatet af jagten på en enkelt art var utilfredsstillende, kunne jagten på andre arter eventuelt bidrage til at opfylde eller nærme sig målet om generel fødevaresikkerhed.

Vestgrønlands behov for kød fra store hvaler blev vurderet og godkendt af IWC i 1990 og 1991 på baggrund af fangsttallene før 1986 (IWC/TC/43/AS3).

Ifølge de skøn, som IWC har godkendt, var den gennemsnitlige årlige fangst i Vestgrønland før 1986 14 pukkelhvaler, 9 finhvaler og 232 vågehvaler. På baggrund af forskellige informationskilder fastslog IWC's underudvalg for oprindelige befolkningers traditionelle

hvalfangst, at det bedste skøn for omregning af antal hvaler til mængden af hvalkød var 8 tons i dødvægt for pukkelhvaler, 10 tons for finhvaler og 2 tons for vågehvaler.

Ved hjælp af den tilgængelige omregningsfaktor blev den årlige fangst i Vestgrønland før 1986 anslået til 112 tons kød fra pukkelhval, 90 tons kød fra finhval og 464 tons kød fra vågehval. Det betyder, at der før 1986 årligt blev konsumeret cirka 670 tons kød fra store hvaler i Vestgrønland.

Det samlede "behov for hvalkød" har som sådan altid været det samme. Målet om 670 tons hvalkød kunne og kan imidlertid opfyldes ved at kombinere fangstkvotaerne for de enkelte arter på en række forskellige måder.

Behovet for hvalkød er blevet fastsat ud fra tidligere tiders fangst. De forskellige arter kan til en vis udstrækning erstatte hinanden, og Grønland har derfor været nødt til at definere en samlet enhed for behovet, dvs. antal tons. Under IWC-processen er behovet for hvalkød administrativt blevet ændret til de normale fangstbegrænsninger for de forskellige arter. Denne ændring blev først foretaget efter, at den videnskabelige komité havde undersøgt de forskellige arters mulighed for at modstå et vist fangstpres. Fangstbegrænsningerne er således udtrykt i antal hvaler og ikke i ton.

7. Afsluttende bemærkninger:
Grønlands hvalfangst er en meget gammel tradition, som udøves i overensstemmelse med behovene i det moderne grønlandske samfund. Jagt generelt og jagt på store hvaler i særdeleshed er en integreret del af landets kultur og økonomi. Det er derfor umuligt at forestille sig et Grønland, hvor der ikke kan jages hvaler. Grønland har derfor fortsat til hensigt at jage store hvaler, også på længere sigt.

Der er af en række årsager gode chancer for at opnå IWC's godkendelse af kvoterne for 2013-2018:

- IWC's videnskabelige komité har netop godkendt tallene for de relevante bestandes udbredelse
- Kontrol- og overvågningssystemerne fungerer godt, og blokkvoterne for 2008-2012 er blevet overholdt.
- Med de nuværende kvoter mangler Grønland 100 ton i forhold til det dokumenterede behov, som lød på 670 ton kød fra store hvaler, hvilket blev godkendt af IWC i 1991.

IWC burde på baggrund af rådgivning fra den videnskabelige komité kunne vedtage kvoter for Grønland, som følger de biologiske anbefalinger. Disse kvoter vil være bæredygtige, og fangsten vil fortsat være velreguleret. Grønland vil desuden fortsætte sin aktive indsats for at forbedre dyrevelfærden i forbindelse med hvalfangst.

Fra bilag II: Hvalkødets og spækkets betydning for grønlændernes kost:

Borgerinformation fra Ernæringsrådet: **En diskussion om forurening af den grønlandske mad.** Viden er nødvendig i valg af sund mad, 2011.

Indtag af havpattedyr i forhold til kontaminanter.
Når man er kommet over den fødedygtige alder eller ikke ønsker flere børn, kan man uden helbredskonsekvenser spise havpattedyr trods forureningen af den marine fødekæde. Da der gennem livet ophobes forureningsstoffer fra den marinefødekæde, og flere af dem ikke udskilles, vil man med indtag af havpattedyr i tilfælde konstateret i Grønland opnå niveauer under graviditeten, som kan påvirke fosterets helbred.
Grønlands Ernæringsråd forslår derfor tilbageholdenhed med indtag af havpattedyr frem til, man har fået de børn, man ønsker. Vil man være helt sikker på ikke at udsætte fosteret for forureningsstofferne, bør indtag af havpattedyr undgås indtil man har fået de børn, man ønsker. Herefter er der ingen helbredsrisiko med de målte doser og den tilgængelige viden på området. Samtidig anbefaler **Ernæringsrådet, at der arbejdes i alle nødvendige fora for, at forureningen af fødekæden undgås, altså at forbyde de stoffer som giver helbredsrisiko.** Forbud af PCB har kunnet måles som reduktion i den arktiske marine fødekæde.

Naalisagaq

1. Aallaqqaasiut:
IWC-mut (Arfanniarneq pillugu nunat tamat akornanni ataatsimiititaliarsuaq) killiliussat iluiniippoq Kalaallit Nunaata arfernik angisuunik piniartarnera qulequttap "nunap inoqqaavisa arfanniartarnerat" (Aboriginal Subsistence Whaling (ASW)) ataani Russit Naalagaaffeqatigiivi, Saint Vincent aamma Grenadinerne kiisalu USA peqatigalugit.

IWC-mi nunap inoqqaavisa qangaaniilli arfanniartarnerannut tulliuttunik anguniagassaliorsimavoq:

- qulakkiissallugu, nungutaanissamut navianartorsiortitsineq malunnaatilimmik annertusineqassanngitsoq (pingaartinneqarnerpaaq)
- qulakkiissallugu, siunissami aamma piniartoqartarsinnaanera kulturikkut inuussutissatigullu piumasaqaatit naapertorlugit
- aalajangiusimassallugu imaluunniit ilanngaatissat ilanngaatigereerlugit amerliartornermut uumasoqassuseq amerlanerpaanngortissallugu.

Kalaallit arfernik angisuunik piniartarnerisa anguniakkat taakku eqquutitippaat.

2. Oqaluttuarisaanikkut takussutissiineq:
Kalaallit nalitsinniittut siuaavi, Canada-p Issittortaanit ukiut tusintillit siulliit aallartinnerini nunasiartortut, piniartuupput pikkorissut, arfernik avannaaniittartunik arlaannik aamma qipoqqarnik piniartartut. Thulep inuiisa nassarpaat sakkut immikkut naleqqussakkat, arfanniarnermut atorneqartartut ilaatigut umiat amernik amillit, tuukkat arfanniutit arferit saarnginik sanaat, puttaqutit, alit aamma atallaat. Atallaat atisaapput masattartuunngitsut puisit amiinik imermik pitarneqarsinnaanngitsutut sanaat, taakkulu atorlugit piniartut arferit qaavinut qaqisinnaasarput toqusaasinnaallutillu, aammalu pilassinnaanissamut ajornannginnerulersitsisartut.

Arfernik angisuunik piniarneq kalaallit ulluinnarni inuunerannut kulturiannullu pingaarutilimmik suli inissisimavoq. Kalaallit Nunaata inuussutissaqarnikkut pilersuinermut pingaaruteqarluinnartumik immikkoortuuvoq illoqarfinnilu soorluttaaq sinerissami inuiaqatigiinni avinngarusimasuniittuni ilaqutariinnut inuussutissaqarnermut isertitaqarnermullu pingaarutilimmik tunngaviliisuulluni. Arferit soqqallit arfiupput pingaarutillit; Kalaallit Nunaanni piniarneqarsinnaasut umiatsiaaqqaniit imaluunniit aalisariutinit tuukkartalinnik qamutililinnik.

Taamaattumik arfanniarneq aamma Kalaallit Nunaat ataatsimoortuupput avissaartinneqarsinnaangitsut. Suli Kalaallit Nunaanni sumiiffeqarpoq, taakkunani arfanniarneq piniarnernut assigiinngitsut allanut ilanngullugu pingaaruteqarluinnartumik aningaasatigut

isertitsisutaasartut ilagaat. Arfanniarneq aamma aalisarnermut tapertaavoq, ilaqutariinnullu aningaasaqarniarnikkut qulakkeerisuulluni, allanik aningaasatigut isaatitsivissaqanngitsillugu. Uppernarsarneqarnikuuvoq, arferit neqaat arfernilu nioqqutissiat allat, soorlu assersuutigalugu timaata atortui, orsua mattaalu inuussutissanik aamma omega-3-fedtsyrenik pissarsinissamut pingaaruteqartuusut. Immaqa eqqortoq ilisimaneqarpallaanngitsoq unaavoq, arferit neqaannik neqitorneq avatangiisinut annertuunik iluaqutaasuusoq, *Kalaallit* - inuit peqqissusaannut aamma nerisassanik pilersuinermi isumannaassusermut tunngatillugu.

3. Kalaallit Nunaata eqqaani immani arferit angisuut qanoq inissisimanerat:
Kalaallit Nunaata eqqaani immani katillugit arfeqatigiit assigiinngitsut 15-it uumasuupput. Arfeqatigiit angisuut tallimat tassaapput arfeqatigiit balenopteridae-inik taaneqartartut aamma tikaagulliusaanik taaguutillit, kalaallillu nunaata imartaani akuttunngitsumik takussaasartut: tikaagullik (*Balaenoptera acutorostrata*), tikaagulliusaaq (*Balaenoptera physalus*), qipoqqaq (*Megaptera novaeangliae)* tikaagulliusaarnaq (*Balaenoptera borealis*) aamma tunnulissuaq (*Balaenoptera musculus*). Taakku arferit tallimat ukiuunerani piaqqiartorlutik kujammut ingerlaartarput aasaaneranilu kalaallit nunaata imartaannut sikueraangat nerisassarsiorlutik uteqqittarlutik. Aamma arfeqatigiit marluk Kalaallit Nunaata imartaani arfeqatigiinnit balaenidas-ineersut nassaassaapput, aamma soqqalinnik taagorneqartartut: Arfiviit arlaat aamma arfivik (*Balaena mysticetus)*. Arfiviit arlaat assut nungutaanissaminut ulorianartorsiortorujussuuvoq. Arfivik Qeqertarsuup Tunuani tassungalu atasuni imartani uumasuuvoq februarip qeqqata missaani, april imaluunniit majimi sikueraangat takkusimaartarluni. Arfivik ilaannikkooriarluni aamma Tunup avannamut kangiani takuneqartarpoq. Arferit angisuut Kalaallit Nunaata imartaani uumasuusut ilagaat, kigutilissuaq (*Physeter macrocephalus*) arfeqatigiinnit physeteridae-neersoq. Kigutilissuit Kitaani Tunumilu immani itisuuni siaruarsimallutik uumasuupput.

Qanoq angisuunik arfeqartiginera nalilersinnaajumallugu Pinngortitaleriffik aasaanerani marlunnik kisitsivoq september 2005-imi aammalu ukiuunerani kisitsilluni marts aamma april 2006-imi. 2005-imi kisitsinerup umiarsuarmik ingerlanneqartup takutippaa annertuumik siaruarsimasoqartoq, taamaalillunilu timmisartumit kisitsisimanerit Kitaani ingerlanneqarsimasut taperserlugit. Tamakku saniatigut umiarsuarmik kisitsinerup takutippaa Tunumi, tikaagulleqartoq, tikaagulliusaaqartoq, qipoqqaqartoq aamma tikaagulliusaarnaqartoq. Tunumi arfiviit aamma soqqallit takuneqarput, arfeqassuserli kisitsiffigineqartoq, naammaginartumik annertussuseqanngilaq, qanoq siaruarsimatiginerinnik naliliisinnaanermut atorneqarsinnaasumik.

Kalaallit Nunaata imartaani qanoq angisuunik arfeqartigineranik siusinnerusukkut naliliinernut ilaapput timmisartumit kisitsisimanerit 1983-ip aamma 1993-ip akornanni ingerlanneqarsimasut, qipoqqarnik uuttortaanerit, assitigut sorliusimanerinik tunngavillit

ingerlanneqarput 1988-imiit 1993-imut, kiisalu 2002 aamma 2004-imi kisitsisimanerit timmisartumit assilisanit tunngaveqartut.

4. Aqutsineq nakkutilliinerlu

Kalaallit Nunaanni nunamik, immamik imaluunniit pisuussutinik uumassusilinnik inuinnartut piginnittussaatitaasoqanngilaq. Sumiiffiit piniarfiusartut piniagassallu kalaallisut innuttaassusilinnit tamanit, piniarnermut allagartalinnit atorneqarsinnaallutillu piniarneqarsinnaapput. Taamaallaalli inuit, inuussutissarsiutigalugu piffissaq tamakkerlugu piniartuusut, aamma piniarsinnaanermut allagartallit, arfernik angisuunik piniarsinnaapput, taakkulu piumasaqaatinik killilersuinernillu arlalinnik pingaaruteqartunik atugassaqartitaapput, taakkununnga ilanngullugit piniarnermik killilersuinerit, piniariaatsit, ilinniagaqarsimanissaq aamma nalunaaruteqartartussaaneq. Kalaallit Nunaanni Naalakkersuisunit inatsisiliarineqarsimasut saniatigut kommunit aamma najukkani aalajangersagaqarsinnaapput.

Piniarneq Aalisarnermut, Piniarnermut Nunalerinermullu Naalakkersuisoqarfimmit aqunneqarlunilu ingerlatsivigineqarpoq nakkutigineqarlunilu aalisarsinnaanermut akuersissutinik nakkutilliisoqarfimmit. Sumiiffinni najugaqarfiusuni piniarnermut aalisarnermullu nakkutilliisunit piniarneq sinerissamullu qanittumi aalisarneq nakkutigineqarpoq, sumiiffinnik uumasunillu illersugaasunik piginniinnarnissamut iliuutsit, kiisalu sumiiffinni inuiaqatigiinnut paasissutissanik ingerlatsisarneq taakkua qulakkeertarpaat. Piniarnermik aalisarnermillu nakkutilliisunit, kommuneni oqartussaasut, politiit, Grønlands Kommando aamma Kalaallit Nunaanni Namminersorlutik Oqartussat qanimut suleqatigineqarput.

Kalaallit Nunaanni Namminersornerullutik Oqartussat 1999-imi inatsimmik akuersissutiginnipput, taannalu tamatuma kingorna arlaleriarlugu allanngortinneqartarsimavoq, tassanilu pineqarput uumasunik tamanik aamma arfernik piniartarnerit. Inatsisinik allanik arlalinnik toqqaannanngikkaluamik arfernik piniarnermut attuumassuteqartunik akuersissutiginnittoqarnikuuvoq, taakkununnga ilanngullugu inatsit uumasut atugarissaarnissaannut tunngasoq 2003-meersoq kiisalu ukioq taanna inatsit pinngortitamik illersuineq pillugu.

Tamakku saniatigut pingasunik nalunaaruteqarpoq, arfernik angisuunik piniarnermut toqqaannartumik pingaarutilinnik, tassani pineqarlutik qamutilinnik tuukkartalinnik aserfallatsaaliisarneq akuersissutiginnittarnerlu, piniarnermik nalunaarutiginnittarneq kiisalu piniarnivik nammineq pillugu tunngasut. Ilanngullugu arfanniarneq piniarnermut allagartanik tunniussisarneq pillugu nalunaarummit toqqaannanngikkaluamik pineqarpoq.

Piniarneq pillugu Namminersornerullutik Oqartussani inatsit taassuminngalu allanngortitsinerit siunertaqarput uumasunik miluumasunik nujuartanik timmissanillu

akisussaassuseqartumik piujuartitsinerlu tunngavigalugu piniartarnissap qulakkeerneqarnissaa. Suliarilluakkamik suleriaatsimik atulersitsisoqarsimavoq akuusut attuumassuteqartut piniarnermik aqutsinermut peqataasarnerinut tunngasumik, taakkununnga KNAPK ilaatinneqarluni, kommunini oqartussaasut, Pinngortitaleriffik aamma Nunamut Namminermut, Pinngortitamut Avatangiisinullu Naalakkersuisoqarfik. Ilanngullugu inatsimmi allanneqarsimavoq, inuit piniarnermut allagartallit kisimik piniarsinnaasut, sakkut qanoq ittut piniarnermi atorneqarsinnaasut, aamma ataatsimoorussamik piniaqatigiittarnerni siulersuisumik toqqaasarnissami periutsit allaaserineqarsimallutik.

5. Uumasut atugarissaarnerat, piniariaatsit, piffissaq toqutsiviusoq aamma annaasat qanoq annertutigineri:
IWC-imi isumaqatigiissut nunap inoqqaavisa arfanniartarneranni uumasut atugassarissaarnissaat pillugu aalajangersagaqanngilaq. IWC-imi aalajangersakkakkut "nillertumiktuukkamik" taaneqartartup aningaasannanniutigalugu arfanniarnermut atorneqarnissaanut inerteqqummik aalajangersagaqarpoq. Taamaakkaluartoq Kalaallit Nunaanni Naalakkersuisut nammineq suliniutigalugu eqqussimavaat annertuumik aqutsiviginninnissamut paasissutissiisarnissamullu piumasaqaateqarneq uumasut atugarissaarnissaat qulakkeerniarlugu.

Piumasaqaatini taakkunani qitiusoq unaavoq, inuit suna tamaat atorlugu iliuuseqartassasut uumasut pisariaqanngitsumik anniartinneqarnissaat pinaveersaartinniarlugu. Taamatut periuseqarneq Namminersornerullutik Oqartussani inatsimmi uumasut atugarissaarnissaat pillugu eqqunneqarnikuuvoq.

Arfanniartarnermut tunngatillugu, uumasut atugarissaarnissaasa qulakkeerneqarnissaanut atatillugu anguniakkat pingaarnerpaartarivaat uumasut sapinngisamik piaarnerpaamik toqunneqartarnissaat. Pitsaanerpaaq unaavoq, arferup erniinnaartumik toqunneqartarnissaa. Ilaannikkulli anguniakkap tamatuma eqquutsinnissaa ajornakusoortarsinnaavoq pinngortitami uumasumik miluumasumik taama angitigisumik piniarnermi. Arfanniarnermut atatillugu anguniakkap pingaarutillip aappaatigut qulakkeerniarneqartarpoq, uumasut ikilerneqartut sapinngisamik amerlanersaasa toqunneqarnissaat nunamullu tulaanneqarnissaat.

Arfernik angisuunik piniarnermut atatillugu uumasut atugarissaarnissaat nakkutigisinnaajumallugu arfanniartartut kalaallit nalunaarutigisassavaat, siullermik aallaaneqarneraniik arferup toqunneqarnissaata imaluunniit toquararneqarnissaata tungaanut qanoq sivisutigisumik piffissaq atorneqarsimanersoq. Tamatuma saniatigut piniartunit nalunaarutigineqartassapput pisut tamarmik tassani arferit angisuut aallaarsarineqarsimasut kisiannili annaaneqarsimasut.

6. Kalaallit arfanniartarnerisa siunissaa:
Arfanniartarneq Kalaallit Nunaannut pingaaruteqarpoq arlalinnik tunngaveqartumik, taakkununnga ilanngullugit:

- Arferit arfanniarnerlu tunngaviusumik Kalaallit Nunaata kulturiata oqaluttuarisaaneratalu ilagaa
- Arferit angisuut inuiaqatigiit kalaallit amerlanersaannut pingaarutilimmik inuussutissanik pissarsissutaasarpoq
- Arferit neqaannik tuniniaaneq, aviffigeqatigiinneq pilersuisarnerlu inuppassuarnut pisariaqartuuvoq taakkua inuussutissanik pilersorneqarnerisa isumannaatsuuneranut aamma isertitaqartarnerinut
- Uppernarsarluagaavoq, nioqqutissanik arferneersunik nerisaqartarneq peqqissutsimut pitsaasuusoq
- Nunami immamik assut uumassusilinnik avatangerneqarsimasumi, tassanilu silaannaap pissusaata nunalerinermeersunit naatitsisinnaanermut periarfissanik annertuumik killiliivigineqarsimasumi, arfanniarneq periarfissiivoq nerisassanik annertuunik pissarsisinnaanermut avatangiisinik malunnaatilimmik artukkersuutaanngitsumik.

Taamaattumik Kalaallit Nunaanni Namminersorlutik Oqartussat pisussaaffeqarput qulakkiissallugu, aamma siunissami qaninnerpaami piujuartitsinermik tunngaveqartumik arfernik angisuunik naammaginartunik amerlassusilinnik pisaqartoqartarnissaanut.

Kalaallit Nunaata arfernik angisuunik piniartarnera IWC-imi sinaakkusiussat iluanni "nunap inoqqaavisa qangaaniilli arfanniartarnerinik" (ASW) taaguutip ataaniippoq. Niuernerpalaartumik arfanniartarnerup nalinginnaasumik siunertaraa iluanaarutinik annertusisitsinissaq, taava nunap inoqqaavisa arfanniartarnerani siunertarineqarpoq sumiiffinni najugallit arferup neqaanik pisariaqartitsinerinik qulakkeerinninnissaq (inuussutissanik pilersorneqarnerup isumannaatsuunera) kiisalu kulturimik aamma najukkami ileqqorisanik attassinniinnarnissaq.

Kalaallit Nunaata arferneersunik tunisassianik pisariaqartitsinera aamma arfernik assigiinngitsunik isiginninneq pillugu oqallinneq 1970-ikkut naalernerini IWC-imi oqallinninneersuupput, ukiullu ingerlanerini uppernarsaaterpassuit annertuut saqqummiunneqartarnikuupput, taakkualu ukiumoortumik IWC-imi ataatsimeersuarnerni suliarineqartarsimallutik.

Kalaallit arfanniartarnerat tassaavoq arfernik assigiinngitsunik arlalinnik piniarneq, taamaattumillu arferit neqaanik pisariaqartitsineq qangaaniilli arfernit angisuuneersunit tunisassiat nerineqarsinnaasut tonsinngorlugit oqaatigineqarsimalluni, uumasunik ataasiakkaanit pinnani.

Arfernik ataasiakkaanik piniarneq ukiut ingerlanerini allanngorarsimavoq, tamatumunngalu pissutsit arlalissuit pissutaapput, soorlu sikut silaannaallu pissusaatigut pissutsinit, silamit aamma pissarsiariuminassutsimit. Arfernik ataasiakkaanik piniarnerup inernera naammaginnanngippat, arfernik allanik piniarsinnaaneq pilersuiqataasinnaavoq nalinginnaasumik inuussutissanik pilersorneqarnerup isumannaatsuunissaanut anguniakkap anguneqarnissaanut qanillineqarnissaanulluunniit.

Kalaallit Nunaata Kitaata arferit angisuut neqaannik pisariaqartitsinera IWC-imit nalilerneqarlunilu akuersissutigineqarpoq 1990 aamma 1991-imi pisarineqarsimasut qassiunerinit kisitsit 1986 (IWC/TC/43/AS3) sioqqullugu naatsorsorneqarsimasut tunngavigalugit.

Missiliuussinerit IWC-mit akuersissutigineqarsimasut malillugit Kitaani agguaqatigiissitsilluni 1986 sioqqullugu pisaqartarsimanerit imaapput qipoqqaat 14-it, tikaagulliusaat 9-t aamma tikaagulliit 232-it. Assigiinngitsunik paasissutissiissutigineqartut tunngavigalugit IWC-ip nunap inoqqaavisa qangaaniilli arfanniartarnerat pillugu ataatsimiititaliaata aalajangiuppaa, arferit qassiunerinit naatsorsueqqissaartarnerni arferup neqaata qanoq annertutigineranut missiliuussineq pitsaanerpaaq tassaasoq qipoqqarmut uumatinnagu oqimaassuseq 8 tonsi, tikaagulliusaamut 10 tons aamma tikaagullimmut 2 tons.

Naatsorsueqqissaartarnermut naleqqersuut pissarsiarineqarsinnaasoq ikiorsiullugu Kitaani 1986 sioqqullugu ukiumoortumik pisarineqarsimasut missiliuunneqarput qipoqqarmit neqi 112 tons, tikaagulliusaamit neqi 90 tons aamma tikaagullimmit neqi 464 tons. Tamatuma kinguneraa, 1986 sioqqullugu Kitaani arferit angisuut neqaannik nerineqartarsimasut 670 tons missaanniissimasut.

Tamakkiisumik “arferup neqaanik pisariaqartitsineq” taannaajuaannakannersuusimavoq. 670 tonsinik arferup neqaanik anguniagaqarneq anguneqarsinnaallunilu anguneqarsinnaassaaq arfernut ataasiakkaanut pisassiissutitigut aalajangersakkat assigiinngitsunik periuseqarluni akulerussuutsinneqarnerisigut.

Arferup neqaanik pisariaqartitsineq siusinnerusukkut pisarineqarsimasut tunngavigalugit aalajangersarneqartarpoq. Arferit assigiinngitsut annertungaatsiartumik imminnut taarseraattarsinnaapput, taamaattumillu Kalaallit Nunaata allatut ajornartumik pisariaqartitsinermut tamakkiisumik immikkoortitsineq nassuiartariaqarsimaavaa tassalu tonsingorlugit amerlassutsimut. IWC-imi sulinerup nalaani arferup neqaanut pisariaqartitsineq allaffissornikkut allanngortinneqarsimavoq arfernik assigiinngitsunut nalinginnaasumik pisarineqarsinnaasutut killilersuinernut. Taamatut allannguineq aatsaat suliarineqarpoq, ilisimatuussutsikkut ataatsimiititaliap arferit assigiinngitsut piniarneqarnerisa qanoq annertutigisumik attanneqarsinnaasoq pillugu

misissuisoqareerneratigut. Taamaasilluni pisarineqarsinnaasunik killilersuineq arfernik pisarineqarsinnaasunik amerlassusiliinikkut, tassalu tonsinngorlugu killilersuineq atorneqarani.

7. Naggataarutaasunik oqaaseqaatit:
Kalaallit Nunaata arfanniartarnera qangarsuaaniilli ileqqutoqaavoq, ingerlanneqartarlunilu inuiaqatigiit kalaallit ullutsinni pisariaqartitsinerat naapertorlugu. Nalinginnaasumik piniarneq pingaartumillu arfernik angisuunik piniarneq nunap kulturiata aningaasaqarniarneratalu immikkoortitassaanngitsumik ilagai. Taamaammallu eqqarsaatigineqarsinnaanngivippoq Kalaallit Nunaat arfanniartarfiunngitsoq. Taamaattumillu Kalaallit Nunaata suli siunertaraa arfernik angisuunik piniartarnissaq, aamma piffissaq ungasinnerusoq eqqarsaatigalugu.

IWC-ip 2013-imiit 2018-imut pisassiissutinik akuersissutiginninnissaata anguneqarnissaa arlalinnik peqquteqarluni periarfissaqarluarpoq:

- IWC-ip ilisimatuussutsikkut ataatsimiititaliaata arferit attuumassuteqartut siuariarsimanerinut kisitsisit akuersissutigeqqammerpai
- Nakkutilliinermi nakkutiginninnermilu periutsit ajunngitsumik ingerlapput, arfernullu assigiinngitsunut pisassiissutit 2008-miit 2012-imut eqquutsinneqarsimallutik.
- Maannakkuugallartoq pisassiissutinit pisariaqartitsinermut uppernarsarneqarsimasumut sanilliullugu Kalaallit Nunaata 100 tonsit amigaatigai, arfernit anginernit neqi 670 tonsitut annertutigisut, taakkualu IWC-imit 1991-imi akuersissutigineqarnikuupput.

Ilisimatusarnikkut ataatsimiititaliamit siunnersuisimanerit tunngavigalugit IWC-ip akuersissutigisinnaasariaqarpaa Kalaallit Nunaannut pisassiissutit biologit kaammattuineri naapertorlugit pisassiissutigineqartut. Pisassiissutit taakku piujuartitsinerussaapput, piniarnerlu suli aqulluarneqarsimasussaalluni. Ilanngullugu Kalaallit Nunaata arfanniarnermut atatillugu uumasut atugarissaarnerat pitsanngorsarniarlugu pimoorussamik suliniuteqarnini ingerlatiinnassamaarpaa.

Ilanngussaq II: Arferup neqaata orsuatalu kalaallit nerisaqarnerannut pingaaruteqassusiat:

Inuussutissat pillugit Siunnersuisoqatigiinnit Innuttaasunut paasissutissiissut: **Kalaallit nerisassaataasa mingutsinneqarsimanerat pillugu oqallisiginninneq.** 2011-mi, Peqqinnartunik nerisassanik toqqaanermi ilisimasaqarneq pingaaruteqarpoq.

Uumasut miluumasut imarmiuneersut toqunartoqarsinnaanerinut sanilliullugu nerisaqartarneq.
Meerartaarsinnaanissamut ukiut killiliussat qaangersimatillugit imaluunniit amerlanerusunik meerartaarusukkunnaarsimagaanni, peqqissutsikkut akornuteqanngitsumik uumasunik miluumasut imarmiuneersunik nerisoqartarsinnaavoq naak imaani nerisaqaqatigiinnikkut mingutsitsisoqarsimagaluartoq. Inuuneq tamaat imaani nerisaqaqatigiinnermeersunit mingutsitsinerit timimi katersuuttarmata, arlalillu arrortinneqarsinnaanngimmata, nerisaqarnikkut naartunermi qaffasissutsit anguneqarsinnaapput, naartup peqqissusaannut sunniisinnaasunik, tamanna imaani miluumasut uumasunit Kalaallit Nunaanni nerineqartartut annertussusaat aallaavigalugu.
Taamaattumik Kalaallit Nunaanni Inuussutissat pillugit Siunnersuisoqatigiinnit siunnersuutigineqarpoq uumasunit imaani miluumasuneersunit nerisarnerup ingalassimaneqarnissaa, meerariumasatut kissaatigineqartut anguneqarsiillugit. Qulakkeerniaraanni mingutsitsisartunit naartorisap sunnerneqarsimannginnissaa, taava kissaatigineqartutut meerariumasat anguneqarnissaasa tungaanut uumasunit imaaneersunit miluumasunit nerisarneq pinngitsoortissimaneqartariaqarpoq. Tamatuma kingornatigut pineqartumi nerineqarsinnaasutut uuttorneqarsimasut aamma ilisimaneqartut sinnerlugit nerigaluaraanni peqqissutsikkut navianaateqanngillat. Peqatigitillugu **Inuussutissat pillugit Siunnersuisoqatigiit** kaammattuutigaat**, ataatsimiititaliani pisariaqartuni tamani sulissutigineqassasoq, nerisaqaqatigiinnit mingutsitsinerup pinaveersimatinnissaa, tassalu peqqissutsimut navianartorsiortitsisunik tamanik inerteqquteqarnissaq.** PCP-ip inerteqqutaalernerani uuttorneqarsinnaasimavoq issittumi nerisaqaqatigiinni akuusarnera annikillisimasoq.

2. Introduction

In June 2009 *Kalaallit Nunaat* / Greenland obtained status of Self-Government with a population still dependent on marine resources, including subsistence hunting. It has a population of 56,600 people living in 18 towns and 60 settlements. The size of Greenland is 2,166,086 square kilometres, covering an area from Norway to Sahara and with a coastline of 44,087 kilometres, (plate I). Inuit is about 90 % of the total population, and has maintained a lifestyle connected to the sea and the harsh nature and environment. Greenland faces a paradox created by its traditional image in the world and its need for economic sustainability and development.

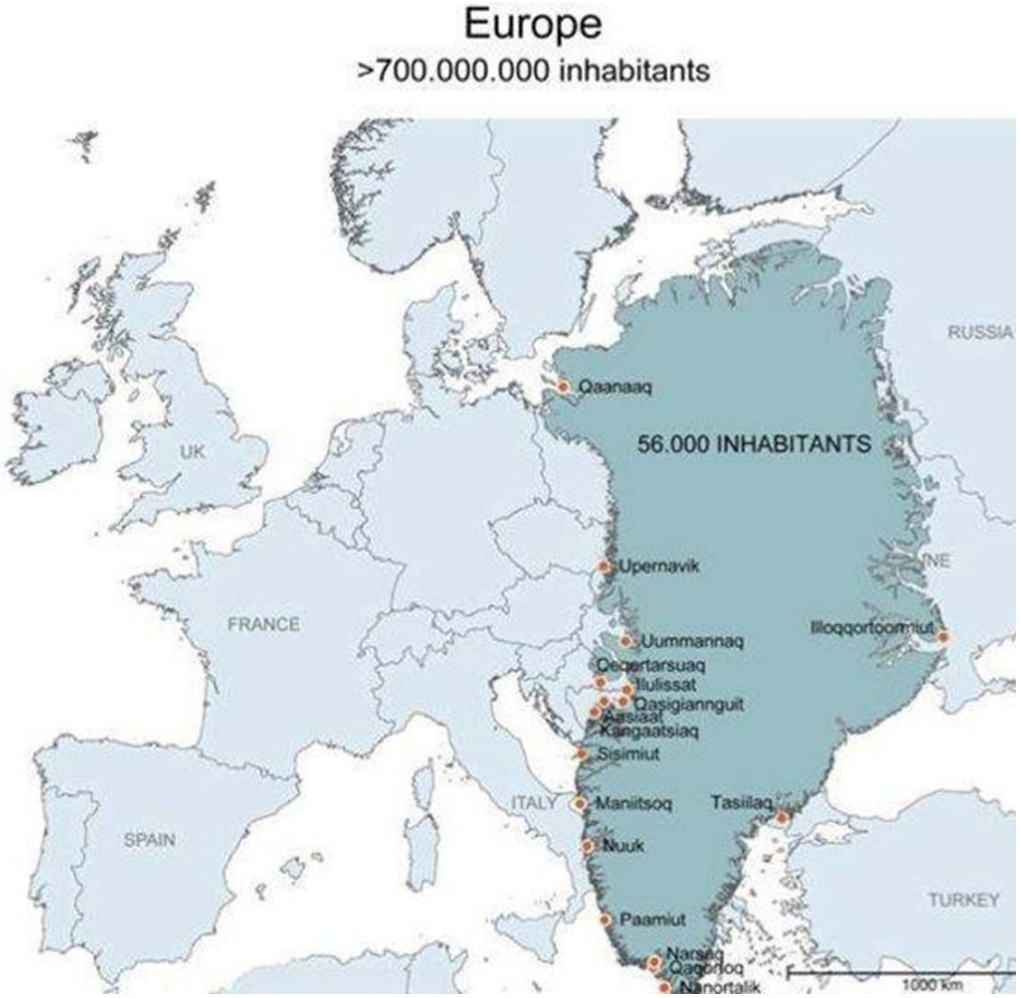


Plate I. Map of Greenland compared to Europe.

The hunting of large whales is a vital component of everyday life and culture in Greenland. It is an important part of the Greenland food security system and provides a significant amount of nutritious food and income to families living in the cities as well as in remote coastal communities. The baleen whales are important species; they are hunted in every part

of Greenland during the year as an activity from small boats or by the use of fishing vessels with harpoon canons. The skin / *mattak* and lower jaw meat; the ventral groves / *qiporaq* are used as a delicacy, the meat for celebration and everyday food. The baleens are also used as a beautiful part of modern jewellery and design.

Therefore, whaling and Greenland are inseparable. There are still parts of Greenland where whaling is one of the more important component of people's livelihood, combined with other forms of hunting. Whaling acts also as a supplement to fishing activities and is an economic buffer for families when no other income sources are available. It is documented that whale meat and other whale products such as organs, blubber and *mattak* are a vital source of proteins and omega-3 fatty acids. So what may not be so obvious for everyone is that consuming whale meat has huge advantages for the environment, for the health of *Kalaallit* / Inuit in Greenland and as food security.

Archaeological investigations and discoveries have shown that the Greenlandic culture in some periods has been based on the harvest of humpback and bowhead whale in addition to other marine mammal species. The introduction of fisheries in certain winter-ice areas has not weakened the importance of whaling in any significant way, particularly not in remote coastal communities. Yet, for some hunters the main source of income has shifted to Greenland halibut for instance, but the importance of the whale as a daily dish remains unchallenged.

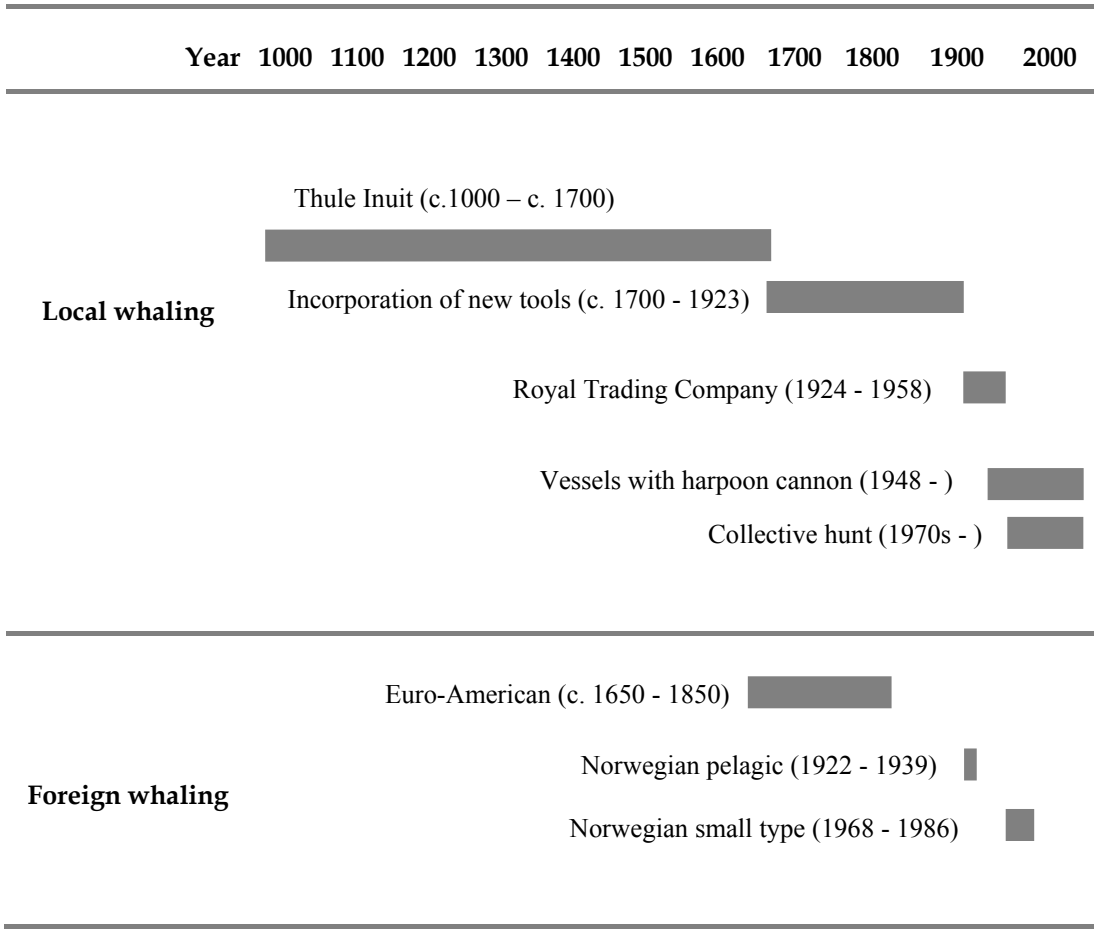
Through a traditional way of life for many generations the Inuit have developed an in-depth knowledge of the ecosystems in which they live. As hunters, they become part of the same ecosystems as their prey and accurate observations and interpretations about wildlife behaviour, weather patterns and other environmental factors are essential for survival. Aside from hunting, Inuit have traditionally spent hours observing and discussing the animals, the sea and the land. Lessons were learned and the knowledge base became fine-tuned through direct experience of a subsistence lifestyle. The respect for wild animals educated Inuit on how to use and preserve the wildlife resources for future generations.

Among the problems the Inuit face are the lack of understanding of the Arctic way of life, resulting in e.g. the seal ban with the Inuit exemption in the EU and the on-going climate changes in the Arctic regions. Weather and ice conditions are changing and attempts are made at both local and national level to adapt to what seems to be severe and lasting changes in the Arctic environment.

3. Historical overview

The following section gives a short overview of the history of hunting of large whales in Greenland from the time when the Thule Inuit, the ancestors of the present Greenlanders emigrated from Arctic Canada until today. Timelines for the different categories of whaling described in the text are schematised in table 1.

Table 1. Schematic representation of different periods in the history of whaling in Greenland. Local whaling: whaling by Greenlanders or Danish for the benefit of Greenlanders. Foreign whaling: whaling off Greenland by Europeans or North Americans for the purpose of trading with oil and other whale products.



Hunting of large whales by early Greenlanders

The ancestors of the modern Greenlanders that migrated from Arctic Canada at the turn of the first millennium were skilled hunters of bowhead and humpback whales. These Thule Inuit brought with them specialized tools used in whaling, which included the *umiaq* skin boat, distinctive whaling harpoons made of whalebone, floats, hunting lines and the *atallaaq*. The *atallaaq* was a dry suit made of waterproof seal skin that allowed the hunters to crawl

upon the back of the whale in order to deliver the final strike and to aid in flensing. The *atallaaq* was still used in some areas during the 19th century (Birketh-smith 1924, Caulfield 1997).

Other Eskimo cultures immigrated to Greenland and became extinct before the arrival of the Thule Inuit. The whaling of these cultures is not discussed here. Likewise, we do not discuss the whale hunting of the Scandinavian *Norboere*, who came via Iceland and settled in Greenland from the year 985-6 to the 15th century (Kellog 1997, Gulløv 2004).

Contact of the Thule Inuit with European and North American whalers in the 18th century resulted in changes of equipment, such as shifting to metal harpoons, more efficient flensing tools and wooden boats (Caulfield 1997).

The hunting of humpback whales continued with few modifications until 1923, when modern whaling was introduced by the Danish authorities (Kapel and Petersen 1982).

Bowhead whales became scarce due to overexploitation by foreign whalers during the 17th, 18th and beginning of the 19th century. As a result of this, hunting of bowhead whales by Greenlanders on a regular basis stopped in the 19th century. Only a couple of bowhead whales were taken during the 20th century (Kapel and Petersen 1982).

Minke whales were taken in Disko Bay during the 19th century, and perhaps also in earlier times (Caulfield 1997).

Pelagic whalers (1922 – 1958)
Norwegian pelagic whalers caught considerable numbers of large whales during 8 cruises off West Greenland carried out between 1922 and 1939. The catches included 705 fin whales, or an average of 88 fin whales per cruise. During the first three years of the operation, the Norwegian whalers took 327 humpback whales. Thereafter the catches of humpback whales were much smaller (Kapel and Petersen 1982, Simon *et al.* 2007b, Witting 2007b).

From 1924 to 1939, and again from 1946 to 1958, the Royal Greenland Trade Company, from Denmark, used a large steel catcher *Sonja* to provide whale meat for the Greenlanders and bring oil back to Denmark. On average, this operation caught 21 fin whales per year, and a smaller number of humpback, blue, sei, sperm and bottlenose whales. The operation ended because it was financially unprofitable (Kapel and Petersen 1982, Freeman *et. al.* 1998, Simon *et al.* 2007b).

Coastal whaling in the 20th century
In 1948, in Disko Bay, West Greenland, a fisherman and hunter mounted a harpoon cannon on the bow of his 36 ft. vessel, revitalizing the community based hunting of large whales.

The owner was the first Greenlander to own an harpoon cannon. Other vessels from West Greenland followed this example in the late 1950s and began taking minke, fin and humpback whales. A few blue whales were taken during the first years of this whaling (Caulfield 1997, Freeman *et. al.* 1998).

The taking of bowhead whales was stopped in 1938 due to low stock numbers. In 2007, Greenland was by the IWC given a quota of 2 bowhead whales per year in the quota period 2008-2012, with the possibility of carrying over up to 2 whales from one year to the next. Greenland started the bowhead whale hunt in spring of 2009 and the first two landings were given to the Greenlandic people in connection with the introduction of Self-Government. The bowhead whale hunting is under a national testing period (figure 1; Kapel and Petersen 1982, Lemche 1990, Caulfield 1997, IWC 2007a).

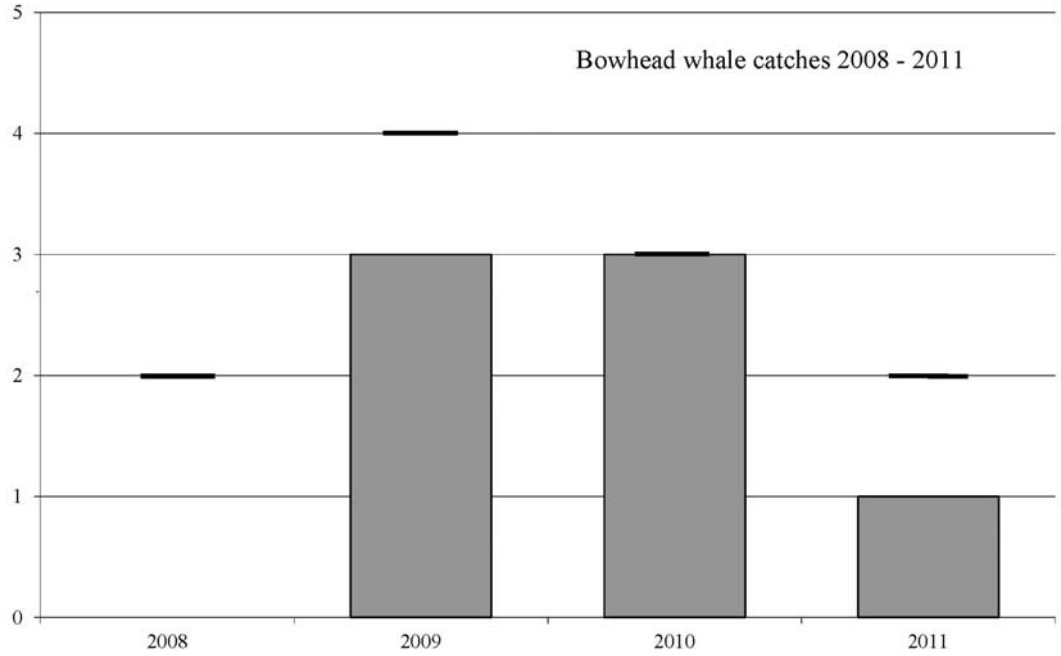


Figure 1. Catches of bowhead whales by Greenlandic whalers off West Greenland from 2008 to 2011. Black lines show the quotas. Only a few bowhead whales were caught prior to 1938. Source: IWC SEC. / Ministry of Fisheries, Hunting and Agriculture.

In 1955, the IWC limited the taking of humpback whales in West Greenland to 10 animals per year. Quotas were reduced to 9 humpback whales per year in 1984 and to 8 in 1985. The IWC prohibited the catching of humpback whales off Greenland in 1986, due to uncertainties about the size of the stock. In 2010, Greenland was given a quota of 9 humpback whales per year, with the possibility of carrying over up to 2 whales from one year to the next (figure 2; Kapel and Petersen 1982, Lemche 1990, Caulfield 1997).

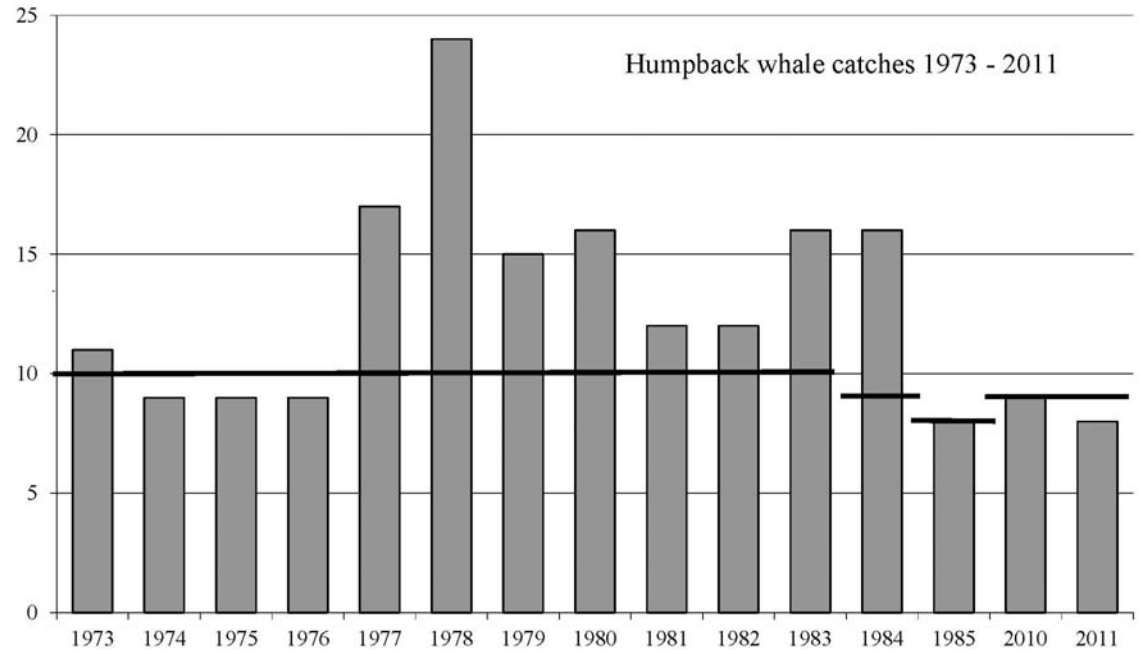


Figure 2. Catches of humpback whales by Greenlandic whalers off West Greenland from 1973 to 2011. Black lines show the quotas. Previous to 1973 Greenlandic whalers caught less than 5 humpback whales per year. Source: Witting 2007b / Ministry of Fisheries, Hunting and Agriculture.
Note: comparison with catches of fin whales (figure 3) and minke whales (figure 4) show that the regulation system and the subsequent adherence to quotas improved substantially during the 1990s.

During the 1960s and 1970s, Greenlanders caught 0-13 fin whales per year. Catches have been regulated by IWC aboriginal subsistence quotas since 1977 and the average catch has been 12 fin whales per year. The quotas have ranged from 6 to 23 whales per year, and since 1995 have remained stable at 19. Surveys carried out in 2004 in order to update abundance estimates of large whales were unsuccessful and, due to the uncertain status of the stock the Greenland Home Rule voluntarily reduced the quotas for 2006 and 2007 to 10 fin whales per year. The following year the survey went well and for the quota block 2008-2012 Greenland was given 19 fin whales per year (figure 3; Kapel and Petersen 1982, Caulfield 1997, Simon *et al.* 2007b). In connection to a political decision during the IWC Annual Meeting in 2010, the Greenland Government agreed to a reduction of the fin whale quota from 19 to 16 (IWC 2010). The Greenland Government on a voluntarily basis further reduced the catch limit for the West Greenland stock of fin whales from 16 to 10 for each of the years 2010 to 2012 in connection with the obtained quota of 9 humpback whales.

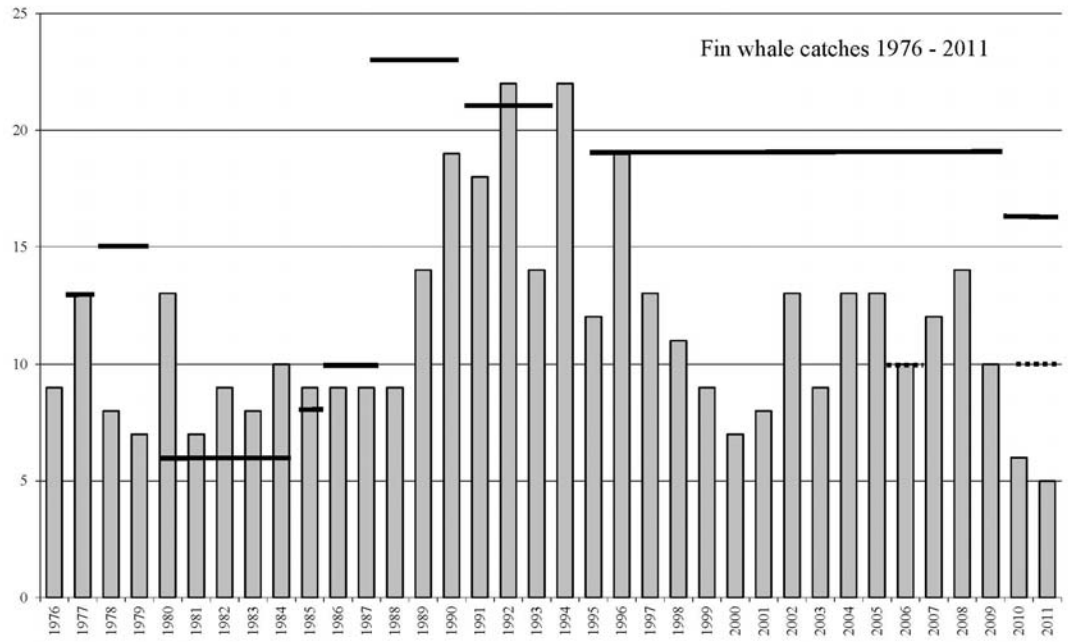


Figure 3. Catches of fin whales by Greenlandic whalers off West Greenland from 1976 to 2011. Black lines show the quotas, broken-up lines show the actual quota. The Government of Greenland voluntarily reduced the quota for 2006-2007 and 2010-2012 from 19/16 to 10 fin whales. Previous to 1976 Greenlandic whalers caught less than 5 fin whales per year. Source: Ministry of Fisheries, Hunting and Agriculture / Greenland Institute of Natural Resources.

The catches of minke whales remained low during the 1950s, but several boats acquired harpoon cannons during the 1960s and the catches off West Greenland increased to more than 200 whales per year. In 1968, small type whaling boats from Norway expanded their operation to include waters of East and West Greenland. During the early and mid-1970s, Norwegian catches off West Greenland averaged 175 minke whales per year. At that time, Greenlanders caught an average of 225 minke whales per year. After 1977, following recommendations by the IWC, the Norwegian catches were reduced to 75 minke whales per year (Kapel and Petersen 1982). The Norwegian boats stopped catching minke whales in Greenland in 1986.

A proliferation of outboard engines in the 1970s allowed hunters to take minke whales with rifles and hand held harpoons by cooperatively working from several skiffs (Kapel 1978). This type of whaling is called the "collective hunt", and is the only type of whaling carried out in East Greenland today.

Since 1975, catches of minke whales by Greenlanders are regulated by IWC aboriginal subsistence quotas. Until 1985, the quotas were higher than the average catches. Since 1986, the quotas for West Greenland have ranged from 60 to 200 minke whales per year, and remained stable at 175 whales per year since 1998 (with the exception of 2008-2009 having a quota of 200), with the possibility of carrying over up to 15 whales from one year to the next

(figure 4). The quota for East Greenland is 12 minke whales per year, with the possibility of carrying over up to 3 whales from one year to the next.

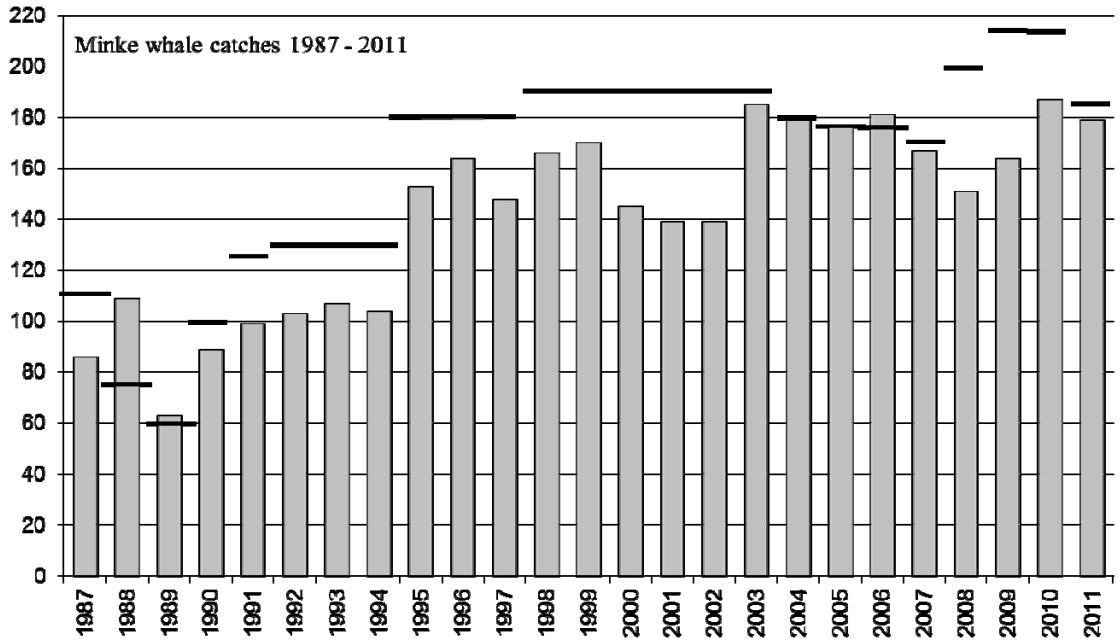


Figure 4. Catches of minke whales by Greenlandic whalers off West Greenland from 1987 to 2011. Black lines show the quotas. The overrun from 2006 has been withdrawn from the 2007 quota. Previous to 1987, minke whales were caught both by Norwegian small type whalers and by Greenlanders. Source: Ministry of Fisheries, Hunting and Agriculture / Greenland Institute of Natural Resources.

Modernisation of the whaling fleet

In 1987, inspired by increasing concerns in the IWC regarding whale killing methods, the Greenland Government sought for the assistance of Norwegian experts to perform experimental trials with detonating whale-grenade harpoons. Further trials were carried out in 1988 and 1989. At that time, there were about 70 50mm harpoon cannons spread throughout West Greenland. Due to the poverty of the country, many of these harpoon cannons had been poorly maintained. In 1990, the Home Rule Government launched a program to renovate these harpoon cannons and introduce the use of the detonating penthrite whale-grenade as a standard practice. The program finished in 1998. During this time, about 70 harpoon cannons were renovated and safely mounted on the bow of vessels. These boats were combined fishing and hunting boats, used in all open water seasons to harvest a variety of fish, crustaceans, mammals and birds. Because of the flexibility of the hunting and fishing activities, and the opportunistic nature of the hunt, not all the boats equipped with harpoon cannon take part on the hunting of large whales each year. In 1999, at the end of the harpoon-cannon renovating program, 50 boats equipped with harpoon cannon participated in the hunt of large whales. After that, the number of boats that catch

large whales has remained stable, oscillating between 30 and 45, with a median of 42 boats (figure 5).

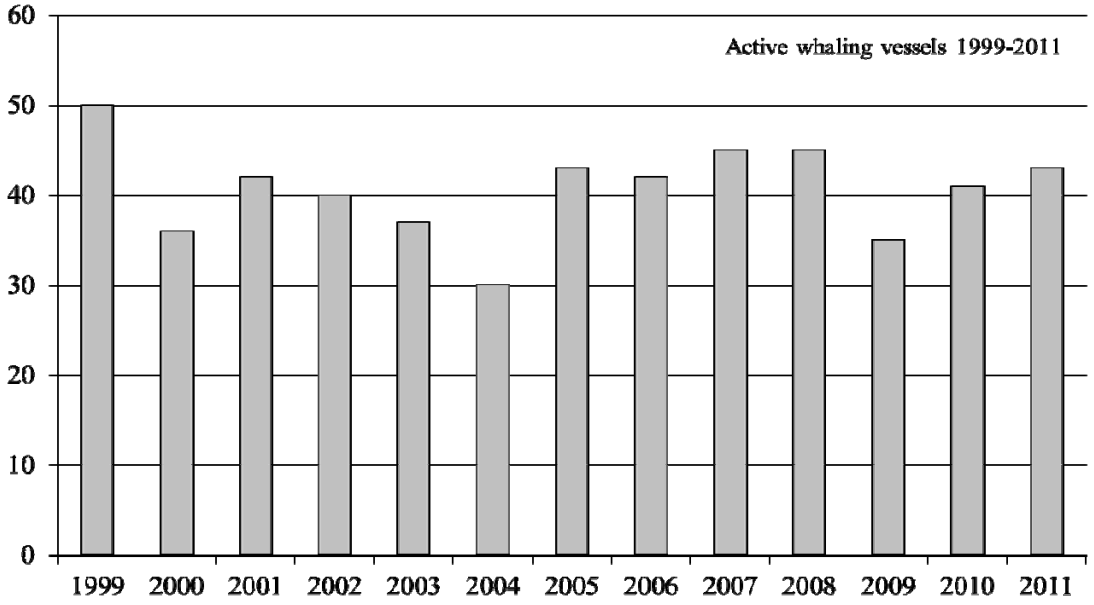


Figure 5. The number of boats actively hunting large whales from 1999 to 2011. The harpoon-cannon renovating program ended in 1998. Source: Ministry of Fisheries, Hunting and Agriculture.

Aboriginal Subsistence Whaling (ASW) in the IWC

Within the IWC context, Greenland's hunt of large whales falls in the category of Aboriginal Subsistence Whaling (ASW) together with the Russian Federation (Siberia, gray and bowhead whales), St. Vincent and The Grenadines (Bequia, humpback whales) and the USA (Alaska, bowhead and gray whales).

For aboriginal subsistence whaling the IWC has the following objectives:

- ensure risks of extinction not seriously increased (highest priority);
- enable harvests in perpetuity appropriate to cultural and nutritional requirements;
- maintain stocks at highest net recruitment level and if below that ensure they move towards it.

IWC definition for aboriginal subsistence whaling (1981):

Aboriginal subsistence whaling means whaling for the purpose of local consumption carried out by or on behalf of aboriginal, indigenous, or native peoples who share strong community, familial, social, and cultural ties related to a continuing traditional dependence on whaling and the use of whales.

Local aboriginal consumption means the traditional uses of whale products by local aboriginal, indigenous, or native communities in meeting their nutritional, subsistence, and

cultural requirements. The term includes trade in items which are by-products of subsistence catches.

Subsistence catches are catches of whales by aboriginal subsistence whaling operations.

Objectives for managing aboriginal subsistence whaling (1981):
To ensure that the risks of extinction to individual stocks are not seriously increased by subsistence whaling.

To enable aboriginal people to harvest whales in perpetuity at levels appropriate to their cultural and nutritional requirements, subject to other objectives.

To maintain the status of whale stocks at or above the level giving the highest net recruitment and to ensure that stocks below that level are moved towards it, so far as the environment permits.

Definition of subsistence use (1982):
1. The personal consumption of whale products for food, fuel, shelter, clothing, tools, or transportation by participants in the whale harvest.

2. The barter, trade, or sharing of whale products in their harvested form with relatives in the harvest, with others in the local community, or with persons in locations other than the local community with whom residents share familial, social, cultural, or economic ties. A generalized currency is involved in this barter and trade, but the predominant portion of the products from each whale are ordinarily directly consumed or utilized in their harvested form within the local community.

4. Status of large Whales around Greenland

There are five species of the family balenopteridae, or rorquals, which can be regularly found in Greenland waters: common minke whale (*Balaenoptera acutorostrata*), fin whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae)*, sei whale (*Balaenoptera borealis*) and blue whale (*Balaenoptera musculus*). All five species migrate to southern breeding grounds during the winter and return to feed in the ice-free waters of Greenland during summer. The first whales are usually seen in March or April, and the last ones in December or January, but some individuals especially of fin and humpback whales may remain in Greenland waters throughout the winter. Except for the blue whale, all the species of this family are regularly seen off West Greenland. All five species are seen regularly off East Greenland.

Two species from the family balaenidae, or right whales, can be seen in Greenland waters: the North Atlantic right whale (*Eubalaena glacialis*) and the bowhead whale (*Balaena mysticetus*). The North Atlantic right whale is highly endangered. The only known population feeds during the summer in waters of northern US and southern Canada. Whales of this population are sometimes seen during summer in East Greenland and West Iceland. The bowhead whale can be found in Disko Bay and adjacent waters from around February until the break-up of the ice in April or May. Bowhead whales are also present in small numbers in Northeast Greenland.

The last species of large whale found in Greenland waters is the sperm whale (*Physeter macrocephalus)*, from the physeteridae family. Sperm whales are relatively abundant in deep waters of both West and East Greenland.

Surveys

In order to estimate the summer abundance of large whales in West Greenland waters, a series of mainly aerial surveys has been carried out starting in 1983, with the last two surveys being in 2005 and 2007 (Hiby 1985, Hiby *et al.* 1989, Larsen *et al.* 1989, Larsen 1995, Larsen and Hammond 2004, Witting and Kingsley 2005; Heide-Jørgensen *et al*., 2008a,b, 2010a,b). The earlier surveys, which were conducted in the early summer, typically July, were often unsuccessful due to bad weather combinations with either calm weather and fog, or too strong winds and no fog. Later surveys were instead conducted during late summer and fall (August/September) to avoid the problem of widespread fog. Especially the aerial 2005 and 2007 surveys were successful in providing solid estimates for many whale species, including minke whales, fin whales, humpback whales, and sei whales. The next summer survey is planned for 2015.

A series of aerial winter surveys targeting beluga, narwhal, and bowhead whales have been conducted in West Greenland starting in 1981, with the last two surveys being carried out 2006 and 2012 (Heide-Jørgensen *et al.* 2007). These surveys have provided a time series of sighting rates for bowhead whales in the Disko Bay area, together with a fully corrected estimate for 2007. Mark-recapture estimates from biopsy sampling in the Disko Bay area have recently provided comparable estimates by a different method (Wiig et al., 2011).

Minke whale
The aerial survey in 2007 provided a fully corrected line transect estimate of 17,300 (CV: 0.42) minke whales off West Greenland (IWC, 2010; Heide-Jørgensen *et al*., 2010b). Earlier abundance estimates include a 2005 estimate of 10,800 (CV: 0.59; Heide-Jørgensen *et al*., 2008a) whales, a 1993 estimate of 8,370 (CV: 0.43; Larsen, 1995), and a 1987/88 estimate of 3,266 (CV: 0.31; IWC 1990).

The estimates above, however, are not directly comparable because they are based on different methods and because the degree to which they are corrected for various factors differ. A time series of relative and comparable abundance estimates was instead provided by Heide-Jørgensen and Laidre (2008). This time series include eight estimates from 1984 to 2007 and show a rather varying index with no apparent trend. These numbers relate to the abundance and density of minke whales in the areas surveyed. The actual size of the West Greenland stock is probably larger, and the time series of relative abundance indicate that there may not be a consistent fraction of minke whales from the North Atlantic that use the West Greenland banks as a summer feeding ground.

Evidence that the stock of minke whales of West Greenland extends beyond the areas where the whales are caught is given by the fact that the majority of the animals harvested are females, even though the minke whales give birth to approximately the same number of male and female calves (figure 6, Simon *et al* 2007a). The sex bias of the catch can only be explained if a significant part of the population, including a majority of males is out of reach for the Greenlandic hunters.

The current advice for strike limits of minke whales in West Greenland is based on the interim AWMP adopted by the IWC SC in 2008 (IWC, 2009). This procedure allows for catches of up to two percent of the lower 5th percentile of the most recent abundance estimate, and when applied to the 2007 estimate is concludes that annual strikes of up to 178 minke whales in West Greenland are safe (IWC, 2012).

The Scientific Committee has on several occasions noted that catches of minke whales off East Greenland are believed to come from a much larger Central North Atlantic stock of minke whale. Minke whales are common in these waters east of East Greenland, with available abundance estimates including a 2005 estimate of 26,740 (CV: 0.39) minke whales in

the CM area, and 2007 estimates of 10,680 (CV: 0.29) for the CIC area, 1,048 (CV: 0.60) for the CG area, and 1,350 (CV: 0.38) for the CIP area (IWC, 2012). The Scientific Committee agrees that the present strike limit of up to 12 minke whales per year in East Greenland will not harm the stock (IWC, 2012).

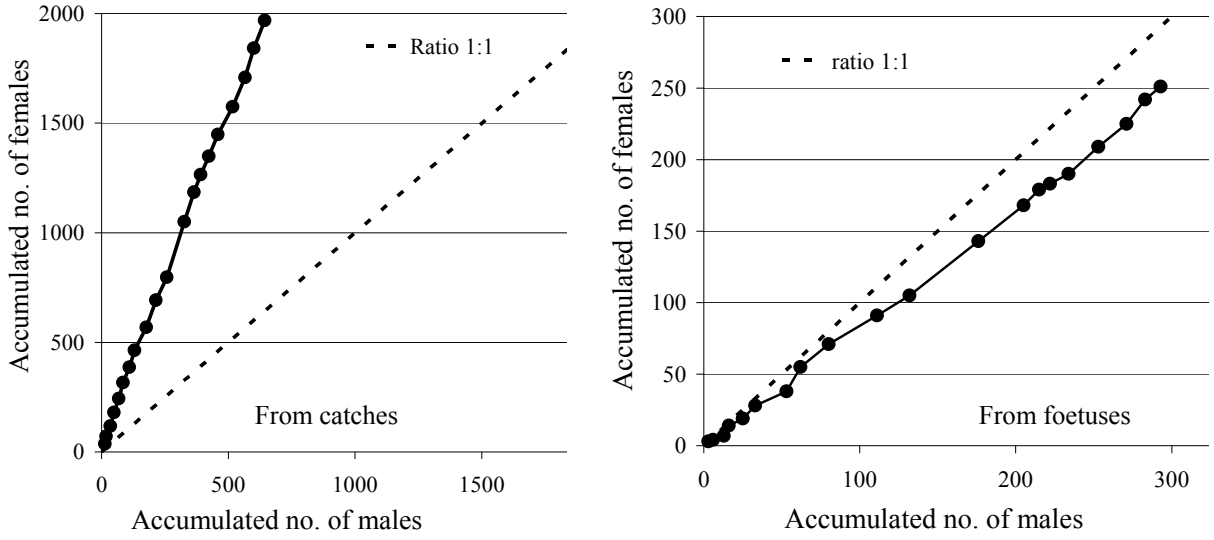


Figure 6. Cumulative number of males and females in the catches (left) and in the foetuses from pregnant females (right). Each data point corresponds to the number of males (x-axis) and females (y-axis) counted at the end of one season. Dotted lines indicate how the plot would look like it there were the same numbers of males as of females. Data obtained from catch reports filled by the hunters from 1987 to 2011. Source: Ministry of Fisheries, Hunting and Agriculture / Greenland Institute of Natural Resources.

Fin whale

When corrected for proportion of animals missed by observers, estimates of 3,230 (CV: 0.44) fin whales in 2005 (Heide-Jørgensen *et al.*, 2008a), and 4,360 (CV: 0.45) in 2007 (Heide-Jørgensen *et al.*, 2010a) were obtained. These results are underestimations because they were not corrected for the proportion of animals that were diving and therefore unavailable to be counted by the observers.

The only earlier estimate of fin whale abundance off West Greenland accepted by the IWC Scientific Committee dates from 1987-88, and is 1,100 (95% CI 520-2,100; IWC 1992). Together, the three estimates show an increasing trend in West Greenland fin whales (figure 7), with an estimated natural increase of 6.5% (95% CI: 1.6-10%) per year (Witting, 2012a). This rate of increase is similar to the rates of increase observed for fin whales in East Greenland (5.9%), West Iceland (3.4%), and East Iceland and the Faroese (4.2%; Witting, 2012a).

The current advice for strike limits of fin whales in West Greenland is based on the interim AWMP adopted by the IWC SC in 2008 (IWC, 2009). This procedure allows for catches of up to two percent of the lower 5th percentile of the most recent abundance estimate, and it was simulation tested for a catch of up to twenty fin whales per year. Two percent of the lower 5th percentile of the 2007 estimate is 42 whales, concluding that an annual Strike Limit of up to 20 whales is safe. This is only 0.5% of the point estimate of 4,360 fin whales in 2007.

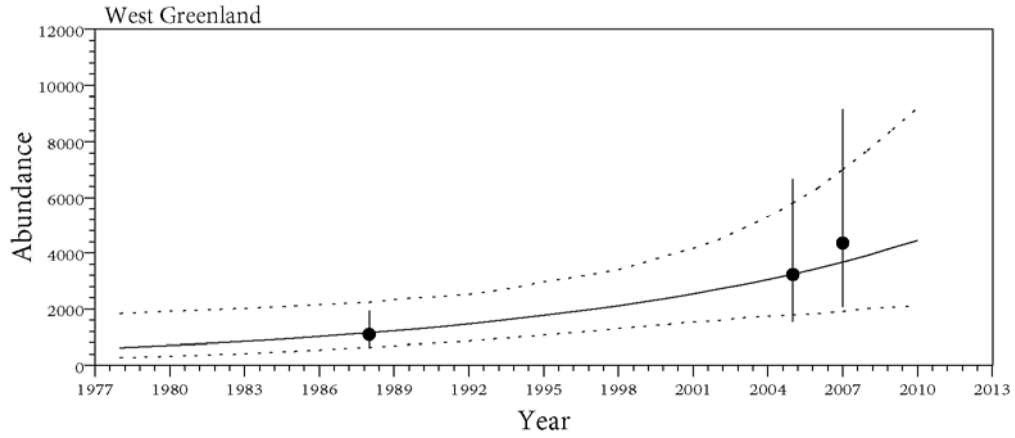


Figure 7. The trend in the abundance of fin whales in West Greenland as estimated from the aerial surveys of 1988/89, 2005 and 2007.

Humpback whale

The aerial survey in 2007 provided a fully corrected estimate of 3,270 (CV: 0.50) humpback whales off West Greenland (Heide-Jørgensen *et al*., 2008b). Apart from this there are four uncorrected line-transect estimates from aerial surveys from 1984 to 2005 (Heide-Jørgensen *et al*., 2008b), and four mark-recapture estimates of abundance from 1988 to 1992 (Larsen and Hammond, 2004).

Taken together the abundance estimates show an increasing trend in humpback whales off West Greenland (figure 8), with an estimated natural increase of 5.5% (90% CI: 2.6-7.6) per year (Witting, 2011). This rate of increase is higher than the increase observed at the breeding grounds in the West Indies, but is in same magnitude as the observed rate of increase at other feeding grounds in the North Atlantic.

The current advice for strike limits of humpback whales in West Greenland is based on the interim AWMP adopted by the IWC SC in 2008 (IWC, 2009). This procedure allows for catches of up to two percent of the lower 5th percentile of the most recent abundance estimate, and it was simulation tested for a catch of up to ten humpback whales per year. Two percent of the lower 5th percentile of the 2007 estimate is 29 whales, concluding that an annual Strike Limit of up to 10 humpback whales is safe. This is only 0.3% of the point estimate of 3,270 humpback whales in 2007.

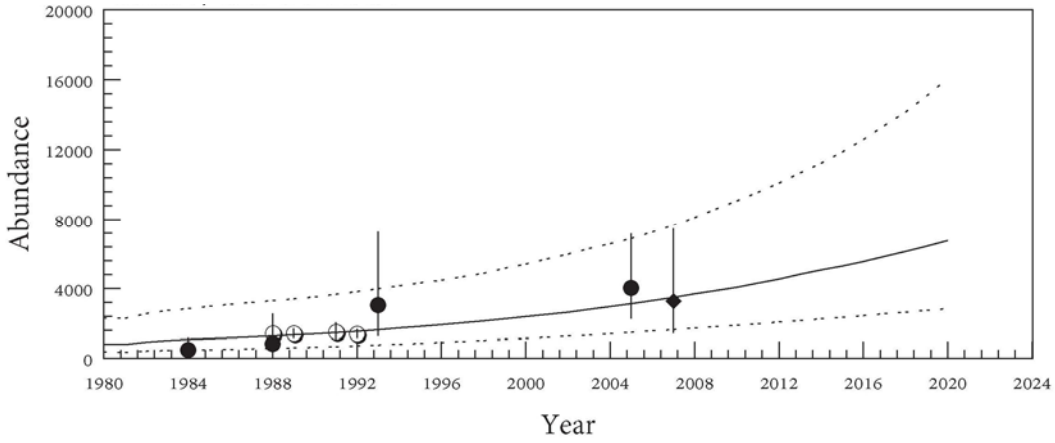


Figure 8. The trend in the abundance of humpback whales in West Greenland as estimated from available abundance estimates.

Bowhead whale

Since 1981, the Greenland Institute of Natural Resources has carried out a series of surveys to estimate the numbers of narwhals and belugas in West Greenland during spring. Bowhead whales are a secondary target of these surveys. The survey carried out in March and April 2006 provided a fully corrected estimate of 1,230 (CV: 0.47) bowhead whales in the Disko Bay and adjacent waters at this time of the year (Heide-Jørgensen *et al.* 2007). A mark-recapture estimate based on biopsies taken in Disko Bay between 2000 and 2010 provided a similar 2010 estimate of 1,410 (CV: 0.23) whales (Wiig *et al.*, 2011).

The aerial surveys provide also a time series of sighting rates (Heide-Jørgensen *et al.* 2007) for the West Greenland winter and spring aggregation of bowhead whales. This series show an increasing abundance, with an estimated rate of increase of 3.8% (90% CI: -2.7-6.1%) per year (Witting, 2012b). This is similar to the rate of increase of 3.4% (95% CI: 1.7-5%) that have been estimated for bowhead whales in Alaska (Zeh and Punt, 2005).

Satellite tracking and genetic analyses indicate that bowhead whales from the Eastern Canadian Arctic and Western Greenland form a single population, where whales move extensively and share common ranges in summer as well as in winter (Dueck *et al.* 2006, Postma *et al.* 2006, Heide-Jørgensen and Laidre 2006, 2007). The winter and spring aggregation of bowhead whales in West Greenland is only a fraction of the total population, for which there is an agreed estimate of 6,340 (CV: 0.38) bowhead whales in 2002 (Givens et al., 2009).

The current advice for strike limits of bowhead whales in West Greenland is based on the interim AWMP adopted by the IWC SC in 2008 (IWC, 2009). This procedure allows for catches of up to two percent of the lower 5th percentile of the most recent abundance estimate, and it was simulation tested for a catch of up to ten bowhead whales per year. Two percent of the lower 5th percentile of the 2002 estimate for the entire population is 68 whales,

concluding that an annual Strike Limit of up to 10 bowhead whales is safe. This is less than 0.2% of the point estimate of 6,340 bowhead whales in 2002, or 0.7% of the 2010 point estimate for the aggregation of bowhead whales in West Greenland.

5. Regulations and Monitoring

The Ministry of Fisheries, Hunting and Agriculture have authority in protection and management of Greenland's living resources locally and internationally, including commercially exploited fish species, terrestrial mammals, marine mammals, birds, recreational use of wildlife and trophy hunting/sport fishing. The Ministry of Domestic Affairs, Nature and Environment have authority in nature conservation and environment.

In Greenland, there is no private ownership of land, sea or living resources. Hunting grounds and game animals are open to harvest and use by Greenlandic citizens, subject to hunting licenses. However, only persons with a full-time occupational hunting license are allowed to hunt large whales, and there are a number of important conditions and limitations, including those related to catch limits, methods of hunting, training and reporting. In addition to Greenland Government's executive orders there may also be additional local rules set by the municipality.

Hunting is regulated and administered by the Ministry of Fisheries, Hunting and Agriculture, and supervised by the Fisheries Licence Control Authority. Locally, a team of wildlife officers/wardens control hunting and coastal fishing activities, making sure that conservation measures of protected areas and species are observed, and passing on information to the local community. The wildlife officers work in close cooperation with the municipalities, the police, Island Command Greenland, and the Government of Greenland. In 2012, 9 wildlife officers and up to 10 assisting wildlife officers were employed nationally. Wildlife officers are operating on the west coast as well as on the east coast.

Legislation related to the hunting of large whales

The Government of Greenland has issued one act in 1999, with several amendments that affects hunting of all animals, including whales. Other acts that indirectly affect whaling include an act on animal welfare from 2003 and an act on nature protection from the same year (table 2).

In addition, there are 3 executive orders that directly affect the taking of large whales: one on maintenance and approval of harpoon cannons, one on the reporting of the hunt and one on the hunt itself. Furthermore, whaling is indirectly affected by an executive order that regulates the issuing of hunting certificates (table 2).

Table 2. Legislation used to regulate hunting of large whales in Greenland.

Type of legislation	Name of legislation
Greenland Home Rule Act	No. 12 of 29 October 1999 on Hunting No. 11 of 12 November 2001 on Revisions to Greenland Home Rule Act no. 12 of 29 October 1999 on Hunting No. 9 of 15 April 2003 on Revisions to Greenland Home Rule Act no. 12 of 29 October 1999 on Hunting No. 1 of 16 May 2008 on Revisions to Greenland Home Rule Act no. 12 of 29 October 1999 on Hunting No. 29 of 18 December 2003 on Nature Protection No. 25 of 18 December 2003 on Animal Welfare
Executive Order	No. 26 of 24 October 1997 on Extraordinary Check and Approval of Harpoon Cannons No. 28 of 30 October 1998 on the Tasks and Authority of Wildlife Officers No. 20 of 27 November 2003 on Hunting Licenses for Full Time Hunters No.11 of 16 July 2010 on Protection and Hunting of Large Whales (under revision now) No. 12 of 16 July 2010 on Reporting of Hunting and Strike of Large Whales, with a revised version expected finalized in May-June 2012.

The Home Rule Act on Hunting and its revisions have the goal to ensure a responsible and sustainable harvest of wild mammals and birds. There is a well-developed process for stakeholder participation in harvest management that includes the Organisation of Fishermen and Hunters, the KNAPK, the municipalities, the Greenland Institute of Natural Resources and the Department of Domestic Affairs, Nature and Environment. It also mentions that only persons with a hunting certificate can hunt, specifies the types of weapons that can be used for hunting and describes the mechanisms to choose leadership in the case of collective hunts. The Home Rule Act on Hunting gives authority to the Cabinet for regulating the hunting and protecting the wildlife under a specific framework.

The Home Rule Act on Nature Protection is aimed at ensuring the protection of animals and plants by protecting Greenland's nature in an ecologically sustainable basis, in accordance with the cautionary principle and with respect for the living conditions of the people.

The Home Rule Act on Animal Welfare aims at ensuring that all animals are handled in a responsible way and, as much as possible, are spared from unnecessary pain, suffering, fear, injuries and disadvantages.

The Executive Order No. 26 of 24 October 1997 on extraordinary check and approval of harpoon cannons establishes the requisites for installing and maintaining harpoon cannons in combined fishing and whaling boats. The goals of this executive order are to ensure that harpoon cannons mounted in whaling boats are safely installed, and adequate for using the Norwegian Penthrite whale-grenade, which is the most efficient available weapon for killing whales.

The Executive Order No. 28 of 30 October 1998 on the Tasks and Authority of Wildlife officers equips the officers with the authority to monitor the hunts. It also gives them the task of coordinating the mercy killing of wounded, entangled or sick animals.

The Executive Order No. 20 of 27 November 2003 on Hunting Licenses for Full Time Hunters defines who can be accredited as a fulltime hunter. Permits for fulltime hunters are based on a number of criteria. The applicant must be a permanent resident of Greenland, having lived here for a minimum of two years over the last decade, and must establish that hunting is a primary source of income (at least half of the applicant's income must be based on hunting and small-scale fishing). The licences are issued by the Ministry of Fisheries, Hunting and Agriculture, but the Organisation of Fishermen and Hunters, the KNAPK, is involved before permits are issued. This is relevant because only fulltime hunters can apply for licences to hunt large whales.

The Executive Order No. 12 of 16 July 2010 on Reporting of Hunting and Strike of Large Whales sets the guidelines for reporting both catches and struck and lost animals. The reporting system is described below in the section about monitoring and data collection.

The executive order on hunting of large whales

The core legislation dealing with hunting of large whales in Greenland at the moment is the Executive order No. 11 of 16 July 2010 on Protection and Hunting of Large Whales[1] (appendix 1). This Executive order declares that all baleen whales and sperm whales are protected, with the exemption of minke whales, fin whales, bowhead whales and humpback whales, which can be taken following the rules specified in the executive order.

This executive order allows only for the hunt of adult whales that are not accompanied by immature animals. It also sets hunting seasons and defines rules for the merciful killing of whales that are injured, entangled in fishing gear or captured in ice entrapments.

The executive order places restrictions on the size and the type of boats that can be used for the taking of large whales. It also regulates the type of harpoon cannons allowed, specifies

1 This executive order is a revision of earlier versions of this executive order, which dates back to 1979.

who should mount, examine and approve these cannons and demands that harpoon cannons should be examined and approved every other year.

The executive order specifies that only persons with licence or special permit can hunt large whales. Only full-time hunters that have taken a special course on handling and use of whale-grenades, and whose boat and equipment have been approved can apply for licences. The executive order outlines a control system that limits sales of whale-grenade to hunters that have taken the whale-grenade course, and have a licence valid for the running year.

Special permits for collective hunt of minke whales can be given in places where the local boats equipped with harpoon cannon cannot satisfy the demand of fresh meat. Only full-time hunters that own skiffs and do not have access to boats with harpoon cannon can apply for permits for collective hunt. There are further regulations concerning the equipment necessary on-board the skiffs and the minimum amount of skiffs that can participate in a collective hunt.

Failure to comply with the executive order can result in a fine and in confiscation of the hunt and of the hunting equipment.

Quotas

The quota year goes from January to December with different hunting periods: minke whale 1 April to 31 December, fin whale 1 January to 31 December and bowhead whale and humpback whale 1 April to 31 December.

Quotas set by the IWC apply to all four large whale species taken in Greenland. Thereafter, according to the executive order on hunting of large whales, the Ministry of Fisheries, Hunting and Agriculture decides the maximum number of large whales that can be taken from each municipality. This decision is taken every year after consulting with the municipalities and with the hunter's organisation. The municipal authorities provide numbered licences that allow the owner to hunt whales with a specified boat during the running year.

Since 1994, the fin whale quotas have been set free, meaning that quotas are not allocated to specific municipalities. Hunters who have obtained a licence for taking fin whales can hunt freely and the Ministry of Fisheries, Hunting and Agriculture stops the hunt when the catches approach the quota. This system has worked satisfactorily.

As a rule, the quotas for minke whales taken with harpoon cannon are also set free in April, at the beginning of the season and redistributed during August or September, depending on the progress of the hunt. In some years however, a proportion of the Greenland quota is

distributed through fixed quotas among the municipalities at the beginning of the season, and the remaining Greenland quota is distributed later during the season.

At the beginning of the season, about 25 % of the quota for minke whales for West Greenland is distributed among the municipalities to be used in the collective hunt. The municipality has the responsibility to allocate this quota among the settlements where there are not enough boats with harpoon cannon.

The Ministry of Fisheries, Hunting and Agriculture stops the hunt of minke whales when the catches approach the quota. This is usually between September and December. The Ministry of Fisheries, Hunting and Agriculture can reduce the quota for the running year, or for the following year, if the quotas have been exceeded. Other factors that may lead to redistribution of quotas, or the moving or cancelling of licences include quota overruns, incorrect reporting and the infraction of taking of whales of protected species[2].

As a rule, the current system works satisfactorily. The catch progress of the quota block 2008-2012 has been followed thoroughly by the Ministry of Fisheries, Hunting and Agriculture and no overrun has taken place for any of the four species. There have been changes of the quotas during this 5-year period decided by the IWC (IWC 61: bowhead whale and IWC 62: humpback whale, fin whale and minke whale).

Because whalers are a combination of hunters of large whales, hunters of other species and fishermen, they have to evaluate a complex number of factors before setting out to catch large whales. These factors include weather conditions, seasonal variations in the availability of whales and time available for other activities such as fishing for snow crab and a number of fish species that are regulated by quotas, fishing seasons and market forces. This explains why some years the quotas for large whale are not all taken (figures 1-4).

Distribution

At the first high tide after a hunt, whale carcasses are dragged into shallow waters, where they are flensed during low tide. Thereafter, the meat and other edible products are distributed among those who participated in the hunt and in case of a surplus; this can be sold at the local market. In two of the more isolated communities, only rifle hunting occurs and thus only common minke whales can be taken; in such cases all products are consumed within the village. In the other communities where multiple species can be taken, products are distributed via direct sharing, bartering or sales at local open markets *Kalaaliaraq* and in some cases, transportation and sales to other towns and settlements that do not have direct access to whale products or for which there is a shortage. This may be via a co-operative supermarket chain or two distribution companies that are partially owned by the

2 executive order number 11of 16 July 2010 on Protection and Hunting of Large Whales

Greenlandic Government; Greenland is a very large island and any sharing is within Greenland. No export of whale products is allowed. Sometimes the meat is also sold directly to institutions, such as hospitals or nursery homes, when the Veterinary authority has given the permission.

Monitoring and data collection

The hunt is monitored by the local authorities and by wildlife officers. Furthermore, it is possible to control the fate of all whale-grenades, which are marked with unique serial numbers and distributed under a tightly regulated system. The Ministry of Fisheries, Hunting and Agriculture gathers information and follows the development of the hunt through a self-reporting system (figure 9).

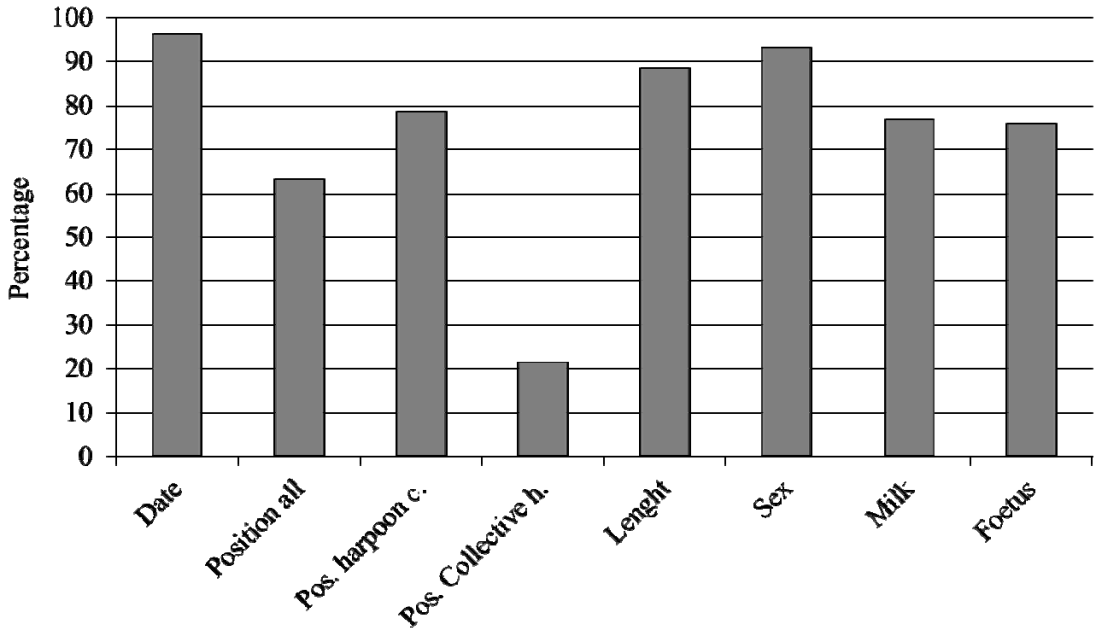


Figure 9. Proportion of the minke whales caught in 2007 to 2011 for which information about the following items was clearly reported: Date when whales were caught; position where whales were caught for all catches pooled; position where whales were caught by boats with harpoon cannon; position where whales were caught in the collective hunt; length of the whales; sex of the whales; females for which data on lactation state was given; females for which information on presence/absence of foetus was given. N = 804 minke whales. Note: This figure shows only a selection of biological parameters, catch reports contain more information than what is outlined here. Source: Ministry of Fisheries, Hunting and Agriculture.

As mentioned above, licences or special permits are required for the killing of large whales. The product of a catch cannot be sold before the municipal authorities have registered the hunt and stamped the licence. In order to obtain a stamp, whalers must show the receipt for the purchase of the whale-grenade, as well as the used whale-grenade with serial number.

Any sale of edible products is forbidden until the licence is stamped. If the catch happens at the weekend, it must be reported on Monday. When the municipality sees that the local quota is almost reached, it informs the Ministry of Fisheries, Hunting and Agriculture, and the time to stop the overall hunt is announced through a media release.

In the small communities of Greenland, it would be difficult to kill, flense and distribute a large whale without the local people and authorities noticing and asking for the relevant licence or permit. In addition, wildlife officers, where available, monitor the hunt by making random checks in the field and in the open markets where the hunters sell their products.

After a whale has been caught, the hunter has the obligation to deliver a catch report to the municipal authorities. This catch report was designed to collect the information described in section IV of the Schedule of the International Convention for the Regulation of Whaling, 1946 (IWC 2006). It includes operational information about the hunter, his license, boat, etc., as well as data about biologically relevant items such as the place where the animal was caught, the approximate size of the animal, sex, reproductive state of females, stomach contents, weight of meat products etc. The report also includes information about the hunting method, including descriptions of the weapon used to kill the animal, serial number of the whale-grenade and estimated time to death.

Although it is obligatory to present a catch report, this is a self-reporting system, since there is no external control over the accuracy of the data provided by the hunters. Not all hunters are able to provide information on all items included in the catch report (figure 9). For instance, only hunters who own a GPS (Global Positioning System) provide with latitude and longitude. Hunters without access to a GPS write the local name of the place where the whale was hunted. This explains the low reporting of geographical data from the collective hunt (figure 9).

Hunters deliver their catch reports to the municipal authorities, together with tissue samples stored in a saturated saline solution. This information is forwarded to the Ministry of Fisheries, Hunting and Agriculture, where it is stored as a hard copy and entered into an electronic database. The tissue samples, together with copies of their associated catch reports are sent to the Greenland Institute of Natural Resources. The Greenland Institute of Natural Resources and the Ministry of Fisheries, Hunting and Agriculture share information and cooperate in the validation of the electronic database. The Greenland Institute of Natural Resources uses the data for biological studies (e.g. Simon *et al* 2007a, 2007b; Witting 2007a, Witting and Schweder 2007). The Ministry of Fisheries, Hunting and Agriculture uses the catch reports to monitor the hunt and to provide information requested by the IWC (e.g. appendix III, this report) and /or NAMMCO.

The Ministry of Fisheries, Hunting and Agriculture also present annual hunting statistics, based on the statutory reports of catches by all hunters, in the information folder *Piniarneq*. The *Piniarneq* is sent to all licence holders and also made available online by the Government of Greenland.

International observers that report to the NAMMCO Inspection and Observation Committee have monitored the hunt of large whales in Greenland a number of times, most recently in 2011.

6. Animal welfare: hunting methods, time to death and loss rates

The IWC Convention and the Schedule do not contain rules relating to ASW in regard to animal welfare issues. IWC rules only outlaw the cold harpoon in the commercial hunt for whales. The Government of Greenland has, nevertheless, on its own introduced comprehensive regulation and information requirements in order to address the question of animal welfare. An explanation (below) of the Greenlandic animal welfare system will aid in understanding the extent of this system.

Humans should make every effort to avoid causing unnecessary distress to living animals. This principle is brought into the legislation in Greenland by the Home Rule Act on Animal Welfare (table 2).

In the case of whaling, the main goal from an animal welfare point of view is to cause death as quickly as possible. An ideal situation is when the whale is killed instantaneously. However, when hunting a large mammal in the wild, this goal may be difficult to attain in some situations. Another important goal of whaling is to ensure that as many of the wounded animals are killed and landed. The proportions of animals that are struck but lost (S/L) are also known as "loss rates".

In order to monitor the welfare aspects in the hunting of large whales, Greenlandic whalers report the time passed between the first hit and the moment when the whale is considered to be dead or unconscious. This period of time is technically known as Time to Death, or TTD. In addition, hunters are required to report all incidences of large whales that were struck but lost.

Time to death and loss rates depend on the species being hunted and on the method used to hunt the animal. There are three types of hunting of large whales in Greenland: hunting of fin whales, bowhead whales and humpback whales with harpoon cannon, hunting of minke whales with harpoon cannon and the collective rifle hunt for minke whales.

Vessels with harpoon cannon

Vessels with harpoon cannons (e.g. plates II and III) take minke, fin, humpback and bowhead whales. Not all local communities have a vessel with harpoon cannon (since 2004, 3 out of 16 communities in West Greenland do not: This is the 3 most northern communities: Qaanaaq, Upernavik and Uummannaq). In recent years, of the approximately 60 fishing vessels equipped with harpoon cannon, some 35-45 are approved for hunting and active in whaling during the season. Gunners must be trained and formal approval of the harpoon cannon is mandatory and required every second year. Courses are provided in the use of the

harpoon cannon and whale-grenade and are compulsory to obtain a licence for the hunting of large whales.

The size of the vessels varies (9-20 m) with 75 % < 15m. A 30 foot (9m) vessel is required for minke whale hunting and 36 foot (11m) vessel for fin whale, humpback whale and bowhead whale hunting. Crew size also varies from around 4 to up to 7. The vessels operate opportunistically and seasonally i.e. they are not full-time whaling vessels but are also fishing vessels and crew members may also have other seasonal employment. The monthly distribution of catches of minke whales by the harpoon hunt has a peak from June-October while for fin whale it is August to September. Bowhead whale is caught in April-May, and humpback from April-December.

Hunting generally occurs in good sea conditions only (<Beaufort 3) as the main method of hunting is stealth. Trips generally last less than 24 hours and once a vessel has caught a whale it tows it to the nearest suitable flensing site. Hunting usually occurs within 60n.miles of the home port of the vessel and depending on conditions up to 10n.miles offshore.

Fin whales with harpoon cannon[3]
Fin whales are caught in West Greenland, south of Uummannaq. They are caught either by two boats of a minimum length of 30 ft. working together, or by one boat of a minimum length of 36 ft. Each boat should be equipped with one certified harpoon cannon, which is checked every second year.

The primary weapon is a harpoon with the Norwegian penthrite "Whale Grenade 99". This whale-grenade was originally produced for hunting minke whales, and it has been modified for the hunt of fin whales by extending the length of the triggering cord and an increase in the amount of explosives.

The triggering cord is a string with one end attached to the detonator and the other end attached to a small hook. This hook anchors itself to the skin of the whale and, as the harpoon penetrates the body of the whale, the triggering cord unfolds until it tenses and initiates the detonation of the whale-grenade. This way, the whale-grenade explodes deep inside the body cavity of the whale at a depth applicable to the anatomy of the specific whale species.

The harpoon with the whale-grenade is fired with a 50mm Kongsberg cannon. The harpoon is attached to a forerunner, which is in turn attached to a winch in the boat. The secondary weapon is the same as the primary weapon. Gunners shoot in the heart and lungs region by aiming at an area close to the pectoral fins.

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Bowhead whale with harpoon cannon[4]
Bowhead whales are caught in West Greenland in the Disko Bay area. They are caught by three boats of a minimum length of 36 ft. working together. Each boat should be equipped with one certified harpoon cannon, which is checked every second year.

The primary weapon is a harpoon with the Norwegian penthrite "Whale Grenade 99" being modified for the hunt of bowhead whales by extending the length of the triggering cord and with a larger amount of explosives.

The harpoon with the whale-grenade is fired with a 50mm Kongsberg cannon. The secondary weapon is the same as the primary weapon. Gunners shoot in the heart and lungs region by aiming at an area close to the pectoral fins.

Humpback whale with harpoon cannon[5]
Humpback whales are caught in West Greenland south of Uummannaq. Presently they are caught by two boats of a minimum length of 36 ft. working together. Each boat should be equipped with one certified harpoon cannon, which is checked every second year.

The primary weapon is an harpoon cannon with the Norwegian penthrite "Whale Grenade 99" being modified for the hunt of humpback whales by extending the length of the triggering cord and with a larger amount of explosives.

The harpoon with the whale-grenade is fired with a 50mm Kongsberg cannon. The secondary weapon is the same as the primary weapon. Gunners shoot in the heart and lungs region by aiming at an area close to the pectoral fins.

Minke whales with harpoon cannon[6]
The majority of the minke whales are taken by this method (figure 12). Minke whales are caught with harpoon cannon in West Greenland, south of Uummannaq. The boat length is 30-70 ft. The harpoon cannons used to hunt minke whales should be certified and checked every second year.

The primary weapon is a 50mm Kongsberg harpoon cannon with the Norwegian penthrite "Whale Grenade 99". The gunners aim at an area close to the pectoral flippers, in order to damage the heart and surrounding areas.

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5 executive order number 11of 16 July 2010 on Protection and Hunting of Large Whales
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The secondary weapon is either a harpoon with the "Whale grenade 99", or rifles of a minimum calibre of 7.62 mm (30.06) and full mantled bullets. Some hunters use solid round-nosed bullets together with rifles with higher calibre (.375), due to their better penetration. Rifle shots are aimed at the neck, in the back of the animal's head.

Plate II. Examples of harpoon cannon vessels in Greenland. (Photo: Greg Donovan).

Plate III. Examples of harpoon cannon and whale-grenades in Greenland. (Photo: Greg Donovan).

Collective minke whale hunt

The collective minke whale hunt takes place in settlements where there are no boats with harpoon cannons or where there is not a food sufficient supply of products from large whales from vessels with mounted cannon. The collective minke whale hunt is the only hunt of large whales in areas with little infrastructure, such as East Greenland and West Greenland north of Disko Bay.

A minimum of 5 skiffs have to participate in the hunt, normally up to 8-10 small (usually around 6m and never more than 9m) vessels equipped with outboard motors (plate IV). Each boat generally contains around 2-4 people. Boats of larger size without harpoon cannon can also take part, but not as the leading boat. These are usually small fishing boats. Each boat has to be equipped with at least one hand harpoon with line and buoys. This harpoon is attached to the whale at the first opportunity, to prevent the animal from sinking. During the course of the hunt, hunters attempt to herd the whale towards shallow and inshore waters.

The weapons of the collective minke whale hunt are rifles of a calibre of 7.62 mm. (30.06) or larger and full mantled bullets. As a rule, the whales are first wounded and then secured with the hand harpoons. When possible, the hand harpoon is used before wounding the animal. One hunter is designated the leader and it is his task to secure the animal with the hand harpoon. Once a whale has been secured, it is killed by shoots aimed at the neck. Round-nosed solid bullets together with rifles with higher calibre, such as .375, are often used to kill the whale. As for the harpoon hunt, the animal is towed to the nearest suitable flensing site and whaling can only occur in good weather conditions (<Beaufort 3). The economic costs of such hunting are less than those of a harpoon vessel (although the number of participants requiring a share is greater and the amount available for distribution and sale is less). Again, this is a seasonal activity for the hunters. The peak season is from July-September

Plate IV. The rifle hunt: a common minke whale caught and brought to a flensing site in 2008 (Photo: Leif Fontaine).

Time to death, instantaneous death and loss rates

A whale is considered dead when it stops swimming, it does not move and its flippers are still. In practice, it can be difficult to estimate the exact moment of death or unconsciousness

because fin and minke whales tend to sink as soon as they are dead. Often, the whale is considered dead or unconscious when it has sunk and the harpoon lines attached to the whale show no signs of movement.

In the case of hunts with harpoon cannon, reasons for longer than average times to death include malfunction of equipment (penthrite whale-grenades failing to explode, ropes breaking, etc.) and inaccurate shots. Deterioration of weather conditions may lead to unsuccessful or difficult catches.

For collective hunts, unusual long times to death are caused by factors such as whales swimming offshore and weather deteriorating.

For all hunts, long times to death increase the risk of wounded animals escaping before being secured. Both fin and minke whales tend to sink when dead, and therefore a relatively common cause for losing the animals is when dead whales sink before they have been secured properly. In this quota block, median times to death have annually ranged between 4 - 15 minutes for the fin whale hunt, 1 - 5 minutes for the minke whale hunt with harpoon cannon, 20 - 25 minutes for the collective hunt and 3 – 7 minutes for the humpback whale hunt with harpoon cannon (figure 10 and table 3).

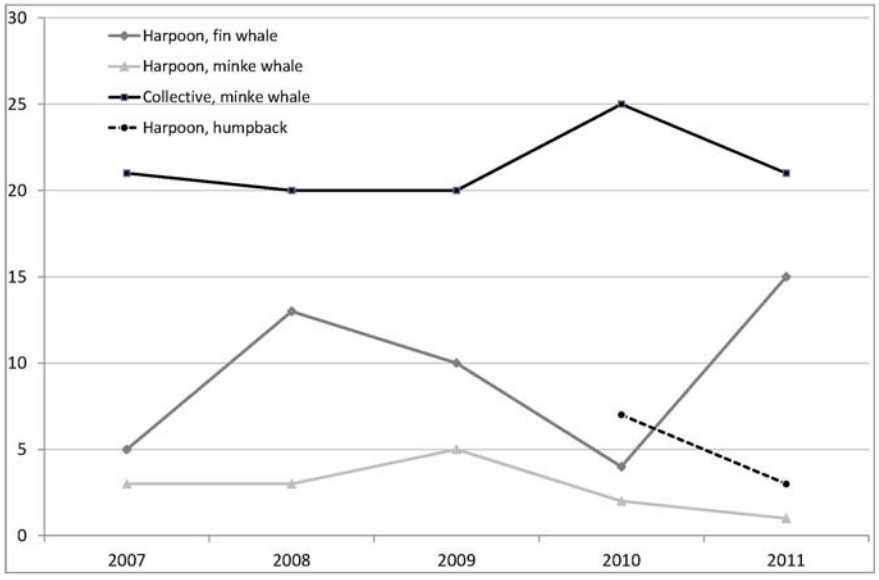

Figure 10. Median time to death for fin whales (diamonds), minke whales taken with harpoon cannon (triangles), minke whales taken in the collective hunt (squares) and humpback whales (circles) from 2007 to 2011. N = 790 catch reports with recorded TTD. Source: Ministry of Fisheries, Hunting and Agriculture.

In recent years, loss rates have ranged between 0 – 21 % for the fin whale hunt, 0 – 4 % for the minke whale hunt with harpoon cannon and 0 – 12 % for the collective hunt (figure 11 and table 3).

From 2007 to 2011, instantaneous death rates, defined as the proportion of whales dying or losing consciousness within one minute after being wounded, were 26 % for the fin whale hunt, 41 % for the minke whale hunt with harpoon cannon, 1 % for the collective hunt and 40 % for the humpback whale hunt (table 3).

Because instantaneous death is difficult to achieve when hunting wild animals, it may be relevant to consider also the proportion of animals that die within five minutes after being struck for the first time. From 2007 to 2011, this proportion has been 40-66 % for the fin whale hunt, 65-80 % for the minke whale hunt with harpoon cannon, 2-14 % for the collective hunt and 33-67 % for the humpback whale hunt (table 3).

The vast majority of large whales hunted in Greenland are minke whales taken with harpoon cannon (figure 12). As we can see from table 3 and figures 10 and 11, this type of hunt is characterised by a relatively low TTD and a very low loss rate (0-4 %). Improving hunter's skill through training with harpoon cannon may be a way to keep the instantaneous death rates of minke whales taken with harpoon cannon at the current levels or lower. Training with rifle as secondary weapon, and continued experiments with different types of newly available ammunition may help to reduce the killing time of minke whales that do not die instantly.

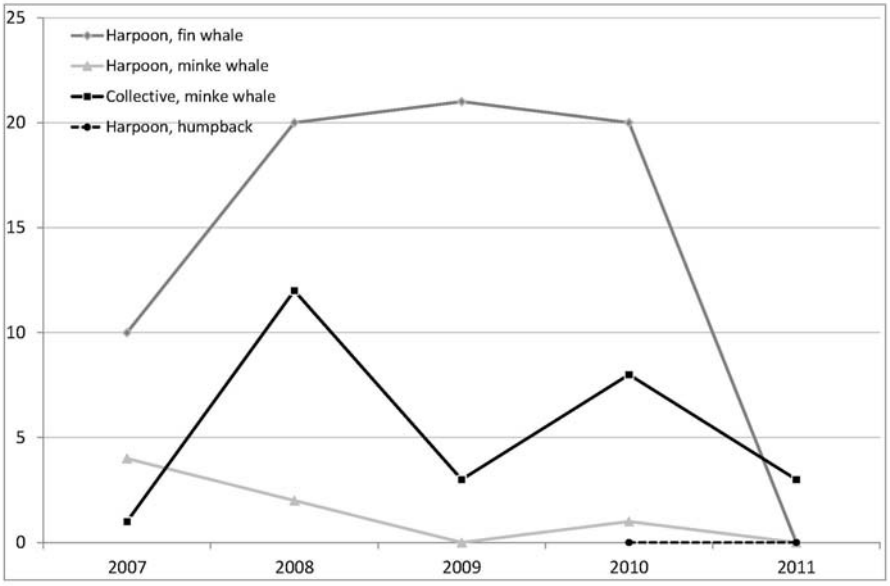

Figure 11. Loss rates for fin whales (diamonds), minke whales taken with harpoon cannon (triangles), minke whales taken in the collective hunt (squares) and humpback whales (circles) from 2007 to 2011. N = 951 catch reports. Source: Ministry of Fisheries, Hunting and Agriculture.

Table 3. Time to death, instantaneous death and loss rates for each type of hunt, from data reported by hunters in 2007-2011 (N = 749 reports). The maximum times to death for the hunts with harpoon cannon correspond to situations when the forerunners broke, the wounded animals escaped and it took a long time to recapture them. Source: Ministry of Fisheries, Hunting and Agriculture.

	Harpoon cannon fin whale	Harpoon cannon minke whale	Collective minke whale hunt	Harpoon cannon humpback
Number of reports TTD - S&L	30 - 8	467 - 5	206 - 16	17 – 0
Average TTD	16 minutes	5 minutes	25 minutes	17 minutes
Median TTD	14 minutes	2 minutes	20 minutes	7 minutes
Maximum TTD	60 minutes	60 minutes	120 minutes	90 minutes
Percentage of whales killed within 1 minute	23 %	41 %	1 %	22 %
Percentage of whales killed within 5 minutes	37 %	70 %	6 %	44 %
Loss rate (% of struck animals that are lost)	21 %	1 %	6 %	0 %

Fin whales are particularly difficult to hunt because of their large size and fast swimming speed. On November 2006, the North Atlantic Marine Mammal Commission (NAMMCO) organised a workshop to Address Problems of "Struck and Lost" in hunts of marine mammals (table 5). In February 2010, NAMMCO arranged a new meeting the "Expert Group on assessment of whale killing data for large whales". One of the conclusions of the workshop was that the hunting of the three largest whales could be improved by modifying the Norwegian penthrite whale-grenade for fin whale to include added explosive power, which was done later in 2010.

Of the methods used to catch large whales in Greenland, the collective hunt has the longest TTD and the next highest rate of struck and lost animals. TTD could be improved by changing the type of ammunition or increasing the calibre of the rifles. However, more effective weapons may lead to animals dying and sinking before they can be secured with hand-harpoons attached to lines and floats; a reduced TTD may lead to an increased struck and lost rate.

The collective hunt is vital for the food security and survival of several hunters and their families, and is especially important in the more remote settlements of Greenland, where there are no boats that can hunt large whales with harpoon cannon. Therefore, any measures

to improve the killing methods used in the collective hunt should take the hunters into consideration and should be economically viable.

Probably as a result of the Government efforts to encourage the hunt of minke whales with harpoon cannon, the proportion of minke whales taken by the collective hunt has decreased during the present century (fig. 12).

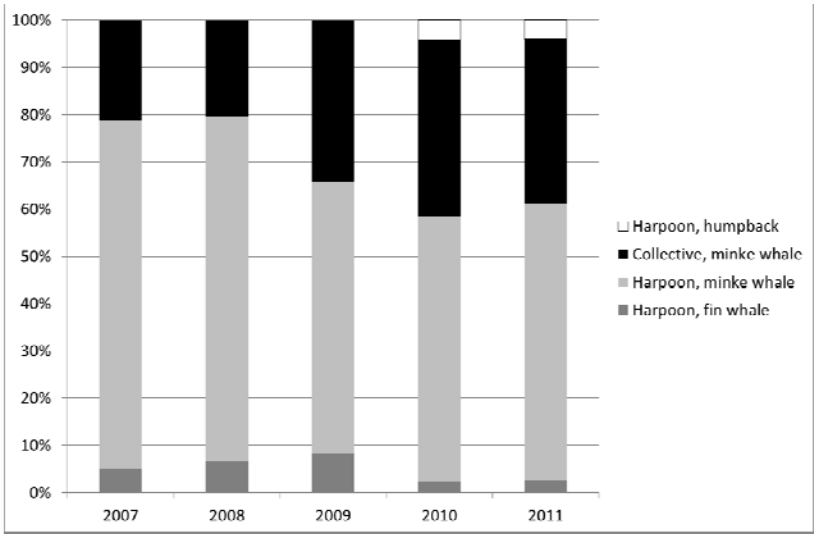

Figure 12. Percentage of whales taken by the different types of hunt from 2007 to 2011. Top: humpback whales with harpoon cannon. Middle, top: minke whales in the collective hunt. Middle, bottom: minke whales with harpoon cannon. Bottom: Fin whales with harpoon cannon. (N = 951 whales). Source: Ministry of Fisheries, Hunting and Agriculture.

Measures to reduce animal suffering

In 1997, the IWC adopted the resolution 1997-1 on improving the humaneness of aboriginal subsistence whaling (IWC 1997). In response, the Greenland Home Rule Government took a number of initiatives, including improved legislation (table 2) and organization of conferences and workshops (table 5).

In addition, the Greenland Government works towards improving the animal welfare aspects of hunting large whales by promoting the use of detonating whale-grenades. As mentioned earlier, this work was boosted by a harpoon-cannon renovating program that finished in 1998 and has been supplemented annually with courses in the handling, use and storage of whale-grenades and maintenance of the equipment.

Maintaining and running a vessel used in whaling has inherent expenses over and above those of running an ordinary vessel. This is primarily due to the regulations that require the use of explosive whale-grenade harpoons in order to maximize the humaneness of the hunt. The use of penthrite whale-grenades became mandatory for all the boats equipped with

harpoon cannons in 1991. Currently, it is obligatory to use the Norwegian penthrite "Whale Grenade 99", which is the globally best available weapon for killing large whales. This whale-grenade is relatively expensive and the Government promotes its use by subsidising part of its cost.

A harpoon cannon itself (essentially a one-off purchase) costs around US$60,000 while an individual whale-grenade costs as much as US$1,500. Other expenses of course, include fuel, maintenance and crew salary if outside the family. The mixed distribution system enables the hunters to meet these costs.

In order to secure the safety of the hunters, and ensure that the whale-grenade is optimally used, a special course is obligatory in order to buy, handle and use whale-grenades. Whale-grenades can only be purchased after showing the certificate of this course, together with the licence for whaling. Licences for taking whales with whale-cannon are given only to boat owners who have taken the course, or have at least one member of their crew who has taken the course.

The current whale-grenade courses are organised by the Organisation of Fishermen and Hunters (KNAPK) in cooperation with the Ministry of Fisheries, Hunting and Agriculture and take place one or more times per year, depending on demand (table 4). The program of the course includes the mechanics of the "Whale grenade 99", security aspects, mounting of harpoon, storage and handling of the whale-grenade, as well as operation of the harpoon cannon and new regulations if needed.

Table 4. Courses on the handling and use of the Norwegian penthrite "Whale Grenade 99", as well as number of hunters, wildlife officers and distributors of the whale-grenade that participated. Skippers or crew members representing all boats equipped with harpoon cannon were taught in the courses from the year 2000. Courses on the use of a previous model of the penthrite whale-grenade were already held since 1991.

Year	2000	2003	2004	2006	2007	2008	2009	2010	2011
No. of courses	Several	9	2	1	3	8	2	1	11
No. of people trained	150	75	30	20	30	69	12	8	10

Table 5. Conferences and workshops relevant for improving the humaneness of whaling, which have been organised or co-organised by the Greenland Government after the IWC adopted the resolution 1997-1 on improving the humaneness of aboriginal subsistence whaling (IWC 1997).

Date	Place	Event
9 - 11 October 1998.	Nuuk, Greenland.	**Seminar on renewable resources** Topics: future ways for sustainable harvest, the situation of the living natural resources, hunting ethics, sharing the resources, etc. Participants: hunters, resource managers, scientists and politicians
9 - 11 February 1999	Nuuk, Greenland	**NAMMCO Workshop on Methods Used for Hunting Marine Mammals** Topics: review of existing marine mammal hunting methods and examination of possibilities for technical innovation. Participants: hunters, resource managers and scientists.
12-15 November 2001	Sandefjord, Norway	**NAMMCO Workshop on Marine mammals: Weapons, Ammunition and Ballistics** Topics: review of existing marine mammal hunting methods and examination of possibilities for technical innovation. Participants: hunters, resource managers and scientists.
4 - 7 January 2003	Reykjavík, Iceland	**NAMMCO Conference on User Knowledge and Scientific Knowledge in Management Decision-Making** Topics: ways of incorporating user's knowledge and scientific knowledge into management decisions. Participants: hunters, fishermen, scientists, and resource managers.
14 - 16 November 2006	Copenhagen, Denmark	**NAMMCO Workshop to Address Problems of "Struck and Lost" in Seal, Walrus and Whale Hunting** Topics: hunting methods with respect to the problem of "struck and lost" (S&L), reasons why some hunts have a high or low S&L rate, recommendations on how to reduce S&L. Participants: hunters, resource managers, scientists and NGOs
8 February 2008	Nuuk, Greenland	**Hunter's seminar** Topics: status of natural resources, legislation, user's knowledge, hunting methods Target audience: hunters, resource managers, scientists and

		politicians
		NAMMCO Expert Group on assessment of whale killing data for large whales
17 – 18 February 2010	Copenhagen, Denmark	Topics: review of existing marine mammal hunting methods, data collection, data analyses and examination of possibilities for technical improvement and innovation. Participants: hunters, resource managers, scientists

The first courses on the use and handling of the whale-grenade were arranged in 1991, in cooperation with Dr. Egil Ole Øen, from the Norwegian School of Veterinary Science and the Norwegian "Kongsberg" company. At that time, the courses were taken by skippers and crew members from all the boats equipped with harpoon cannons (table 4).

The harpoon cannons are checked every second year by persons who have taken a course on mounting and renovation of harpoon cannons. These courses are also organised by the Organisation of Fishermen and Hunters (KNAPK) in cooperation with the Ministry of Fisheries, Hunting and Agriculture. Their frequency depends on the demand. The most recent course was held in the fall of 2011, where personal from shipyards in West Greenland attended.

The course on mounting and renovation of harpoon cannons can be taken by persons who have completed a technical education on welding and working with metal, and are employed in a shipyard approved for the mounting and checking of harpoon cannons. In order to be approved, the shipyard needs to have specific machines and tools, as well as reserve parts needed for mounting and renovation of harpoon cannons.

All the courses are financed by the Greenland Government.

7. The future of whaling in Greenland

The reasons why whaling is important for Greenlanders include:

- Whales and whaling are fundamental part of the culture and the history
- Large whales are a substantial source of food for the majority of the population
- The selling, sharing and distribution of whale meat provide a necessary source of food security and income for many people
- There are well documented health reasons to promote the consumption of whale products
- In a country surrounded by highly productive seas, where the climate seriously restricts farming and agriculture, whaling provides with large amounts of food at very low costs for the environment.

For these reasons, the Greenland Government is committed to continue harvesting large whales in a sustainable way in the foreseeable future.

Greenland's need of whale meat

Greenland's hunt of large whales falls in the category of Aboriginal Subsistence Whaling (ASW) in an IWC context. Commercial whaling aims at maximizing profits, while ASW aims at satisfying the local need (food security) of whale meat and to secure the continuation of cultural practices. Therefore, one of the differences between commercial whaling and ASW is that commercial quotas would be limited only by the sustainability of catches, while aboriginal quotas are limited by the sustainability of the catches and by the needs of local subsistence. As a result, the IWC requires an evaluation of the local need of whale meat before allocating ASW quotas (Donovan, pers. Comm.)

The discussion of Greenlandic need for whale products and its multispecies component dates back to discussions within the IWC from the late 1970s and considerable documentation has been presented over the years and discussed at the IWC Annual Meetings, initially in the discussions of the Commission's Aboriginal Subsistence Whaling sub-committee (appendix III).

The Greenlandic hunt is a multispecies hunt and for this reason, the 'need' statement (documentation of the cultural and nutritional requirements of the population) has traditionally been expressed in terms of tons of meat / edible products of large whales, rather than in individual animals by species. The catch of individual species varied over the years due to a number of factors (ice and climatic conditions, weather, availability). If the result of the hunt, on one individual species, lead to an unsatisfactory result, then the hunt on other species might help to attain the objective of overall food security or an approximation to that objective.

It should be noted that the Scientific Committee's advice on catch limits is based first on whether hunting levels meet the Commission's conservation objectives and secondly whether they meet the need for people. In an ideal world both objectives are met but where this is not possible, priority is given to long-term sustainability. To determine how need can be met in terms of long-term sustainable catches, then a conversion factor is required by species that turns 'strikes' (which may or may not result in a landed animal but which the Scientific Committee assumes always results in death) into tons of edible products.

West Greenland's need of meat from large whales was evaluated and endorsed by the IWC in 1990 and 1991, with basis on the catches previous to 1986 (IWC 1989, IWC 1991a,b, IWC 2007b). The rationale behind this evaluation was that catches of large whales off West Greenland were severely reduced by quotas in 1985, when the humpback whale quota was eliminated and the quota for minke whales was reduced from 300 to 130 whales. Thus, catches previous to 1986 were limited by the demand of whale meat and by the logistic limitations for catching whales, rather than by restrictive quotas (IWC 1989, IWC 1991a,b, IWC 2007b).

According to the estimates accepted by the IWC, the average yearly catches in West Greenland before 1986 were 14 humpback whales, 10 fin whales and 240 minke whales. Using different sources of information, the IWC Aboriginal Subsistence Whaling Sub-committee agreed that the best available estimates for conversion of number of whales to weight of whale meat in this area were 8 metric tonnes for humpback whales, 10 tons for fin whales and 2 tons for minke whales (table 6A; IWC/41/13 submitted to the 1989 meeting of the Commission presented the Greenlandic information on conversion factors and need, subsequently expanded in TC/43/AS3 ADD, IWC 1989. IWC 1991a,b).

Using this conversion factor, the yearly catches of West Greenland, before 1986, yielded 112 tons of humpback whale meat, 90 tons of fin whale meat and 464 tons of minke whale meat. This means that previous to 1986, approximately 670 tons of meat of large whales was consumed yearly in West Greenland (table 6A).

The aggregated "need for whale meat" as such has never changed. The ways to attain the objective of 670 tons meat could and can however be fulfilled by a number of various combinations of the catch.

With the acceptance for the West Greenland hunt to include Bowhead whales in 2007 and Humpback whales in 2010, it will be even more difficult to establish catch limits expressed in numbers of whales, which will satisfy the underlying need for food security. Only very high quotas fort the individual species could justify a permanent change alone to numbers of whales, as the availability of whales changes every year, whereas the need remains fixed in a food security context.

The established need for whale meat has been based on historical catches. The different species can, to a certain extent, substitute each other and consequently we have had to establish a common definition of needs, i.e. tons. The need for whale meat is administratively, during the IWC process, changed into the normal catch limits for the different species and that only after the Scientific Committee has had the opportunity to review the possibility of the various species to sustain a certain hunting pressure. So the catch limits is expressed as number of whales and not as tons.

Applying the same principle to the potential catches given by the current quotas of 178 minke whales, 10 fin whales, 9 humpback whales and 2 bowhead whales for the period 2008 – 2012 and by using the conversion factors from the report from "the small working group on conversion factors" (from whales to edible products) for the Greenlandic large whale hunt of 2010 (Donovan *et al.* 2010), we obtain a total of 570 tons of large whale edible products. This means that West Greenland still needs 100 tons of meat from large whales in order to satisfy its documented need (table 6B). With the use of the recommended quotas given by the Scientific Committee in 2007/2010 a total of 680 tons of edible products is possible, corresponding to the documented need for West Greenland (table 6C).

Table 6A. The documented yearly need of meat from large whales for West Greenland. Based on the catches previous to 1986

Species	Tons of meat per whale	Average yearly catches before 1986	Tons of meat form large whales consumed yearly in West Greenland previous to 1986
Humpback whale	8	14	112
Fin whale	10	9	90
Minke whale	2	232	464
Bowhead whale	0	0	0
		Total	**666**

Table 6B. The amount of edible products from large whales for West Greenland based on the values corresponding to the quotas for 2008-2012. The quotas from 2008-2012 yield 100 tons of whale meat less than the documented need for West Greenland.

Species	Tons of edible product per whale	Annual quota 2008-2012	Tons of edible products form large whales available per year from 2008-2012 quotas
Humpback whale	11,6	9	104
Fin whale	10,9	10	109
Minke whale	1,9	178	338
Bowhead whale	11,0	2	22
		Total	**574**

Table 6C. The amount of edible products from large whales for West Greenland based on the recommended quotas for 2008-2012 from the Scientific Committee in 2007/2010. The quotas from the Scientific Committee give a yield in tons of edible products corresponding to the documented need for West Greenland.

Species	Tons of edible product per whale	Scientific Committee recommended quotas 2008-2012	Tons of edible products form large whales available per year from 2008-2012 quotas
Humpback whale	11,6	10	116
Fin whale	10,9	19	207
Minke whale	1,9	178	338
Bowhead whale	11,0	2	22
		Total	**683**

The need of meat from large whales for West Greenland has probably increased since 1990, because Greenland's ability to locally produce alternative sources of meat has remained stable, and there has been a slight increase in the population size of 2.5 %. The increase of population size is more substantial when considering the number of people born in Greenland, which is 10 % (fig. 13). The people born in Greenland are the ones that are primary consumers of marine mammal products, including meat from large whales. The 10 % increase in residents born in Greenland corresponds to an increase of 60 tons of edible products from large whales with a need of 670 tons, giving a total need of 730 tons.

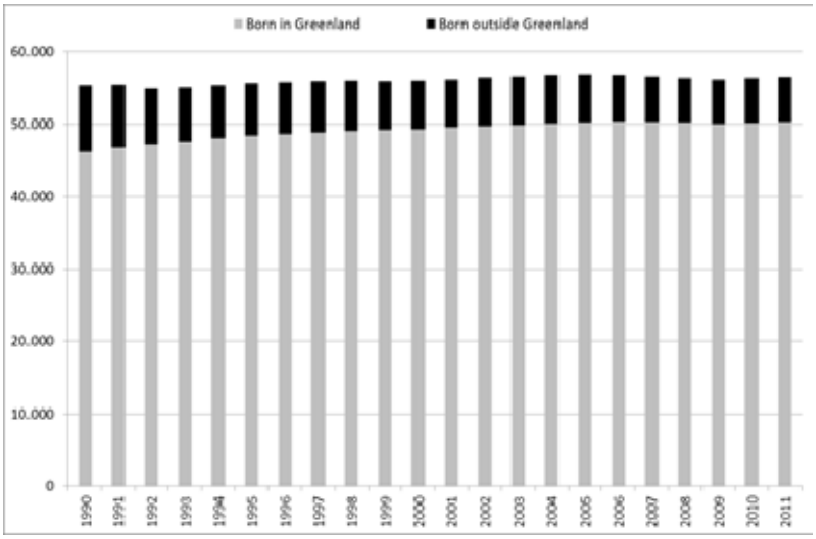

Figure 13. The number of people residing in Greenland from January 1990 to January 2011. Bottom: people born in Greenland. Top: people born outside Greenland. Source: Greenland Statistic.

There is a high demand of meat from large whales in modern Greenland. When fresh meat from a large whale is brought to the open market *Kalaaliaraq*, the news spreads through the "*kamikpost*", a communication network that includes phone calls and text messages from

mobile phones and, in the larger cities chain emails across working places. As a result, people often line up to buy the meat and hunters have no problem selling the share of the catch that is meant to be sold (plate V).

Plate V. People lining up to buy fresh minke whale meat at the open market in Nuuk, May 2007. Photo: Benny Koksholm

Environmental and health reasons for consuming whale meat in Greenland

It is clear that hunting and consuming large whales have a cultural importance in Greenland. It is also clear that whale meat and other whale products, such as *mattak* are a vital source of proteins and a very welcome source of income, either as cash from sales, or as savings for those who acquired whale meat through non-commercial transactions or by sharing. What is

not so obvious for everyone is that consuming whale meat in Greenland has huge advantages for the protection of the environment and for the health of Greenlanders.

Harvesting large whales from local waters has a relatively low cost for the environment. In contrast, the amount of gas emissions, production of waste and use of land needed to farm western meat, and to transport this meat to Greenland is enormous. As mentioned above, the current IWC quotas are short of fulfilling the need of meat from large whales in West Greenland. The buffer in the food supply and the consequence of this shortage of meat is an increased import of western meat from overseas, because agricultural activities in Greenland are minimal not covering the nutritional need at all.

In a country like Greenland, surrounded by highly productive seas and with a climate unsuitable for large scale agriculture and farming, it would be environmentally irresponsible not to satisfy the demand of meat by hunting large whales, as long as such hunts are sustainable.

For Greenlanders, consuming whale meat has further advantages in terms of health. Several studies have confirmed the nutritional value of marine mammal products compared to imported and westernised food such as chicken, beef and pork. Whale *mattak* contains rich sources of vitamin A and C, thiamine, riboflavin and niacin. These are known to provide excellent protection against scurvy. Whale meat and blubber are considered beneficial due to their high concentration of selenium. In addition, marine mammal lipids are low in saturated fats and high in the omega-3 polyunsaturated fatty acids that give protection from the cardiovascular diseases common in North America and Europe (e.g. appendix II).

There is evidence that Inuit traditional diet protects against several diseases, including some types of cancer, thrombosis and atherosclerosis. There is also evidence that Greenlanders depend on traditional food to obtain vitamin D. The Board of Nutrition in Greenland recommends Greenlanders not to stop eating traditional food because the effects of stopping these are not known. It is believed that a reduction of traditional diet would lead to an increase in the number of western diseases (appendix II).

Biological advice on catches of large whales in Greenland

It is important that the IWC quotas can satisfy the documented need of meat from large whales of 670 tons for West Greenland.

During the last 20 years, the knowledge about the status of the stocks of large whales was insufficient to grant optimal allocation of quotas. Fortunately, surveys for large whales were successful during 2005 and 2006, and the IWC was in 2007 in a better position to approve new quotas.

Humpback, sei and bowhead whales had all become numerous enough to allow for well regulated sustainable catches and in 2007 the IWC Scientific Committee evaluated assessments of humpback and bowhead whale. Using a newly developed approach to provide safe interim advice on catch limits for a period of up to 10 years, the Scientific Committee agreed that annual strike limits of two bowhead whales and ten humpback whales off West Greenland (numbers first requested by Denmark at the 2007 Annual Meeting - (IWC, 2007a, IWC 2008)) would not harm the stocks (IWC, 2009). The quota advice given in 2007, 2009 and repeated in 2010 on all four species of large whales was valid for a period of two quota blocks and the recommendation from the Scientific Committee is as such still valid until 2017/2018.

The recommendation from the Scientific Committee in 2007/2010 was 178 minke whales, 19 fin whales, 5 bowhead whales and 10 humpback whales. Greenland therefore asks for a yearly quota of 178 minke whales, 19 fin whales, 2 bowhead whales and 10 humpback whales in the quota block 2013-2018, which respects the work and recommendation of the Scientific Committee, gives a total of 683 tons of large whale meat, and hereby satisfies the documented need.

Subsistence use and local consumption
Observations of relevance when considering "need":

- The great variability in the catch of all animals during any one given year (due to climatic variations or variations in the size of the individual groups of animals).
- The substitution between the various prey animals.
- The opportunistic nature of the hunt.
- The nutritional superiority of traditional Greenlandic diet.
- Food security.

The Government of Greenland are of the firm conviction that it has to be up to the political responsible organization to define needs in relation to whales subject to IWC management rules. The same political organization, i.e. the Greenland Government, is also responsible when taking decisions on the utilization of other living resources within their land or EEZ and is therefore the only organization having sufficient knowledge to define "needs". The political decisions are in Greenland based on scientific knowledge and will have to take account of the changing size of the population. There has been a slight increase of 2.5 % of the Greenlandic population since 1990; the number of people born in Greenland has increased with app. 10 % in the same time period.

This is not a new point of view. In 1979 a resolution was passed in IWC stating that the need of US aboriginals was determined by the US Government (Chairman's report on IWC 30 - appendix 4).

As seen from a Greenlandic point of view it is a pity that the various definitions associated with indigenous whaling totally ignore the obligation of the government (before 1979 the Danish State, after 1979 the Greenland Self-rule Government and after 2009 the Government of Greenland) to secure the food supply of the Greenland society. The definition of subsistence use from 1982 is, by some, narrowly understood as covering one settlement only or maybe also neighbouring settlements. The definition, however, also cover the situation (in Greenland) that, the proceedings from whaling has to be distributed also to settlements or towns not able to cover their own needs in whale meat. This means that distribution channels had to be established and later on to be kept open.

During the period 1923-58 the whale catcher *Sonja* had the purpose to secure the food supply in whale meat because the hunt for other animals had failed and because there, at that time, was only one Greenlandic owned vessel with harpoon cannon; 1948. This was the situation in the years 1916-23 after which *Sonja* was commissioned to avoid starvation. When *Sonja* was decommissioned in 1958 the idea of equipping fishing vessels with harpoon cannons emerged – again in order to secure the meat supply of the population.

The distribution and sharing of whale meat within a community, having taken a whale, is in Greenland based on an assumption of reciprocity. It was and is expected that the successful hunters sharing out of the result of their hunt would receive compensation later. This was, in the old time, a kind of "mutual insurance" system. When it comes to sharing with other communities the barter economy prevailed, but also here we have found the idea of "insurance". Finally the sharing with more distant communities would have to include money – or as stated in the 1982 definition "a generalized currency." This acquisition of money helps to pay for those commodities that cannot be bought in the barter trade. Money secures full utilization of the whale and money is necessary to buy and operate the means of production (boat, motor, harpoon cannon, payment of crew, insurance (which is very high when a boat carry certified whale-grenades) and to transport the whale products from the flensing sites.

According to the Greenland Government rules, the large whales cannot be taken without the use of the explosive whale-grenade. The Greenland Government banned the use of the "cold harpoon" in 1991. It will have to be noted that the indigenous societies are not required by IWC rules to use the explosive whale-grenade. It is quite OK – according to the IWC rules – in an indigenous society to take a whale with the "cold harpoon" or anything else, but that would mean a very long time to death (TTD) for the whale. So in Greenland the explosive whale-grenade was introduced for animal welfare reasons. This was the answer to criticism for using the cold harpoon. However, the current 2011 price for such an exploding whale-grenade is very high – app. 1500 US dollars, when you buy it in Greenland, mostly due to transportations and storing costs.

Seen from a Danish/Greenlandic point of view indigenous subsistence whaling cannot function in Greenland without money involved as described. The involvement of money was already agreed to in the 1982 definition and money helps to keep the channels of distribution open to areas where no whaling takes place or where whaling has failed in order to fulfil the obligation of the Government to secure the food supply of the population.

The function and importance of money in Greenland in relation to whale meat is definitely different to the importance of money in the commercial whaling previously known. In an IWC context, the commercial whaling was a business enterprise with the purpose to generate an economic surplus to the owners of the whaling fleets. The aboriginal whaling in Greenlandic waters has the purpose of contributing to secure the food supply of the Greenlandic population and this purpose is helped along by a limited involvement of money.

An alternative, which is not considered feasible today, would be to introduce a whale catcher (like *Sonja*) to secure the food supply of the population. However, the costs of such a vessel would have to be covered either by sale to consumers or by the taxpayers. There would thus be no difference in substance between the present system and a new one. The current policy of the Greenland Cabinet is to minimize or eliminate all kinds of subsidies.

Where the profit maximization was the primary reason for commercial hunting, the products from indigenous hunting intends to meet both immediate nutritional requirements and to provide food for the winter period as well as satisfying important cultural and socioeconomic needs.

8. Concluding remarks

Greenlandic whaling is the continuation of a very old tradition performed according to needs in a contemporary society. Hunting in general and hunting of large whales in particular are integral parts of the culture and the economy of the country. A Greenland without whale hunting is therefore unimaginable. For this reason, Greenland has the intention to hunt large whales both in the near-term and in the long-term future.

The prospects of obtaining approval from IWC for quotas for 2013 – 2018 are particularly good for a number of reasons:

- IWC scientific committee has recently approved estimates of abundance for the relevant stocks.
- The control and monitoring systems are functioning well and the block quotas for the period 2008 – 2012 have not been exceeded.
- With the current quotas, Greenland is 100 tons short of the documented need of 670 tons of meat from large whales that was approved by the IWC in 1991.

With a robust advice from the Scientific Committee, the IWC should be able to approve quotas for Greenland that are following the biological recommendation. These quotas would be sustainable and the hunt would be well regulated. Furthermore, Greenland will continue working actively on improving the welfare aspects of whale hunting.

The Greenland Government hopes that the IWC will be able to take management decisions based on the best available scientific knowledge and respect for the cultural, nutritional and economical needs of Greenlanders and in this respect also fulfil the obligation of the IWC Convention. Allowing Greenland to obtain sufficient whale meat to fulfil the documented need will be a way to protect the environment by rationally utilising the natural resources at hand.

Lastly, it will be suitable to quote then the vice-president in the Inuit Circumpolar Conference (ICC), who expressed concerns about the political climate in the IWC with regard to Inuit Whaling in 1995, which still is the situation and more even:

"As western societies over-did their whaling in the past, so they also over-do the protection of whale stocks today. They interfere in the numbers of whales we take, they call our hunting methods inhumane. For some reason, they do not trust our capability to utilize one of our most important food resources in a sustainable manner."

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Appendix I

Summary of the points relevant to limitations of catch, monitoring of quota and human killing methods, from the "*Greenland Government's executive order nr. 11 of the 16th of July 2010 on the hunt of large whales*"

Species:

- All baleen whales and sperm whales are protected, with the exemption of minke whales, fin whales, bowhead whales and humpback whales, which can be taken following the rules specified in the executive order.

- Only fin whales above 15.2 m can be taken from January 1 to December 31. Mother/calf pairs are protected year round.

- Minke whales can be taken from April 1 to December 31. Mother/calf pairs are protected year round.

- Only adult bowhead whales can be taken from April 1 to December 31. Mother/calf pairs are protected year round.

- Only adult humpback whales can be taken from April 1 to December 31. Mother/calf pairs are protected year round.

- It is possible to apply for a special permit for the euthanasia of whales that are injured, entangled in fishing gear or captured in ice entrapments.

- Large whales caught legally, but discovered being sick and unsuitable for human consumption are considered as euthanized and are not counted as part of the quotas.

- The Ministry of Fisheries, Hunting and Agriculture decides how to use products derived from whales euthanized. It has been the custom that the meat of whales entangled in fishing gear is distributed freely among local institutions, such as hospitals or schools, and among the people from the community.

Requirements:

- Only Greenlandic boats registered in the Danish Maritime Authority can be used for whaling. Furthermore, there are restrictions related to the size of the boat and the equipment on board. The restrictions include the type of harpoon cannon.

- Harpoon cannons should be mounted and approved by authorized personnel. All harpoon

cannons have to be examined and approved every other year by authorized personnel.

- Only persons that have taken a special course on the handling and use of penthrite whale-grenades can buy or handle whale-grenades. A certificate of the whale-grenade course, as well as a license, valid for the current year, has to be shown in order to buy a whale-grenade. Registers of all the purchases of whale-grenades are kept at the Ministry of Fisheries, Hunting and Agriculture.

- The boat and the equipment that will be used for whaling have to be approved before a hunter can obtain a license. Only full-time hunters that have taken the course on handling and use of whale-grenades can apply for licenses for large whales (an exemption from this rule are the special permits for collective hunt for minke whales described below). Only persons with license or special permit can hunt large whales.

- Special permits for collective hunt of minke whales can be given in places without harpoon cannon boats or where the local boats equipped with harpoon cannon cannot satisfy the demand of fresh meat. Only full-time hunters that own skiffs and do not have access to boats with harpoon cannon can apply for permits for collective hunt. There are further regulations concerning the equipment necessary on board the skiffs and the minimum amount of skiffs that can participate in a collective hunt.

Quotas and licences:

- After consulting with the municipalities and with the hunter's organization, the Ministry of Fisheries, Hunting and Agriculture decides every year the maximum number of fin whales, bowhead whales, humpback whales and minke whales that can be taken from each municipality. The allocated IWC quotas are the basis of the annual quota.

- The municipal authorities provide numbered licenses that allow the owner to hunt whales with a specified boat during the current year. Since 1994, the fin whale quotas have been set free, meaning that quotas are not allocated to specific municipalities. Hunters who have obtained a licence for taking fin whales can hunt freely and the Ministry of Fisheries, Hunting and Agriculture stop the hunt when the catches approach the quota.

- Licenses for minke, bowhead and humpback whales are restricted to one whale per license. Licenses for hunting of these three whale species are given in numbered forms by the Ministry of Fisheries, Hunting and Agriculture and distributed to the municipal authorities. The municipal authorities issue the licenses for all the large whales to the hunters.

- Once the amount of licenses allowed by the allocated quotas has been issued, the municipal authorities send information about the hunters, licenses and boats to the Ministry of Fisheries, Hunting and Agriculture. This information is entered into an electronic database.

- A license for the hunt of a large whale in West and East Greenland is used when the animal is struck, not depending on the success of the landing.

- When the quota for any of the four species have been reached for the calendar year any exceeded numbers shall be reduced the same year or following year on any allowed species.

Redistribution and reduction of quotas:

- The Ministry of Fisheries, Hunting and Agriculture can reduce the quota for the current year, or for the following year, if the quotas have been exceeded. Quotas can also be reduced if whales, including whales of protected species, have been shot or captured without permit.

- The municipal authorities and the Ministry of Fisheries, Hunting and Agriculture have the authority to transfer or cancel licenses. Incorrect reporting of taken or wounded whales may lead to loss of licenses.

- The quotas are redistributed in early fall. Unused licenses cannot be used after the redistribution of quotas.

Sale of catch, biological samples and catch data

- The product of a catch cannot be sold before the municipal authorities have registered the hunt and stamped the license. In order to obtain a stamp, whalers must show the receipt for the purchase of the whale-grenade, as well as the used whale-grenade with serial number (hunters from the collective hunt do not buy whale-grenades and are exempted from showing receipts or used whale-grenades).

- It is forbidden to export meat of large whales for commercial purposes.

- Anyone who kills a large whale has the obligation to deliver a fresh tissue sample to the municipal authorities. The sample should be stored in containers with chemical solution provided by the Greenland Institute of Natural Resources, and sent to this institute as soon as possible. The sample should be accompanied by information about species, date, location, etc.

- Failure to compile with the regulations of this executive order can lead to fines.

Appendix II

The importance of whale meat and blubber to the diet of Greenlanders

Paper 1.

Title: The Inuit diet. Fatty acids and antioxidants, their role in ischemic heart disease, and exposure to organochlorines and heavy metals.An international study.

Authors: Mulvad G, Pedersen HS, Hansen JC, Dewailly E, Jul E, Pedersen M, Deguchi Y, Newman WP, Malcom GT, Tracy RE, Middaugh JP, Bjerregaard P.

Affiliation: Center of Primary Health Care, Nuuk, Greenland.

Journal: Arctic Med Res. 1996; 55 Suppl 1:20-4.

Abstract: Traditional food is culturally, economically and nutritionally important for the Greenlandic Inuit people. In the 1970s the preventive effect of marine fat on cardiovascular disease, thrombosis and atherosclerosis was described. The low incidence of ischemic heart disease among Greenlanders has been related to the high intake of marine food. Since 1990 routine autopsies have taken place in two towns in Greenland, Nuuk and Ilulissat. The autopsies represent 26% of the total number of deaths in these two towns. Samples have been collected from 104 autopsies. International cooperative studies have analysed specimens in relation to ischemic heart disease as a benefit related to diet, as well as the level of heavy metals and organochlorine in organs as a risk related to diet. High amounts of mono-unsaturated and Omega-3 poly-unsaturated fatty acid were found in adipose tissue. Liver analyses of selenium have confirmed the expected high intake among Greenlanders. Reduced atherosclerotic lesions were found in the coronary arteries. Blood pressure levels calculated from renovascholopathia of hypertension indicate prevailing levels similar to those in industrialized countries. Some factors in Greenland may be protecting the coronary arteries, thereby of setting the expected effect of hypertension. The level of methyl mercury in organs is generally high. PCB concentrations found in organs of Greenlanders are higher than among other populations. **Health and risk effects of the traditional foods need further investigation.**

Paper 2.

Title: Vitamin D insufficiency in Greenlanders on a westernized fare: ethnic differences in calcitropic hormones between Greenlanders and Danes.

Authors: Rejnmark L, Jorgensen ME, Pedersen MB, Hansen JC, Heickendorff L, Lauridsen AL, Mulvad G, Siggaard C, Skjoldborg H, Sorensen TB, Pedersen EB, Mosekilde L.

Affiliation: Department of Endocrinology and Metabolism C, Aarhus Amtssygehus, Aarhus University Hospital, Aarhus, Denmark. rejnmark@post6.tele.dk

Journal: J Trace Elem Med Biol. 2004

Abstract: We studied the influence of age, gender, latitude, season, diet and ethnicity on plasma 25-hydroxyvitamin D 25 OHD, PTH, 1,25-dihydroxyvitamin D, vitamin D-binding protein, bone-specific alkaline phosphatase, and osteocalcin levels in 46 Greenlanders living in Nuuk (64 degrees N) on a traditional fare (group A), 45 Greenlanders living in Nuuk on a westernized fare (group B), 54

Greenlanders (group C), and 43 Danes (Group D) living in Denmark (55 degrees N) on a westernized fare. Blood specimens were drawn both summer and winter. Vitamin D insufficiency (plasma 25 OHD <40 nmol/l) was common in all four study groups during summer (23-74%) and winter (42-81%). Compared to groups A and D, vitamin D insufficiency was significantly more frequent in groups B and C. In all groups, summer levels of 25 OHD were above winter levels. Multiple regression analysis revealed a significant effect of ethnicity. Compared to Danes, Greenlanders had higher 1,25-dihydroxyvitamin D levels, but lower 25 OHD and PTH levels despite relatively low plasma calcium concentrations. In addition to ethnicity, 25(OH)D levels were influenced by age, season (summer > winter), and diet (a traditional Inuit diet>westernized diet). Ethnic differences exist between Greenlanders and Danes. Our results suggest that Greenlanders may have an inherent lower "set-point" for calcium-regulated PTH release or an enhanced renal 1,25(OH)(2)D production. **In addition to ethnicity, age, season, and diet were important determinants of vitamin D status. Changes from a traditional to a westernized fare are associated with a reduced vitamin D status in Greenlanders. Vitamin D supplementation should be considered."**

Paper 3.

Title: Inuit are protected against prostate cancer.

Authors: Dewailly E, Mulvad G, Sloth Pedersen H, Hansen JC, Behrendt N, Hart Hansen JP.

Affiliations: Public Health Research Unit, CHUQ-Laval University, Sainte-Foy, Quebec, G1V 5B3 Canada. eric.dewailly@crchul.ulaval.ca

Journal: J Trace Elem Med Biol. 2004

Abstract: Incidence and mortality rates for prostate cancer are reported to be low among Inuit, but this finding must be additionally supported given the difficulty of obtaining a precise medical diagnosis in the Arctic. We conducted an autopsy study in 1990-1994 among 61 deceased males representative of all deaths occurring in Greenland and found only one invasive prostate cancer. Histological data were available for 27 autopsies and revealed no latent carcinoma. **Our results suggest that in situ carcinoma is rare among Inuit and that their traditional diet, which is rich in omega-3 polyunsaturated fatty acids and selenium, may be an important protective factor**."

Paper 4.

Title: Elements in autopsy liver tissue samples from Greenlandic Inuit and Danes. V. Selenium measured by X-ray fluorescence spectrometry.

Authors: Milman N, Laursen J, Byg KE, Pedersen HS, Mulvad G, Hansen JC.

Affiliation: Department of Medicine B, Rigshospitalet, University of Copenhagen, Copenhagen, Denmark. milman@rh.dk

Journal: J Trace Elem Med Biol. 2004;17 (4):301-6.

Abstract: The content of selenium in normal liver tissue samples from Greenlandic Inuit was measured and the results compared with those obtained in normal liver tissue samples from Danes. Normal liver tissue samples were obtained at autopsy from 50 Greenlandic Inuit (27 men, 23 women) with a median age of 61 years (range 23-83) and from 74 Danes (44 men, 30 women) with a median age of 60 years (range 15-87). Total liver selenium content was measured by X-ray fluorescence

spectrometry. The content of selenium (median) was in Inuit 26.6 micromol/kg dry liver (5-95 percentile: 15.2-49.4) and in Danes 17.7 micromol/kg dry liver (5-95 percentile: < 3.8-36.5) ($p < 0.0001$). Liver selenium content displayed no significant gender difference, either in Inuit or Danes. In Inuit men, there was a negative correlation between liver selenium content and age ($rs = -0.39$, $p < 0.05$), whereas Danish men displayed a positive correlation between liver selenium content and age ($rs = 0.37$, $p = 0.02$). There was no correlation in Inuit or Danish women. In Inuit, the median hepatic selenium index (liver selenium content divided by age) was 0.48 and in Danes 0.33 ($p = 0.001$). There was an inverse correlation between hepatic selenium index and age both in Inuit ($rs = -0.77$, $p < 0.0001$) and in Danes ($rs = -0.47$, $p < 0.0001$). **In conclusion, Inuit had a higher liver content of selenium and a higher hepatic selenium index compared with Danes. The more favourable selenium status is due to a higher nutritional selenium intake with fish and meat from sea mammals.**

Paper 5.

Title: Prevalence of food insecurity in a Greenlandic community and the importance of social, economic and environmental stressors.

Authors: Goldhar C, Ford JD, Berrang-Ford L.

Affiliation: Department of Geography, Memorial University, St. John's, Canada.

Journal: Int J Circumpolar Health 2010; 69(3):285-303.

Abstract: **Objectives.** Characterize and examine the prevalence of food insecurity in Qeqertarsuaq, Greenland, and identify stressors affecting the food system.

Study design. A mixed-methods study using quantitative food security surveys and semi-structured interviews.

Methods. Food security surveys (n=61) were conducted with a random sample of 6% of Qeqertarsuaq's population. Semi-structured interviews (n=75) allowed participants to describe in their own words their experience of food insecurity and permitted in-depth examination of determinants. Key informant interviews were used to provide context to local perspectives.

Results. Prevalence of food insecurity (8%) is low. However, interviews reveal a more nuanced picture, with women, adults aged 55+, and non-hunters reporting constrained access to Greenlandic foods. Barriers restricting traditional food access include changing sea ice conditions, reduced availability of some species, high costs of hunting and purchasing food, tightening food sharing networks, and hunting and fishing regulations.

Conclusions. While the Qeqertarsuaq food system is relatively secure, the research highlights susceptibility to social, economic and environmental stressors which may become more prevalent in the future.

Paper 6.

Title: Can we safely eat our traditional food? Yes, most of it!

Authors: The Nutrition Council of Greenland

Affiliation: Ministry of Health, Government of Greenland.
Journal: Public information service from the Nutrition Council: A discussion on contamination of Greenlandic food. Knowledge is needed when choosing healthy food, 2011.

Consuming marine mammals with regard to contaminants
If you have passed child-bearing age or no longer wish to have more children, you can eat marine mammals with no consequences for your health, despite the contamination of the marine food chain. Since contaminants from the marine food chain accumulate over a lifetime, and a number of them are not excreted, consuming marine mammals will generate levels during pregnancy that can affect the health of the foetus, as has been ascertained in cases in Greenland.
Therefore, until you have had the children you plan to have, the Greenland Nutrition Council would suggest exercising restraint in consuming marine mammals. If you want to be completely sure of not exposing the foetus to such contaminants, consumption of marine mammals should be avoided until you have had the children you wish. After this there is no risk to health, given the doses measured and the knowledge available in this area. At the same time, **the Nutrition Council recommends that work be done in all the necessary fora to avoid contaminating the food chain, i.e. banning the substances causing the health risk.** A ban on PCB has measurably succeeded in reducing its occurrence in the Arctic marine food chain.

Paper 7.
Title: Food Security across the Arctic.
Authors: Inuit Circumpolar Council - Canada.
Affiliation: Inuit Circumpolar Council – Canada.
Journal: Background paper of the Steering Committee of the Circumpolar Inuit Health Strategy, May 2012.
The Inuit right to food security, page 9-10: Food security is inextricably linked to a person's ability to exercise his or her right to food. That right is included in the 1948 Universal Declaration of Human Rights: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family (sic) including food" (Article 25). It is also enshrined in the 1966 International Covenant on Economic, Social and Cultural Rights.
The UN's Office of the High Commissioner for Human Rights (OHCHR) has recognized the importance of food security for indigenous peoples – not just from a calorific perspective but also from the broader socio-cultural perspective. In its paper on *The Right to Adequate Food*, the significance of food and its accessibility is acknowledged as being "inextricably grounded in …socio-cultural traditions and [the] special relationship to ancestral territories and resources. Food and its procurement and consumption are often an important part of their culture, as well as of social, economic and political organization[7]. For Inuit, this linkage between food and culture is inextricable.
Also important in the context of the right to food is the States obligation to protect the right to food. For Inuit across the Arctic, this is particularly relevant in terms of the level of chemically contaminated

7 The Right to Adequate Food, UNHCHR, Fact Sheet No. 34.

traditional foods. In this, **OHCHR points out that States have to protect the right to food against violations by third parties. "For example, States should prevent third parties from destroying sources of food by, for instance, polluting land, water and air with hazardous industrial or agricultural products or destroying the ancestral lands of indigenous peoples".** As noted earlier, this area of contaminants is one in which ICC has taken a leading role internationally to bring about changes to international regulations and governance surrounding the production of contaminants which threaten the Arctic and its wildlife.

Appendix III

Documentation on Greenland Whaling Submitted by the Greenland Government to the IWC, 1979 – 2011[8]

1979

1) Ab. Subs. Panel of Experts. Seattle. Kapel, F.O and Petersen, R. Subsistence Hunting – the Greenland Case.

1981

2) TC/33/WG/S 3 Subsistence Whaling in Greenland.[9]

1983

3) TC/AB 1. Subsistence and Cultural Needs relating to Aboriginal Subsistence Whaling among the Inuit in Greenland.
4) TC/AB 2. Nutritional Needs relating to Aboriginal Subsistence Whaling among the Inuit in Greenland.

1984

5) TC/36/AS 2. The Greenland Aboriginal Whale Hunt: Report to the standing Sub-Committee on Aboriginal /Subsistence Whaling of the International Whaling Commission, June 1984. 2

1986

6) TC/38/AS 3. Documentation on the catch taken by aboriginal people from the Central Stock of Minke Whales.
7) TC/38/HK 2 B. The Greenland Aboriginal Whale Hunt.

1987

8) TC/39/AS 1. The Legal and Administrative Aspects of Whaling Operations in Greenland.
9) TC/39/AS 2. Hunting Methods including the "Cold/Warm Harpoon Question".
10) TC/39/AS 3. Larsen, F.B. - Scoresbysund - A Hunting Community in East Greenland. 2
11) TC/39/AS 4. Petersen, R. - Communal Aspects of Preparation for Whaling, of the Hunt Itself and of the Ensuing Products. 2

1988

12) IWC/TC/40/AS doc.1. Submission by the Delegation of Denmark. 2

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8 Scientific Committee Papers not included

9 An edition of these papers is found in "The Anthropology of Community-Based Whaling in Greenland", Studies in Whaling No. 4, Occasional Publication No. 42, Canadian Circumpolar Institute, University of Alaska, ISBN 1-896445-05-5. This book was given to all IWC-delegations at the Annual Meeting in 1997.

13) TC/40/AS 3. Danish Statement.
14) TC/40/HK 3. Denmark´s Answers to the Remaining Questions stated in Document IWC/39/19 "Report of the Humane Killing Working Group", Annex 4.
15) TC/40/HK 4. Implementation of the Detonating Grenade Harpoon i Greenland´s Whaling on a Experimental Basis.

1989

16) IWC/41/22. Greenland Subsistence Hunting.[1]
17) TC/41/HK 2. Introduction of the Detonating Grenade Harpoon in Greenland Whaling on a Experimental Basis.
18) TC/41/Inf. 4. National Inspection in Greenland.

1990

19) TC/42/SEST 4. Larsen, S.E. and Hansen, K.G. - Inuit and Whales at Sarfaq (Greenland): Case Study.[1]
20) TC/42/SEST 5. Josefsen, E. - Cutter Hunting of Minke Whale in Qaqortoq (Greenland): Case Study.[1]
21) TC/42/HK 1. Greenland Home Rule Government. - Introduction of the Detonating Grenade Harpoon in Greenland on an Experimental Basis.
22) TC/42/HK 2. Greenland Home Rule Government. - Greenland Licences for Hunting Minke Whales with Rifles.
23) TC/42/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland.

1991

24) TC/43/AS 1. Greenland Home Rule Government. - Designation of Types of Rifles in Greenland.
25) TC/43/AS 3 Add. Conversion Factors for Minke Whale Meat (Denmark)
26) TC/43/AS 4. Caulfield, R.A. - Qeqertarsuarmi arfanniarneq: Greenlandic Inuit Whaling in Qeqertarsuaq Kommune, West Greenland.[10]
27) TC/43/HK 2. Greenland Home Rule Government. - Introduction of the Detonating Grenade Harpoon in Greenland, 1991.
28) TC/43/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland, 1990.

1992

29) IWC/44/HK 1. Greenland Home Rule Government. - Introduction of the detonating grenade harpoon in Greenland, 1992.
30) IWC/44/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland, 1991.
31) IWC/44/12. International Register of Whaling Vessels, June 1992 (contribution concerning Greenlandic vessels).

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10 An edition of these papers is found in "The Anthropology of Community-Based Whaling in Greenland", Studies in Whaling No. 4, Occasional Publication No. 42, Canadian Circumpolar Institute, University of Alaska, ISBN 1-896445-05-5. This book was given to all IWC-delegations at the Annual Meeting in 1997.

1993

32) IWC/45/HK 3. Greenland Home Rule Government. - Greenland Action Plan on Whale Hunting Methods, 1992.
33) IWC/45/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland, 1992.

1994

34) IWC/46/AS 1. Caulfield, R.A. - Whaling and Sustainability in Greenland.[11]
35) IWC/46/AS 2. Greenland Home Rule Government. - Quota monitoring in Greenland, 1993.
36) IWC/46/AS 3. Greenland Home Rule Government. - Greenland Action Plan on Whale Hunting Methods, 1993.

1995

37) IWC 47/24. Greenland Home Rule Government. - Greenland Action Plan on Whale Hunting Methods, 1995.
38) IWC/47/Inf. 2. Greenland Home Rule Government. - Quota monitoring in Greenland, 1994.

1996

39) IWC/48/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland, 1995.

1997

40) IWC/49/AS 3. Caulfield, R.A. - New Technologies, New Traditions: Recent Developments in Greenlandic Whaling.
41) IWC/49/Inf. 1. Greenland Home Rule Government. - Quota monitoring in Greenland, 1996.

1998

42) IWC/50/Inf.1. Greenland Home Rule Government - Quota monitoring in Greenland, 1997.

1999

43) IWC/51/inf.3. Greenland Home Rule Government. - Quota monitoring in Greenland, 1998.
44) IWC/51/WK6.Greenland. Status for Greenland Action Plan on Whale Killing Methods, 1999
45) IWC/51/WK7.Greenland. Report on improvings in ASW in Greenland.
46) IWC/51/WK8.Greenland.Efficiency in the Greenlandic Hunt of Minke and Fin whales, 1990-1998.
47) IWC/51/22. A note regarding information requested in IWC-resolution 1998-11.

2000

48) IWC/52/AS1. A note regarding information requested in IWC-resolution 1998-11.
49) IWC/52/AS2. Traditional Food – Environmental and Health Concerns.

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11 An edition of these papers is found in "The Anthropology of Community-Based Whaling in Greenland", Studies in Whaling No. 4, Occasional Publication No. 42, Canadian Circumpolar Institute, University of Alaska, ISBN 1-896445-05-5. This book was given to all IWC-delegations at the Annual Meeting in 1997.

50) IWC/52WKM&AWI 2. A note regarding information encouraged in IWC-resolution 51/44
51) IWC/52WKM&AWI 3. Status for Greenland Action Plan on Whale Hunting Methods, 2000
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96) IWC/58/INF. Checklist of Information Required or Requested under Section VI of the Schedule
97) IWC/58. Denmark. Progress report on cetacean research, March 2005 to March 2006, with statistical data for the calendar year 2005

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98) IWC/59/WKM&AWI/3 Summary of Activities Related to the Action Plan on Whale Killing Methods (based on Resolution 1999-1)

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100) IWC/59/INF Checklist of Information Required or Requested under Section VI of the Schedule
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102) IWC/59/ASW8rev. White Paper on Hunting of Large Whales in Greenland
103) IWC/59/23 Proposed Schedule Amendment (Greenland catch limits)
104) IWC/59 Greenland Power Point Presentation IWC 59, 2007

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111) IWC/61/6 Summary of Activities Related to the Action Plan on Whale Killing Methods (based on Resolution 1999-1)
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117) IWC/62/9 Donovan, G et al. 2010. Report of the Small Working Group on Conservation Factors (from Whales to Edible Products) for the Greenlandic Large Whale Hunt.
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126) IWC/63/INF Checklist of Information Required or Requested under Section VI of the Schedule
127) IWC/63 Denmark. Progress report on cetacean research, March 2010 to March 2011, with statistical data for the calendar year 2010
128) IWC/63/12rev Proposal to Establish an Ad Hoc Aboriginal Subsistence Working Group (Denmark, Russian Federation and USA)

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130) IWC/64/x Summary of Activities Related to the Action Plan on Whale Killing Methods (based on Resolution 1999-1)
131) IWC/64/INF/x Summary of Infraction Reports received by the Commission in 2012 / Report on infractions of the International Convention for the Regulation of Whaling, 1946 and summary information on catches
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133) IWC/64 Denmark. Progress report on cetacean research, March 2011 to March 2012, with statistical data for the calendar year 2011
134) IWC/64/12. Proposed Schedule amendment (Greenland catch limits)
135) IWC/64 Greenland Power Point Presentation IWC 64, 2012
136) IWC/64/ASW/x White Paper on Hunting of Large Whales in Greenland

Appendix IV

The 63. Annual meeting of the International Whaling Commission: Range state consultation - Addressing Greenland's aboriginal subsistence quota on humpback whale

Introduction

Over the last couple of annual meetings, a decision has been hard to reach on the Greenlandic request of 10 humpback whales off West Greenland. However after many hours of negotiations a consensus was in the end reached at IWC 62 in 2010.

Concerns or criticism were raised based on some of the following arguments: (1) the shared nature of the resource and the possible opportunity costs to tourist-based whale watching in parts of the Caribbean where humpback whales from the western North Atlantic migrate to breed and (2) the need for notifications and consultations with nations that benefit (e.g. through tourist-based whale watching) from shared ownership of western North Atlantic humpback whales.

A wish was raised that Greenland had consultation with the Range states. Therefore Greenland at the following meeting IWC 63 in 2011 invited all range states countries or territories in North America and in the Caribbean Basin to participate in a consultation. This is a resume of the presentation given at that consultation.

Range state

Range state is a term used in zoogeography to refer to the countries in which a species or biotope is usually found. The migratory route followed by the West Greenland feeding aggregation is unknown and thus it is difficult to formally identify its range states.

Criteria used for the consultation was by the advice from the IWC Secretariat in combination with Randy Reeves from the IUCN Cetacean Specialist Group, in total 13 Countries / Territories incl. Greenland-Denmark was invited.

With the presentation we did not only wished to talk about whaling, but also to give a more thorough introduction to the country Greenland with all the possibilities and challenges we are facing now and in the time to come. The presentation covered the following topics: I) Greenland's geography, infrastructure, economy, II) use of natural resources, III) fishing and whaling, with a focus on the humpback whale, IV) a short status on the use of the quota of 2010, V) the last topics up for discussion was other human induces mortality and whale watching.

I) Greenland's geography, infrastructure, economy

Not enclosed here.

II. The use of natural resources

Whale hunting is part of our modern life today; however Greenland is also a traditional hunting society, where food is gathered by those who are able to take it. Opportunities for employment in Greenland and especially in settlements are limited and for many of our people, hunting and sharing of food resources offers the only opportunity for food of our own sources.

Our hunting is opportunistic, given the resources available, as different species migrate around our settlements. These resources are shared throughout Greenland. As it is known, we do not export our whale products. 14 out of the 18 whale hunting villages are able to take a combination of minke, fin, humpback whales and in the Disko Bay area also bowhead whales.

The Greenland whale hunt, relevant to the IWC, consists of two forms. It is the riffle hunt of minke whale conducted from small boats by special permit and it is the harpoon hunt conducted from fishing vessels, mounted with harpoon cannon.

The Hunting methods have continually been evaluated and improved since the end of 1980's. Only full-time hunters that have taken a special course on handling and use of whale-grenades, and whose boat and equipment have been approved can apply for licences.

The White Paper on Hunting of Large Whales in Greenland presented (ASW/8) in 2007, described our efforts to keep up with technology and to train the hunters in order to ensure that large whales are killed as humanely as possible, while at the same time taking into consideration the safety of the crews. Most of this work is done in close collaboration with NAMMCO, weapon experts and veterinaries.

In this case where two new species have become available to Greenland, an exchange of knowledge and know-how on hunting techniques etc. was started to ensure that the appropriate killing and flensing methods are used. The whale-grenade was modified last year for ensuring a quicker killing.

Scientific advice on Greenlandic quotas

In 2009 the Scientific Committee was for the first time able to give interim advice on all 4 whale species relevant to Greenland. The interim advice is valid for two quota blocks. The recommendation from the Scientific Committee was 10 humpback whales off West Greenland. In asking for the quota of humpback whales, we seek to return to the multi-species harvest and balance of resources available to our people prior to 1987, when concerns over the health of the humpback whale population led to the need to abandon that hunt.

By returning the humpback whales to our mix of resources, we will be able to reduce the overall number of whales our hunters take, because of the greater yield provided by the humpback whales.

In 1991 IWC commission accepted and endorsed that the annual need of meat from large whales in West Greenland was 670 tonnes. The need was estimated on the basis of the average annual catches of 232 minke whales, 9 fin whales and 14 humpbacks through the years from 1965 to 1985. This estimate was calculated by the "Technical Committee and Aboriginal Subsistence Whaling Sub-committee".

III) Humpback whales in Greenland

Movement patterns of thousands of humpbacks photographed across the North Atlantic show high levels of site fidelity. There is good evidence that there is little or no movements between the four major feeding aggregations in the North Atlantic although there is mixing on the breeding grounds. The primary breeding grounds now appear to be near the Dominican Republic. To date there is no evidence that these whales migrate as far as or below the equator.

The Scientific Committee has previously agreed to provide management advice on the West Greenland feeding aggregation of humpback whales by treating this as an independent stock. The full biological population stock from which Greenland is harvesting is not endangered; in fact the West Greenland feeding aggregation has an estimated increase rate of 9 % per year. The total breeding population was estimated to be more than 11,000 animals from the YONAH project. The stock winters in the Caribbean Seas and stay in Greenland waters during summer.

Last year the Commission agreed that an annual strike limit of 9 whales for the years 2010-2012 with an annual review by the Scientific Committee will not harm the stock.

IV) Status on the use of the quota of 2010

The 9 Greenlandic catches in 2010 took place from Disko Bay down to South Greenland over a time span of 4 months August-November. It is likely that the range of humpback whales in West Greenland will expand as the population continues to increase. In recent years humpback whales were found more widely distributed in West Greenland and records of observations further north are now frequent.

To implement the decisions taken at the 62 Annual Meeting a new official order had to be issued by the Greenlandic Government covering, at the same time, all the changes to the minke whale quota, the fin whale quota and the new humpback quota.

The Greenland Government decided to introduce the new official order on 13 August 2010, i.e. 2 months before 13 October 2010. This decision had been taken to honor the political agreement from the 62 Annual Meeting. This can be considered an infraction in relation to the wording of article V, para 3 in the IWC Convention. During the deliberations of the Greenland Government the decision was to disregard Arcticle V, para 3 as the objection procedure in the convention is without meaning when one country only has been granted quotas. The 90-day period and the dates of the Annual Meeting were originally linked in with the Antarctic season and for catch limits shared by a number of governments and it does not work temporally for the Northern Hemisphere if limits are set for the same year as the Annual Meeting which agrees them.

V) Other human induces mortality

In terms of anthropogenic mortality affecting the large western North Atlantic breeding population, any mortality (e.g. ship strikes, bycatches, direct catches) is relevant wherever it occurs throughout the range.

Humpback whales are subject to entanglements, often fatal, in fishing gear. They are also vulnerable to injury by ship strikes, which can also be fatal.

The documentation of such incidents is best for US waters. For the Atlantic coasts of the US during 1999-2003, there were 19 reports of death or serious injury caused by entanglements and 7 cases of death or serious injury due to ship strikes (Anonymous. 2005. Humpback Whale (*Megaptera novaeangliae*) Gulf of Maine Stock. Marine Mammal Stock Assessment Reports.. Office of Protected Resources. NOAA Fisheries). For US Pacific waters (mainly Alaska) during 1999-2001 there were 13 reports of deaths and serious injuries due to entanglement and 3 reports of deaths due to ship strikes (Anonymous. 2005. Humpback Whale (*Megaptera novaeangliae*) Eastern North Pacific Stock. Marine Mammal Stock Assessment Reports. Office of Protected Resources. NOAA Fisheries).

So in US waters alone a higher number of humpback whales die than the annual quota given to GRL. Much work is done to reduce the numbers, however these will be underestimates, and possibly large underestimates of actual deaths. There is a need for estimates based on the understanding of the risk in relation to ship densities and whales involved.

Whale watching

Greenland respects the whale watching industry and hears the concern raised from some parties. However Greenland sees the possibility of the two industries moving forward hand in hand. For the first time guidelines has been made concerning whale watching in Greenland. The guidelines have been made as a collaboration between the Greenland Institute of Natural Resources and The Greenland Tourism and Business Council.

Unregulated whale watching has proved to disturb humpback whale behaviour in Nuuk Fjord. Preliminary results of a study on the effect of guidelines on humpback whale behavior indicate that if a simple set of guidelines are followed, the impact of whale watching is likely to be reduced. Based on these preliminary results, the Greenland Institute of Natural Resources recommends the following set of guidelines for whale watching in Greenland:

- Slow down to "no wake" when within 500 m of the whale
- Do not approach the whale directly from behind or in front
- Do not actively move closer to the whale than 50 m

Furthermore there was Greenland participation in the Whalewatching Workshop, Puerto Madryn in November 2010.

There are at present 15- 20 Operators in Greenland with none dedicated to WW alone. WW covers app. 5-10 % of charter tours.

On October 5th 2010, the Government of Greenland received a letter from CARIBwhale Inc. (Association of Caribbean Whale Watch Operators), which was signed by 80 whale watch operators from 14 different countries, all represented here except Iceland, Australia and Trinidad & Tobago. They expressed their concern regarding the resumption of our humpback whale hunt. Their concern is that the whaling will harm the tourism in Greenland. The Government of Greenland does not share this concern.

The Government of Greenland is confident that both whaling and whale watching can co-exist, as it already has done for several years in Greenland, Iceland and Norway. Both in Norway and Iceland reports are showing that whaling is not harming the tourism or other industries, on the contrary, the countries have seen increase in the tourism industry.

Furthermore, the Government of Greenland's legislation number 11 of 16th July 2010 on hunting and protection of large whales gives the Municipalities of Greenland the opportunity of creating their own guidelines on whaling and whale watching. A recent statement from Greenland Tourism Council says that the Council will support whaling as long as the whaling is conducted in a sustainable way

Conclusion
The aim of the presentation was to inform a bit more about Greenland than is possible during a quota discussion and also to set into perspective our quotas influence on the economic interest of the Range states.

The humpback hunt is a part of the food gathering in Greenland – on parallel with the hunt for seals and fishing. We think it is a biological sound to distribute the hunting pressure on several species, including the humpback.

When we compare the numbers involved in the hunt and the total stock of humpbacks we can see no harm for the stock at all and we do not believe that the hunt influence the behaviour of the animals at all, i.e. is a problem in relation to whale watching nationally nor internationally.

We hope this presentation gave the background information needed for further consideration and will be happy for any feedback. No concern or criticism was raised during or after the presentation. Neither have any of the range states countries or territories contacted Greenland in the time after June 2011 for further questions or consultation concerning the humpback whale hunt.