REPORT OF THE SEVENTH MEETING OF THE SCIENTIFIC COMMITTEE
Nuuk, Greenland, 13-15 April, 1999

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1. CHAIRMAN'S WELCOME AND OPENING REMARKS

Klaus Nygård, Director of the Greenland Institute of Natural Resources (GINR), welcomed the participants to Nuuk and to the Institute. He noted that this was the first international scientific meeting to be held at the Institute, and wished the committee well with its deliberations.

The chairman welcomed participants to the meeting (Appendix 1), noting especially the addition of two new members, General Secretary Grete Hovelsrud-Broda and Scientific Secretary Daniel Pike. The following observers were accepted by the SC:
Amalie Jessen, Head of section for wildlife management at Greenland Home Rule, NAMMCO Council member;
Arild Landa, Head of section for bird and mammal studies, GINR;
Ivalo Egede, public relations officer at GINR.

2. ADOPTION OF AGENDA

The agenda (Appendix 2) was accepted with the addition of Item 10, Planning for a possible NASS-2000 survey.

3. APPOINTMENT OF RAPPORTEUR

Daniel Pike, Scientific Secretary of NAMMCO, was appointed as Rapporteur.

4. REVIEW OF AVAILABLE DOCUMENTS AND REPORTS

4.1 National Progress Reports

National Progress Reports for 1998 from the Faroes, Iceland, Norway, and Greenland for 1997 (SC/7/NPR - F,G,I & N) were submitted to the Committee.

4.2 Working Group Reports

Working Group Reports and other documents available to the meeting are listed in Appendix 3.

5. COOPERATION WITH OTHER ORGANISATIONS

It was noted that the Scientific Committee has no formal agreements with any other organizations regarding exchange of observers. This was considered desirable in the case of the IWC, where there is a considerable overlap in interests. For other organizations, such as ASCOBANS and ICES, relevant reports of meetings should be obtained by the Secretariat and given to the Scientific Committee chairman for review. It will be up to him or her to decide if the report(s) should be circulated to the rest of the SC. Some Scientific Committee members had attended meetings of interest this year and reported back to the SC.

5.1 IWC

Nils Øien reported from the annual meeting of the International Whaling Commission Scientific Committee (IWC/SC) held in May 1998. At this meeting The IWC/SC finished its work on validation of the Norwegian estimate of minke whale abundance in the Northeast Atlantic based on the 1995 survey, and agreed that these estimates are adequate for use in the Revised Management Procedure (RMP). There was an extensive discussion of the reanalyses of the Icelandic 1987 aerial survey data made by Borchers and coworkers. The IWC/SC was not able to resolve the problems and decided not to accept the new estimates. A reanalysis of the NASS-87 shipboard data for the CM (Jan Mayen

Central stock) area was also discussed at the meeting, but several concerns were raised that required reanalyses. An estimate for the CM area based on NASS-95 was however accepted, the abundance of minke whales being 12,043 (cv. 0.277). There was also a discussion on data availability, since management under the RMP requires data to be available on a continuing basis. This is a problem in cases where non-member states, like Iceland, hold data of interest to the IWC/SC. In general, the IWC/SC would not recommend the use of published estimates in the RMP if the estimates are based on data that does not meet the reuirements and guidelines of the procedure. Greenland was requested to table a research programme at the annual meeting in 1999 to address management questions related to large whales off Greenland.

Gisli Vikingson reported on a meeting of a working group under the IWC Scientific Committee, held in Barcelona in March 1999, to plan a multinational research programme on the effects of pollutants on cetaceans. A framework for a 5 year research project on harbour porpoises and bottlenosed dolphins in the North Atlantic was developed at the meeting. Although the long term objective of the study is to assess the effects of pollutants at the population level, the research project focusses on the early links of the cause-effect relationships, in particular the relationship between contaminant levels in certain tissues as indicators of certain effects.

5.2 ICES

ICES has now completed its response to the NAMMCO request for advice on catch options for harp and hooded seals in the North Atlantic (SC/7/8) (Agenda 9.1 and 9.2).

The General Secretary informed the Committee that negotiations were continuing with ICES to develop a formal Memorandum of Understanding between NAMMCO and ICES.

Tore Haug informed the Committee about the new structure of ICES. Two new formal Working Groups had been established under the Living Resources Committee: the Working Group on Marine Mammal Population Dynamics and Trophic Interactions and the Working Group on Marine Mammal Habitats. The work of these groups will be relevant to NAMMCO. The Secretariat will obtain reports from these working groups when they become available and provide them to the chairman.

Tore Haug also noted that some of the theme sessions at the ICES annual science conference would be of interest to the SC; for example, a theme session on marine mammal telemetry. It was generally agreed that Scientific Committee members attending such meetings should provide briefings to the SC.

6. INCORPORATION OF THE USERS KNOWLEDGE IN THE DELIBERATIONS OF THE SCIENTIFIC COMMITTEE

At its 8th meeting in Oslo in September 1998, the Council recommended that the SC should develop a strategy on how to incorporate the knowledge of marine mammal users in the advice provided by the SC. Daniel Pike presented a briefing note detailing one option for moving forward on this issue to the Scientific Committee (SC/7/6).

The proposal was to integrate both scientific knowledge and the knowledge of hunters in the NAMMCO "Status of Marine Mammals in the North Atlantic" report (SC/7/7, Agenda 7.). This report will consist of stock status reports for each species in the North Atlantic. The stock status reports will contain most of the information that is important to user groups, such as stock definition, distribution, population estimates, population trend, harvest levels and suggested safe harvest level. The information will be presented in a non-technical format and distributed widely through the NAMMCO website and other means. It is likely that these reports will become very important to NAMMCO, as they will be definitive statements about the status and allowable harvests of stocks that will have a wide and public circulation.

For stocks for which there is considerable hunter knowledge, for example West Greenland Beluga, an assessment committee would be formed which would bring together scientists, knowledgable hunters and managers. The committee would consider a draft stock status report prepared by the NAMMCO Secretariat with appropriate expertise. The objective of the committee would be to integrate all relevant knowledge in the report. Agreement and disagreement between hunter knowledge and scientific knowledge would be explicitly noted, and all statements would be clearly referenced.

The final stock status report produced by the committee would go to NAMMCO Council for approval. It would then be published widely through the internet and otherwise as appropriate.

An approach similar to this has been used in Canada, and an example of a stock status report produced in this way was reviewed by the SC.

There was general agreement that this might be a viable approach in some cases. It was agreed that, if scientific and hunter knowledge did not coincide, they must both be presented separately in the reports. In cases where scientific and hunter knowledge were in agreement, this should also be clearly noted. There should be no attempt to reach a ”compromise” between scientific and hunter knowledge. It would then be up to the NAMMCO Council to decide which knowledge base to use in their decision making process.

There was some discussion over what kinds of ”marine mammal users” should participate in this process. It was generally agreed that the limiting factor should not be the type of use, but the knowledge of the users. It should be clearly stated at the outset that NAMMCO is seeking relevant knowledge, not politically motivated opinions. With this in mind, it should be left to user organizations to choose participants for this process.

It was agreed that the Secretariat should further develop this proposal and carry out consultations with hunter organizations. The proposal should then be presented to NAMMCO Council for approval.

7. UPDATE ON STATUS OF MARINE MAMMALS IN THE NORTH ATLANTIC

At its 5th meeting in 1997, the Scientific Committee (SC) agreed that the “List of Priority Species” should be replaced by a new document, entitled ”Status of Marine Mammals in the North Atlantic”. The new document would incorporate status information on all marine mammal species in the North Atlantic. The Scientific Committee also agreed that the document should be further developed by the Secretariat, using the current update of the “List of Priority Species” as a basis.

Since that time, little progress has been made on this document. The working draft is a slightly re-formatted version of the “List of Priority Species” document, with reports for other species, such as sperm whale, humpback whale, blue whale, fin whale, and sei whale, as yet uncompleted.

Daniel Pike presented a briefing note on plans for preparation, format and publication of stock status reports (SC/7/7). Stock status reports could be central to the function of NAMMCO as an organisation. They can be definitive statements about the current knowledge and management issues for each stock. They can be written in a non-technical format, and published widely through various means, such as the NAMMCO Web Site and NAMMCO Scientific Publications. The publication of such reports demonstrates that the organisation is operating in a transparent and defensible manner. The process of developing such reports can also be a means whereby NAMMCO can incorporate the knowledge of marine mammal users, as well as scientists, in defining stock status (See Agenda Item 6).

There was some discussion over whether reporting should be on species rather than stocks. For most species, there is not enough knowledge on stock delineation to warrant reporting by stock. However, information on stock delineation would certainly be presented, and reporting could be done on a stock by stock basis in some cases. The proposed format was considered acceptable. It was agreed that the secretariat should proceed with the development of this report, with priority given to the eight species (minke whale, fin whale, walrus, pilot whale, bottlenose whale, beluga, narwhal, ringed seal) for which the Scientific Committee has generated advice. Reports for species/stocks could be published separately as they are completed.

8. ROLE OF MARINE MAMMALS IN THE MARINE ECOSYSTEM

8.1 Economic Aspects Of Marine Mammal-Fishery Interactions

At its 8th meeting in Oslo in September 1998 the Council recommended that the Scientific Committee should investigate the following economic aspects of marine mammal-fisheries interactions:

i) to identify the most important sources of uncertainty and gaps in knowledge with respect to the economic evaluation of harvesting marine mammals in different areas;
ii) to advise on research required to fill such gaps, both in terms of refinement of ecological and economic models, and collection of basic biological and economic data required as input for the models;
iii) to discuss specific cases where the present state of knowledge may allow quantification of the economic aspects of marine mammal-fisheries interactions;
    a) what could be the economic consequences of a total stop in harp seal exploitation, versus different levels of continued sustainable harvest ?
    b) what could be the economic consequences of different levels of sustainable harvest vs. no exploitation of minke whales ?

It was noted that the Working Group On The Economic Aspects Of Marine Mammal - Fisheries Interactions could be reactivated to meet this request.

Points i) and ii) were considered to be a first step in fullfilling the request, and it was therefore decided to separate the request into two sections. Aqqalu Rosing-Asvid agreed to replace Gunnar Stefánsson as chairman of the Working Group, and to meet within a year to consider points i) and ii) of the request. Grete Hovelsrud-Broda informed the Scientific Committee that she had been in contact with some American researchers who had expressed interest in participating, and agreed to work with Aqqalu to identify relevant expertise for the WG. This WG is expected to meet before the Scientific Committee meeting in March 2000. The treatment of iii) will await the conclusions from the WG report on i) + ii).

8.2 Other Matters:

For the information of the SC, some recent results from studies in this field were presented and are summarized below:

Food consumption of Barents Sea harp seals

The consumption of various prey species, required by the Barents Sea harp seal (*Phoca groenlandica*) stock in order to cover their energy demands, has been estimated by combining data on the energy density of prey species and on seasonal variations in the energy expenditure and body condition of the seals (Nilssen et al. 1999). Data on diet composition and body condition were collected in the period 1990-1996 by sampling harp seals during different seasons, in various areas of the Barents Sea. All diet composition data were based on reconstructed prey biomass, and adjustments were made for differences in digestibility of crustaceans and fish. The number of seals representing different age and sex groups were calculated for the entire population, and the monthly food requirements were estimated.

In 1998, Russian aerial surveys revealed a total mean pup production of 301,000 for the Barents Sea stock of harp seals, which was estimated to comprise 2.22 million seals. After adjustments for a pup mortality of 30%, the total annual food consumption of the stock was estimated to be in the range of 3.35-5.05 million tonnes (depending on the choice of input parameters). In one case, the annual food consumption of the stock was estimated assuming that there are seasonal changes in basal metabolic rate associated with changes in body mass, and that the field metabolic rate of the seals corresponded to two times their predicted basal metabolic rate. If capelin (*Mallotus villosus*) was assumed to be abundant, the annual total consumption was estimated to be 3.35 million tonnes, of which 1,223,800 tonnes were crustaceans, 807,800 tonnes were capelin, 605,300 tonnes were polar cod (*Boreogadus saida*), 212,400 tonnes were herring (*Clupea harengus*), 100,500 tonnes were cod (*Gadus morhua*) and 404,200 tonnes were "other fish". A very low capelin stock in the Barents Sea (as it was in the period 1993-1996) led to switches in seal diet composition, with increased consumption of polar cod (from c. 16-18 % to c. 23-25 % of total consumption), other gadoids (dominated by cod, but also including haddock and saithe), herring, and "other fish". Using the same set of assumptions as in the previous estimate, the total consumption would have been 3.47 million tonnes, divided between various prey species as follows (in tonnes): polar cod 876,000, codfish (cod, saithe and haddock) 359,700, "other fish" 618,800, herring 392,500, and crustaceans 1,204,200. Overall, the largest quantities of food were estimated to be consumed in the period June-September.

Variation in minke whale diet in response to environmental changes in the Barents Sea

Substantial changes have occurred in the Barents Sea ecosystem over the past 30 years, the most conspicuous being related to the rises and falls of stocks of the two dominant pelagic shoaling fish species: capelin and herring. Thanks to extensive annual studies since 1992, the effects of these ecological changes on the diet and food consumption of one of the most important top predators in the system, the minke whale (*Balaenoptera acutorostrata*), can be assessed (Haug et al. 1999). Following a collapse in the capelin stock in 1992/1993, minke whales foraging in the northern Barents Sea apparently switched from a capelin-dominated diet to a diet almost completely comprised of krill (*Thysanoessa* sp.).

The southern region of the Barents Sea includes important nursery areas for the Norwegian spring-spawning herring. Good recruitment to this stock gives strong cohorts and large numbers of young, adolescent herring (0-3 years old), which serve as the main food for minke whales feeding in the area. Recruitment failure with subsequent weak cohorts seems, however, to reduce the availability of adolescent herring to such an extent that minke whales switch to other prey items such as krill, gadoid fish and capelin.

Harbour seal diets in North Norway

Harbour seals (*Phoca vitulina*) are very numerous in Vesterålen, North Norway. Tore Haug informed the Scientific Committee about results from analyses of stomach contents and faeces collected in the area from 1990 - 1995. The harbour seals fed mainly on saithe (*Pollacius virens*). Little variation occurred in the diet throughout the year, probably due to large and stable abundance of saithe in the area. Other prey items that were important were herring), cod), sandeel (*Ammodytes sp*.) and various flatfishes. The harbour seals seemed to prefer small fish, and older seals had a more various diet than the young seals.

Grey seal diets in Faroese waters

The ecological role of grey seals (*Halichoerus grypus*) as predators in Faroese waters has been assessed in joint Faroese-Norwegian work, based on reconstruction of the diet composition from stomach contents obtained from animals taken for scientific purposes during summer in 1993-1995 (Mikkelsen and Haug, 1999). Tore Haug informed the Scientific Committee about the results. Gadoids, sandeels and catfish (*Anarhichas lupus*) dominated the seal diet in all three years of sampling. Observed year-to-year variation in diets was generally due to shifts in relative importance among these three main prey groups. Also, some regional variations were found in the grey seal diet.

Gadoids were most important in the Svínoy area, catfish and flatfish most important in the Sandoy area, and sandeels most important in the northwest area. Both the annual and regional variations in diet may reflect variations in the abundance and availability of potential prey. Grey seals of different ages were found to have somewhat different feeding habits. Juveniles fed most frequently on sandeels, pre-adults on sandeels and saithe, and adults on cod and catfish. Adults also fed on larger prey than the younger seals. The grey seals in Faroese waters were observed to feed only on fish, generally smaller than 30 cm in length, but the size differed among prey species.

9. MARINE MAMMAL STOCKS -STATUS AND ADVICE TO THE COUNCIL

9.1 and 9.2 Harp seals and Hooded Seals

Based on a request from NAMMCO in May 1995, the Joint ICES/NAFO Working Group on Harp and Hooded Seals met in 1997 to provide assessment advice on harp seals in the White Sea and Barents Sea, and harp and hooded seals in the Greenland Sea. The Working Group was, however, unable to deal with the entire request, and decided to meet again in Tromsø, Norway from 29 September to 2 October 1998 to complete the work. The terms of reference formulated by ICES Advisory Committee on Fisheries Management in response to this were:

a) to complete the assessment of stock size, distribution and pup production of harp seals in the White Sea/Barents Sea and hooded seals in the Greenland Sea;
b) to assess the sustainable yield at present stock sizes and provide catch options for these two stocks.

9.1 Harp Seals

Stock Identity, Distribution and Migrations

Results of studies of the stock identity of harp seals using DNA analysis support the view that there is a separation between western and eastern Atlantic groups.

Results from satellite tracking experiments have shown that adult female harp seals undertake feeding migrations out of the White Sea and westwards in the Barents Sea in the period between breeding and moult. The seals migrated northwest into the Barents Sea after moult. In July and August they dispersed along the southern edge of the pack-ice belt from 5°W in the Norwegian Sea to 87°E in the north-eastern Kara Sea, occasionally as far north as 82°N. While the seals spent much of their time in close association with the pack-ice, frequent foraging trips were made into open waters of the Barents Sea. In late autumn and early winter the seals moved south gradually with the expanding ice cover.

The Greenland Sea Stock

Recent Catches

Only Norway took catches of harp seals in the Greenland Sea pack ice in 1998. As in 1997, the total quota (13,100 animals one year of age and older, denoted 1+) could be taken as 1+ animals or as weaned pups, one 1+ animal considered equal to two pups. Only 1884 animals (1707 pups and 177 1+ animals) were taken. Between 1990-1998, less than 60% of the quota has been taken.

Abundance

No current estimate of pup production for this stock is available.. The estimated pup production in 1991 was 67,300 (95% C.I. 56,400–78,113).

The total population of harp seals in the Greenland Sea during 1998 was estimated using a model incorporating the 1991 estimate of pup production (Table 1). Natural mortality for adults (M_{1+}) was varied between 0.09 and 0.11, a range similar to that seen in other harp seal stocks, while natural mortality for pups (M_0) was estimated as three times that of adults ($M_0 = 3M_{1+}$).

	Numbers		
M_{1+}	0	1+	Total
0.09	97,000	456,000	549,000
0.1	85,000	416,000	501,000
0.11	79,000	379,000	458,000

Table 1. Estimated 1998 abundance of harp seals in the Greenland Sea using the 1991 pup production estimate of 67,300 and a range of adult mortalities (M_{1+}).

Catch options

Catch options for all stocks were developed using a model that calculates a constant exploitation rate that will stabilize the total population at or slightly below its current level. Once the population has stabilized, this exploitation rate then becomes equivalent to the replacement yield rate for population. Inputs to the model include estimates of pup production, catches, pup and adult mortality, maturity-at-age, and pregnancy rate. Biological parameters for this stock and other stocks were derived from the best available information

Two options were calculated for each of the mean, upper and lower 95% CI estimates of 1991 pup production. In the first, only 1+ animals are taken ($u_0 = 0$; i.e. no catch of pups) and in the second, only pups are harvested (i.e. $u_{1+} = 0$). In practice, of course, a combination of pups and 1+ animals will likely be harvested, and the catch options will have to be adjusted for a mixed harvest. Table 2 presents the catch options and projected stock sizes for 1999 and 2009, given a 1991 pup production estimate ($N_{1991,0}$) of 67,000 with upper and lower 95% confidence limits of 78,000 and 56,000, respectively:

Option	Exploit. rate		1999 catch		1999 Pop. Size		2009 catch		2009 Pop. size	
	u_0	u_{1+}	Pups	1+	Pups	1+	Pups	1+	Pups	1+
$N_{1991,0}$ = 56,000										
1+	0	.046	0	14200	64100	308400	0	14200	62100	307400
Pups	.443	0	29800	0	67200	300800	33300	0	75100	291600
$N_{1991,0}$ = 67,000										
1+	0	.046	0	17500	78900	380800	0	17500	76800	380000
Pups	.443	0	36700	0	82700	371400	41200	0	92900	360400
$N_{1991,0}$ = 78,000										
1+	0	.046	0	20900	93800	453200	0	20800	91500	452473
Pups	.443	0	43600	0	98300	442000	49100	0	110700	429296

Table 2. Catch options for harp seals in the Greenland Sea under different assumptions of starting pup production and age of catch.

Catch options range from about 30,000 to 44,000 pups or 14,000 to 21,000 1+ animals in 1999. Estimates of pup abundance stabilise fairly quickly (approximately 15 years) while adult numbers continue to decline slowly for some time. Given this trend in abundance, lack of current data on reproductive rates and the lack of current pup production estimates for this stock, caution should be used when considering these catch options.

The White Sea and Barents Sea Stock

Recent Catches

The combined Russian and Norwegian catches in 1998 were 14,202 animals, of which 13,368 were pups. This is considerably lower than the 1989-1997 level, which ranged between 36,399-42,877. The total quotas during 1998 remained the same as during 1989-1997 (40,000 animals).

Abundance

Aerial surveys of White Sea harp seals were conducted in March 1998 as a co-operative effort between Russian and Canadian scientists. The Scientific Committee accepted an estimate of 301,000 (95% C.I. 243,000 to 359,000) pups. This estimate is likely to be conservative as no correction for reader error was applied.

The total population of harp seals in the White and Barents Sea during 1998 was estimated using a model incorporating the 1998 estimate of pup production (Table 3). Natural mortality for adults (M_{1+}) was varied between 0.09 and 0.11, a range similar to that seen in other harp seal stocks, while natural mortality for pups (M_0) was estimated as three times that of adults ($M_0 = 3M_{1+}$), and also as five times that of adults ($M_0 = 5M_{1+}$) due to concerns about the possibility that pup mortality rates can vary substantially in the White Sea region, and that in recent years, these rates have been very high.

M_{1+}	M_0	Numbers ('000)		
		0	1+	Total
0.09	0.27	301	2,980	2,281
0.1	0.30	301	1,922	2,223
	0.50	301	1,736	2,037
0.11	0.33	301	1,873	2,174

Table 3. Estimated 1998 abundance of harp seals in the White Sea and Barents Sea based upon the 1998 pup production estimate of 301,000.

Catch options

The same modelling approach was used for this stock as for the Greenland Sea stock (see explanation above). Catch options are detailed in Table 4. Catch options range from about 96,000 to 142,000 pups or 50,000 to 72,000 1+ animals in 1999. Because of concerns that pup mortality may be greater than three times that of adults in some years, catch options were also derived under the assumption that pup mortality was five times that of adults, with results as outlined in Table 5. The option derived under this assumption is lower than the others, with catches of 76,000 pups or 32,000 1+ animals in 1999.

Option	Exploit. rate		1999 catch		1999 Pop. Size		2009 catch		2009 Pop. size	
	u_0	u_{1+}	Pups	1+	Pups	1+	Pups	1+	Pups	1+
$N_{1998,0}$ = 243,000,										
1+	0	0.032	0	50100	241500	1565000	0	45000	224100	1404000
Pups	.385	0.000	96100	0	249500	1541000	101400	0	263200	1361000
$N_{1998,0}$ = 301,000										
1+	0	.032	0	61100	299400	1906000	0	56000	281500	1747000
Pups	.385	0	119200	0	309300	1876000	127700	0	331300	1687000
$N_{1998,0}$ = 359,000										
1+	0.000	0.032	0	72000	357300	2248000	0	66900	338800	2089000
Pups	0.385	0.000	142200	0	369100	2211000	153900	0	399400	2012000

Table 4. Catch options for harp seals in the White Sea and Barents Sea under different assumptions of starting pup production and age of catch. M_{1+} = 0.1 and M_0 = 0..3

Option	Exploit. Rate		1999 catch		1999 Pop. Size		2009 catch		2009 Pop. size	
	u_0	u_{1+}	Pups	1+	Pups	1+	Pups	1+	Pups	1+
1+	0.000	0.018	0	31600	299400	1725000	0	29400	283200	1602000
Pups	0.249	0.000	76000	0	305000	1708000	77400	0	310700	1569000

Table 5. Catch options for harp seals in the White Sea and Barents Sea under different catch scenarios assuming 1998 pup production is 301,000 and mortality rates of M_{1+} = 0.1 and M_0 = 0.5.

Given that historical estimates of abundance of this population are poorly documented, the 1998 pup production estimate is based on new methods for which no comparable data exists, and that no information on population trends is available, the Scientific Committee recommends that a conservative approach be adopted in establishing harvest quotas. The recent anecdotal evidence for high pup mortality rates would also provide support for a conservative approach.

9.2 Hooded Seals

Stock Identity, Distribution and Migrations

Results from satellite tracking experiments have shown that the seals remained within the Greenland and Norwegian Sea for the majority of the year. Several seals spent extended periods at sea west of the British Isles, or in the Norwegian Sea, between the breeding and moulting periods.

The Greenland Sea Stock

Recent Catches

Only Norway took catches of hooded seals in the Greenland pack ice in 1998 The total quota (5000 1+ animals) was allowed to be taken as weaned pups with one adult equal to two pups. The catches totalled 6351 animals, where 5597 were pups and 754 were 1+ animals.

Abundance

Estimated abundance from a survey carried out in the Greenland Sea in March 1997 was 23,762 pups (95% C.I. 14,819 - 32,705). This should be considered a minimum estimate as it was not corrected for the temporal distribution of births or pups born outside of the whelping patches surveyed.

The 1998 population size of hooded seals in the Greenland Sea was estimated using the model incorporating the 1997 pup production estimate of 24,000 (Table 6). Natural mortality of adults (M_{1+}) was varied between 0.09 and .11, and pup mortality (M_0) was assumed to be three times that of adults ($3M_{1+}$).

M_{1+}	Numbers		
	0	1+	Total
0.09	26,700	113,500	140,200
0.1	26,300	109,100	135,400
0.11	26,100	105,700	131,800

Table 6. Estimated 1998 abundance of hooded seals in the Greenland Sea under different assumptions of 1+ mortality and a 1997 pup production estimate of 24,000. M_0 is assumed to be $3M_{1+}$.

Catch options

The same modelling approach was used for this stock as for the Greenland Sea harp seal stock (see explanation above). Catch options are detailed in Table 7. Catch options range from about 11,000 to 25,000 pups or 7,000 to 15,000 1+ animals in 1999.

9.1 and 9.2 Harp Seals And Hooded Seals: Future Work

Coordination of Joint Feeding Studies:

At its 8th meeting in Oslo the Council recommended that Scientific Committee should coordinate joint feeding studies of harp and hooded seals in the Nordic seas and off West Greenland. Tore Haug noted that preparations to coordinate such studies between member countries were already under way, outside of the NAMMCO SC. The Scientific Committee therefore emphasized its support for such joint studies and urged member countries to participate..

Option	Exploit. rate		1999 catch		1999 Pop. Size		2009 catch		2009 Pop. size	
	u_0	u_{1+}	Pups	1+	Pups	1+	Pups	1+	Pups	1+
$N_{1997,0}$ = 15,000										
1+	0.000	0.103	0	7300	15900	70200	0	6300	15200	61300
Pups	0.627	0.000	11100	0	17700	69300	12100	0	19300	60500
$N_{1997,0}$ = 24,000										
1+	0.000	0.103	0	11200	25700	108000	0	10200	24900	99200
Pups	0.627	0.000	18000	0	28600	106000	19800	0	31600	96400
$N_{1997,0}$ = 33,000										
1+	0.000	0.103	0	15200	35700	146800	0	14300	34800	138100
Pups	0.627	0.000	25000	0	39800	143700	27800	0	44300	133200

Table 7. Catch options for hooded seals in the Greenland Sea under different assumptions of starting pup production and age of catch. M_{1+} = 0.1 and M_0 = 0.3

9.3 Harbour Porpoise

9.3.1 Update on progress

Tore Haug informed the Scientific Committee that plans for the International Symposium on Harbour Porpoises in the North Atlantic were well underway. The Symposium will be held September 10-14 onboard the Hurtigruten enroute from Bergen to Tromsø. To date there are 24 contributions covering five theme areas: Distribution and Stock Identity, Biological Parameters, Ecology, Pollutants, and Abundance, Removals and Sustainability of Removals. The Symposium Planning Committee will report the findings of the Symposium to the Scientific Committee in 2000. The Committee will also act as an editorial board for a future volume of *NAMMCO Scientific Publications* assembling the contributions to the symposium. The Scientific Committee will develop its advice to the Council on the basis of the report from this symposium.

9.4 and 9.5 North Atlantic Beluga And Narwhal:

In 1997 the Council of NAMMCO requested the Scientific Committee to "examine the population status of narwhal and beluga (white whales) throughout the North Atlantic". Since the two species inhabit the same areas, and the development of status reports for both species would draw upon the same expertise, it was decided to deal with both species in one Working Group. Thus the Scientific Committee established a Working Group on the Population Status of Narwhal and Beluga in the North Atlantic, and decided to invite experts from Canada, Russia and other countries to contribute. The Working Group met at the Zoological Museum in Oslo during 1-3 March 1999 under the chairmanship of Øystein Wiig. The report from the Working Group is contained in Annex 1.

A considerable amount of new information on the population structure of narwhal and especially beluga has appeared during the last 5 yrs. A number of methods, including tooth morphology, satellite tracking, genetic studies of mtDNA and microsatellites, and studies of trace elements of both anthropogenic and natural origin, have contributed to the elucidation of a much more complex population substructure of beluga stocks than hitherto believed. A general picture of a seasonally

strong philopatry to certain areas has emerged, and previous assumptions about the probable connections between nearby beluga occurrences have been challenged. On the basis of this new information, it seems necessary to redefine beluga stocks as smaller or larger herds that are seasonally present at restricted localities. The splitting of beluga stocks into smaller units has important management implications, in that a status of the North Atlantic beluga needs to be developed on the basis of beluga aggregations that are seasonally but regularly present at specific fjords, coast lines, promontories or estuaries. Well-known aggregations were listed by the working group, and basic information on stock-identity, population size, level of exploitation, other potential threats and present status was given when available (Annex 1, Table 1).

For narwhal, much less information was available, but the limited studies of population structure suggested a level of philopatry similar to that evident for beluga. Therefore, water bodies with known aggregations of narwhal were listed for the entire North Atlantic and the same basic information as for beluga was included (Annex 1, Table 2).

Status For Beluga Aggregations In The North Atlantic

Russia.

Since the late 1980's, beluga have only occasionally been harvested in Russia, and this is unlikely to have had any effect on the stocks. Potential threats include ice breaking, boat traffic and pollution, but none of these are known to pose a threat to the beluga in the Russian part of the North Atlantic at present. However, although no accurate information on beluga population structure and abundance in Russian Atlantic waters is available, all available evidence suggests that the total abundance of beluga is lower than in the western part of the North Atlantic. Small population size may potentially make the beluga from western Russia vulnerable to perturbations of their habitats.

Svalbard and Norwegian coast.

In Svalbard, beluga have not been harvested since 1961, but from 1945-1960, 3281 beluga were caught. The stock has apparently not completely recovered from the exploitation, although they are regularly observed, especially during the summer. However, no estimates of abundance exist, and the population structure and potential connection to other beluga aggregations remain unknown. Disturbance from ship traffic and oil spills are potential threats.

In Finnmarken in the northern part of Norway, beluga are regularly seen during spring and summer, and conflicts with the local fishery have been reported.

East Greenland.

Beluga are occasionally killed in East Greenland, but nothing is known about the stock relationships of these whales. It is likely that they are animals from other concentration areas, perhaps Svalbard or West Greenland, at the outer limits of their normal distribution.

West Greenland.

The aggregation of beluga that occurred from October through June in South Greenland (Qaqortoq to Maniitsoq) apparently disappeared after a period with intensive hunting that ended in the late 1920s. The aggregation may have consisted of more than one stock.

Southwest Greenland (Maniitsoq to Disko) is probably a wintering ground for beluga from two or more summering grounds. Present harvests levels are more than 400/yr. A series of surveys conducted since 1982 indicate a decline of more than 60% in abundance in this area. A preliminary estimate of population size from a survey conducted in 1998 suggest that 6722 (95% CI 3562-12688) beluga winter in the area. Although the stock identity of this aggregation needs to be resolved, the aggregation is likely declining due to overexploitation.

Northwest Greenland (Avanersuaq and Upernavik) is primarily an area where beluga migrate through on their way to wintering grounds in Southwest Greenland or summering grounds in Canada. The present harvest is more than 100/yr. Since this beluga occurrence must be considered part of those wintering in Southwest Greenland, it is considered to be declining due to overexploitation.

North Water
This is clearly a wintering ground for a large proportion of the beluga that spend their summer in the Canadian High Arctic. Despite several attempts, no realistic estimates of total abundance have been made in this area. Present harvesting in Canada and Greenland is low (<50/yr) and is considered sustainable.

Canadian High Arctic
This is probably a summer aggregation of beluga that winters both in the North Water and in West Greenland. It was estimated in 1996 to number 28.499 whales (95%CI 13.886-58.491). Canadian harvest is low (<50/yr), however a proportion of these beluga are harvested in Greenland during the fall, winter and spring (see above), and this portion of the aggregation may be threatened by overexploitation.

Southeast Baffin Island
Several stocks exist in this area and all are harvested at low rates (<50/yr). There is evidence that the Pangnirtung aggregation has declined due to past overexploitation. The present population is small and at continuing risk of overexploitation. Nothing is known about the size or status of the other aggregations in this area

Saint Lawrence River
This is a small, isolated population that has been depleted by past overharvesting. However, it is not presently harvested and is known to be increasing in number. Potential threats to the stock include pollution and harassment.

Hudson Strait
The summer occurrence of beluga in Ungava Bay was essentially extirpated by past overexploitation. It is uncertain if the area is being recolonized by beluga from other areas. Hudson Strait is a seasonal migration route to and from summer aggregation areas in Hudson Bay and Foxe Basin. Present harvest levels are 150-200/yr, but the stock origin of the take is uncertain, as several stocks may mix in the area.

Hudson Bay
Several summering aggregations of beluga exist in Hudson Bay: north Hudson Bay, east Hudson Bay, Belcher Islands, west Hudson Bay, south Hudson Bay, Foxe Basin and James Bay. Of these, at least the beluga harvested at Belcher Islands, west Hudson Bay and east Hudson Bay can be distinguished from one another and the other stocks. Except for James Bay, exploitation at variable levels takes place in all areas. Exploitation may potentially pose a conservation problem in east Hudson Bay, where the stock size estimates are low compared to the exploitation level. For James Bay and west Hudson Bay, stock size is large and the aggregations are probably not threatened by harvesting. For north and south Hudson Bay, and the Belcher Islands populations are harvested but the status is not known and these aggregations have not been reliably enumerated.

Status For Narwhal Aggregations In The North Atlantic:
Russia and Svalbard.
No sizeable concentrations of narwhal could be identified in the eastern North Atlantic, including Russian Arctic waters, the Polar Basin and the Greenland Sea. Little if any harvesting is conducted in this area. No potential threats to narwhal in this area could be identified.

East Greenland.
In summer, narwhal can be found in low numbers all along the east coast of Greenland. However, harvesting takes place only at a few coastal localities in the vicinity of Ittoqqortormiut (Scoresby Sund), Kangerlussuaq and Ammassalik. The narwhal that are found in East Greenland are genetically distinct from narwhal found in West Greenland, but no other information on stock delineation is available. The relatively small catches in East Greenland are assumed to be taken from a larger stock of narwhal wintering in the Greenland Sea. Considering the large area from which the whales are recruited relative to the restricted areas where hunting is conducted, present harvesting probably does not pose an immediate threat to the stock. The catch statistics are, however, incomplete and no reliable abundance estimates are available.

West Greenland.
Narwhal are harvested in four main areas in West Greenland; Avanersuaq, Melville Bay-Upernavik, Uummannaq and Disko Bay. Narwhal from the first three areas are genetically distinct from one another, whereas Disko Bay seems to be an area where different stocks mix during the winter. This is also suggested by satellite tracking of whales from Eclipse Sound in Canada and Melville Bay.

Catch statistics from Avanersuaq are incomplete, but for 1993-95, a mean of 144/yr was taken. In some years, however, the low reported catch cannot account for the volume of narwhal products that are traded from this area. An abundance estimate of 3539 narwhal in the Avanersuaq area in 1986 (which is not corrected for diving whales), suggests that an exploitation level of 150/yr is sustainable, assuming that the same whales are not harvested in other areas.

The Melville Bay-Upernavik summering stock is believed to be small, although no surveys have been conducted. If reliable, the catch statistics indicate a relatively low level of exploitation in Upernavik. Some of the catches are taken from the ice edge and consist of migratory whales that may not be summering in this area. No status could be given.

Judging from the catches, the occurrence of narwhal in the Uummannaq area in November fluctuates widely. In some years substantial catches (several hundreds) are taken, which alone or in conjunction with catches from the same stock in other areas do cause concern for the status of this aggregation. The abundance of narwhal in this area should be estimated.

Since winter catches in Disko Bay consist of animals taken from several summering stocks, no status can be assigned for Disko Bay alone. Also, although the number of narwhal in Disko Bay varies seasonally, there is a minimum estimate of 5210 in 1998 from a survey that did not cover the complete range of narwhal in the area. This indicates that present catches are probably sustainable.

Canada.
Satellite tracking of whales from Eclipse Sound showed no exchange with narwhal on other summering grounds. Assuming this stock is supplying most of the harvest in the Eclipse Sound area, as well as in some settlements along Baffin Island, the population estimate of less than 1000 (uncorrected for submerged narwhal) cannot sustain the catches. However, many of the narwhal taken here are hunted in the spring during migration, when catches probably consist of a mixture of stocks. Also, the narwhal stock in this area has sustained present catches for several decades, with no apparent sign of depletion.

Harvesting in Admiralty Inlet, Prince Regent Inlet and Peel Sound is likely sustainable given the population estimates from 1984 of 5556, 9754 and 1701 whales (uncorrected for submerged narwhal), respectively. Again, whales from these summering aggregations are likely harvested in

other areas during migration, so it is presently impossible to assign harvest levels to particular aggregations.

When combining all summering stocks in the Canadian High Arctic, the most recent total population estimate is 14240 narwhal (95% CI 6658-30931), which is on the edge of what can sustain the combined Canadian and Greenlandic catches of more than a thousand narwhal. However, this estimate is a minimum as the survey did not cover the complete range of narwhal in the area and was uncorrected for diving animals. All evidence suggests, however, that assessment of status should be given on a stock basis, which will not be possible until more information on stock delineation is elucidated.

An uncorrected 1979 estimate of the number of narwhal wintering in the pack ice in the Baffin Bay is 34363 narwhal (SE 8282), but again status should be assigned after examining the population structure of these whales.

Northern Hudson Bay is a summering ground for low numbers of narwhal (1984 estimate with partial coverage of 1355 whales), but harvesting is also low and could be sustained by the numbers observed. Again, the stock discreteness of these whales is unknown, but their distribution is quite distinct from that of other narwhal aggregations in Canada.

Conclusion

Within the North Atlantic, beluga and narwhal are harvested only in Canada and Greenland, with the largest catches taken in Greenland. Recent studies of population structure suggest strong philopatry, which implies that stock status should be assigned for local aggregations of whales.

- The present harvest level of beluga in West Greenland is a concern because the estimate of stock size is small relative to the high and incompletely reported catch levels, and a decline in relative abundance has been detected. Continued monitoring of population trend and more information on stock structure in the area are needed. With the observed decline, a reduction in harvesting seems necessary to halt or reverse the trend.
- Some beluga stocks in Canada are small and therefore at risk of being overexploited. This applies especially for Pangnirtung, Ungava Bay and Eastern Hudson Bay. Monitoring of population trend as well as no increase in harvesting is recommended.
- Less is known about the population structure of narwhal, and for some smaller aggregations (e.g. Peel Sound and Eclipse Sound), exploitation in other areas (e.g. Disko Bay and Uummannaq) may pose a threat. For most aggregations, no accurate population estimates are available, and enumeration of narwhal is needed before a status can be assigned (e.g. Avanersuaq and Uummannaq).
- For both narwhal and beluga it is mandatory for future management that more reliable catch statistics (including loss rates) are collected from Canada and Greenland.

9.6 Fin Whales

In 1998, the Management Committee of NAMMCO asked the Scientific Committee to "...undertake an assessment of the status of fin whales in the North Atlantic based on all available data". NAMMCO Council later refined the request as follows:

"Acknowledging the large amount of work involved in such a comprehensive assessment of all possible fin whale stocks in the North Atlantic, the Council requests the SC, when conducting such comprehensive assessment, particularly to

i) assess the stock structure of fin whales in the whole North Atlantic.
ii) assess the long-term effects of annual removal of 50, 100 and 200 fin whales in the stock area traditionally assumed to have a main concentration off East Greenland and Iceland (EGI stock area),
iii) identify MSY exploitation levels for that stock area."

In preparation for the assessment, a working group was established, in December 1998, to review the available information and determine computations to be carried out before the meeting. The WG worked first by correspondence, then met in April 1999. A report from that meeting is contained in Annex 2.

Stock Structure

It appears that fin whales in the North Atlantic may be divided into a number of stocks, with limited gene flow between adjacent stocks. Whales sampled at locations in the North Atlantic are different from those sampled in the Mediterranean Sea. There is some indication that the western North Atlantic and Iceland areas both have populations different from those found off the coasts of Spain and north Norway. Furthermore, there are indications of a difference between Iceland and the Canadian east coast. Genetic studies also indicate heterogeneity within the EGI Stock Area. Historical harvest and depletion patterns as well as marking studies suggest site fidelity within EGI area. A similar pattern of site fidelity has also been observed in the western North Atlantic. More information on population structure is needed before firm conclusions can be reached on stock delineation.

Assessment in the EGI Stock Area

Population trajectories incorporating past catch series were conducted to hit the recent abundance estimates, and projected with catch levels of 0, 50, 100 and 200 whales per year until the year 2020 using the HITTER technique.

The Scientific Committee chose a conservative value of MSYR of 2% for assessing the effects of future catches. In summary, a short to medium term (next 10 years) catch of up to 200 fin whales per year is unlikely to bring the population down below 70% of its pre-exploitation level.under the least optimistic scenarios. Even with an unrealisticly low MSYR of 1%, a catch of 200 whales leaves the population in 2020 at a level above the level in 1990. However, catches at this level should be spread throughout the EGI stock area. It was suggested that an appropriate way of doing this would be to spread the catches roughly in proportion to the abundance of fin whales observed in NASS surveys. Thus, based on an average for the two past surveys, an appropriate catch distribution across Blocks A, B and C+D (see Annex 2, Figure 1) could be in the neighbourhood of the ratios 15%:55%:30%. It was also suggested that no catches should be taken in the immediate vicinity of shore-based whaling stations, to avoid localized depletions. In addition, catches should be spread over time within the season to safeguard against depletion of aggregations.

In the longer term (10-50 yrs), with a view towards optimal utilization of this resource, continued monitoring of trends in abundance at regular intervals will be essential to ensure that harvest is sustainable. It is also important that research be continued to improve understanding of stock structure and dynamics (see Research Recommendations below).

The Scientific Committee agreed that determination of MSY and MSYR levels for fin whales and other whale stocks does not seem possible given the present knowledge about the dynamics of whale populations .

Future assessments could seek to determine sustainable harvest levels under predetermined management objectives. Such objectives may include target stock size and trend, or minimizations of risks associated with different harvesting strategies.

Recommendations For Future Research

i. Abundance Estimates

Regular abundance surveys are essential for monitoring the trend in the stocks. This will be particularly important should harvesting resume. The heavier the level of exploitation, the more

frequently surveys should be conducted. For exploitation levels of the order being considered here, sightings surveys conducted at intervals of about 5 years were considered a satisfactory method of obtaining abundance estimates and their trends.

ii. Stock Structure

The Scientific Committee accepted the conclusion of the WG that stock delineation is the most critical issue in fin whale assessment at this time. While it is evident that the stock structure of fin whales is more complex than reflected by the present stock areas, the details of stock structure are not clear. Several approaches to resolving this problem were identified: genetic analyses of existing samples and of samples collected over a broader area, involving additional microsatellite loci and statistical analyses to determine if there are natural genetic groupings; mark-recapture studies using genetic marks or other techniques; stock delineation studies using pollutant or isotopic signatures; and telemetry to provide immediate and unequivocal answers to questions on distribution, migration, and activity patterns.

iii. Population Model Incorporating Immigration

A population model incorporating the history of local depletions and their apparent recovery, with immigration options from other groups, could be developed to generate testable hypotheses about the population dynamics of fin whales in this area.

9.7 Minke Whales

At its 8th meeting in Oslo, the Council recommended that the Scientific Committee should investigate the possibility of supplementing present sampling with existing older material from NAMMCO countries and other countries in joint genetic analyses. It was noted that such exchanges of samples are ongoing between Norway and Greenland. Samples collected in the past from Iceland and Norway have already been analyzed concurrently, and there are no recent samples from Iceland. The Scientific Committee concluded that available samples are being utilized effectively.

9.8 White-Beaked and White-Sided Dolphins

At its 8th meeting in Oslo, the Council recommended that the Scientific Committee should undertake an assessment of distribution, stock identity, abundance and ecological interactions of white-beaked and white-sided dolphins in the North Atlantic area.

The Scientific Committee noted that the IWC Scientific Committee had dealt with these species in 1996. Generally, it was considered that there is insufficient information on stock structure, abundance and feeding ecology to carry out a meaningful assessment of these species at this time. Some new information on abundance may become available from the NASS-95 survey, but these data have not yet been analyzed. The Scientific Committee agreed to begin compiling available information on these species in member countries, with the objective of identifying knowledge gaps and creating a basis for assessment in the longer term.

10. FUTURE NORTH ATLANTIC SIGHTINGS SURVEYS

Gisli Vikingson informed the Scientific Committee that Iceland plans to carry out abundance surveys in their waters at regular intervals, with the next survey tentatively planned to take place in 2000. He noted that both the Fin Whale Working Group and the Working Group on Abundance Estimates in their assessment of minke whales, had recommended that synoptic abundance surveys be carried out at regular intervals. He suggested that it would be most productive if all member countries and other neighbouring countries would coordinate their efforts to gain a broader coverage of the North Atlantic.

The Scientific Committee agreed to assign this task to the Working Group on Abundance Estimates. While it was considered unlikely that synoptic coverage similar to the NASS 95 survey could be achieved in 2000, this WG would be tasked with coordinating efforts to the extent possible, and with seeking funding to broaden the surveys. Gisli Vikingson also noted that the Icelandic surveys could be rescheduled if this would facilitate a broader coverage in the survey.

11. DATA AND ADMINISTRATION

Daniel Pike briefed the Scientific Committee on the catch databases that presently exist in the Secretariat. There are also procedures for regular submission of catch data by member countries, however these have not been consistently followed.

The Scientific Committee noted that the use of catch data generally required a very detailed level of knowledge of accuracy, precision, catch composition, exact location of catch etc, which was not achievable in a simple database such as the ones held at the Secretariat. For scientific/assessment purposes, detailed catch data would have to be compiled on a case-by-case basis by national research institutes.. It was therefore concluded that the catch database at NAMMCO is of little use to the SC. However, it was noted that it may be of use to the Secretariat for other purposes.

12. PUBLICATIONS

The SC noted with satisfaction that the first volume of NAMMCO Scientific Publications, *Ringed Seals in the North Atlantic*, was now published and being widely distributed by the Secretariat. Comment on the volume had been quite positive, and the SC looked forward to the publication future volumes on different topics in the near future.

The following volumes of NAMMCO Scientific Publications are presently in progress:

i. Marine Mammals in the Ecosystem:

Co-editor Gisli Vikingson informed the Scientific Committee that 12 contributions are in various stages of preparation for this volume. All should be in to the Secretariat for final editing by June 1999. It is hoped to have this volume published in 1999.

ii. Sealworm Infections

Co-editor Genevieve Desportes informed the Scientific Committee that there were 9 confirmed and 3 potential contributions for this volume. The deadline for contribution of papers is April 30, 1999. However, these papers will require peer review, so the volume will not be ready for publication until sometime in 2000.

iii. NASS 95:

Co-editor Nils Øien noted that a volume on the results of this survey would be highly desirable, however preparations may take some time as data analysis for some species is still at an early stage.

iv. Harbour Porpoises in the North Atlantic:

Tore Haug informed the Scientific Committee that the Symposium Steering Committee believed that the contributions to the symposium would make an excellent volume of NAMMCO Scientific Publications, and recommended that the Scientific Committee approve its publication. The Scientific Committee agreed to do so. The Symposium Steering Committee will act as an editorial board for the volume, which they hope to publish sometime in 2000.

v. Population Status of Narwhal and Beluga in the North Atlantic

Mads Peter Heide-Jørgensen noted that the contributions to this WG, along with other potential contributions, would make an informative volume of NAMMCO Scientific Publications, and recommended that the Scientific Committee approve its publication, which they did. Mads Peter Heide-Jørgensen and Øystein Wiig will act as editors, and the volume should be published in 2000 or 2001.

13. BUDGET

Daniel Pike circulated an expenditures report for the Scientific Committee budget of 350 K, which showed that remaining funds should be sufficient to cover projected expenditures for 1999.

14. FUTURE WORK PLANS

14.1 Scientific Committee

Dorete Bloch invited the Scientific Committee to meet in the Faroe Islands in 2000. The meeting will be held in late February-early March.

14.2 Working groups

It was generally agreed that the practice of holding working group meetings outside of the regular meeting was preferable and should be continued. There was also discussion of the role of the Working Group on Management Procedures, which was originally intended to deal with management procedures in a generalized sense, but had carried out an assessment of minke whales in 1998. There was general agreement that this WG should be left to its original purpose, and that stock assessments should be carried out by species-specific working groups.

Working Group on the Economic Aspects of Marine Mammal-Fishery Interactions
See 8.1.

Working Group on North Atlantic Fin Whales
This WG will remain dormant, awaiting future requests for advice.

Working Group on the Population Status of Narwhal and Beluga in the North Atlantic
This WG will remain dormant, awaiting future requests for advice.

Working Group on Abundance Estimates
See 10.

Harbour Porpoise Symposium Steering Committee
This committee is functioning as a working group, and will provide a report on the results of the Symposium to the Scientific Committee in 2000.

14. ELECTION OF OFFICERS

Dorete Bloch resigned as Vice Chairman, and was replaced by Gisli Vikingson. Mads Peter Heide-Jørgensen was confirmed as chairman for another year.

15. ANY OTHER BUSINESS

On behalf of the Committee, the Chairman thanked the Greenland Institute of Natural Resources for their hospitality and the excellent facilities they provided, and the Secretariat for their assistance with practical arrangements, reporting and contributions to the meeting.

The Committee members and the Secretariat thanked the Chairman for efficiently leading the Committee through its agenda.

16. ADOPTION OF REPORT

The report was adopted on April 15, 1999 at 1630.

18. REFERENCES

Haug, T., Lindstrøm, U. & Nilssen, K.T. 1999. Variation in minke whale Balaenoptera acutorostrata diets in response to environmental changes in the Barents Sea. Int. Whal. Commn SC / 51 / E7: 13 pp.

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Appendix 1

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Appendix 2

AGENDA

1. Chairman's welcome and opening remarks
2. Adoption of Agenda
3. Appointment of Rapporteur
4. Review of available documents and reports
   - 4.1. National Progress Reports
   - 4.2. Working Group Reports
   - 4.3. Other reports and documents
5. Cooperation with other organisations
6. Incorporation of the users knowledge in the deliberations of the Scientific Committee
7. Update on Status of Marine Mammals in the North Atlantic
8. Role of marine mammals in the marine ecosystem
   - 8.1 Economic aspects of marine mammal-fishery interactions
   - 8.2 Other matters
9. Marine mammal stocks -status and advice to the Council
   - 9.1 Harp seals
     - 9.1.1 Update on progress
     - 9.1.2. Future work
   - 9.2 Hooded seals
     - 9.2.1 Update on progress
     - 9.2.3Future work
   - 9.3. Harbour porpoise
     - 9.3.1 Update on progress
     - 9.3.2 Future work
   - 9.4. Narwhal
     - 9.4.1 Update on progress
     - 9.4.2 Future work
   - 9.5 Beluga
     - 9.5.1 Update on progress
     - 9.5.2 Future work
   - 9.6 Fin whales
     - 9.6.1 Update on progress
     - 9.6.2 Future work
   - 9.7 Minke whales
     - 9.7.1 Update onprogress
     - 9.7.2 Future work
   - 9.9 White-beaked and white-sided dolphins
     - 9.8.1 Update on progress
     - 9.8.2 Future work
10. Future North Atlantic Sightings Surveys
11. Data and administration
12. Publications
    - 12.1 The role of marine mammals in the North Atlantic ecosystem
    - 12.2 Other publications
13. Budget
14. Future work plans
    - 14.1 Scientific Committee
    - 14.2 Working groups
    - 14.3 Other matters
15. Election of Officers
16. Any other business
17. Adoption of Report

Appendix 3

LIST OF DOCUMENTS

SC/7/1	List of Participants
SC/7/2	Provisional Annotated Agenda
SC/7/3	List of Documents and Working Papers
SC/7/NPR-F	National Progress Report – Faroe Islands
SC/7/NPR-G	National Progress Report – Greenland
SC/7/NPR-I	National Progress Report – Iceland
SC/7/NPR-N	National Progress Report – Norway
SC/7/4	Scientific Committee Working Group On The Population Status Of Belugas And Narwhals In The North Atlantic – Report.
SC/7/5	NAMMCO Scientific Committee Working Group on North Atlantic Fin Whales – Report.
SC/7/6	Briefing Note - Incorporation Of The Knowledge Of Marine Mammal Users In The Deliberations Of The Scientific Committee.
SC/7/7	Briefing Note – Update on the *Status of Marine Mammals in the North Atlantic* Report.
SC/7/8	Report of the Joint ICES/NAFO Working Group on Harp and Hooded Seals.