SECTION 4 – NATIONAL PROGRESS REPORTS

4.1
FAROE ISLANDS – PROGRESS REPORT ON MARINE MAMMAL RESEARCH 1996

Dorete Bloch and Jústines Olsen

1. INTRODUCTION

This report summarises Faroese research on cetaceans and pinnipeds conducted in 1996. Since 1984, the main bulk of research on marine mammals in the Faroes has been conducted by the Zoological Department of the Faroese Museum of Natural History, with some assistance from the Faroese Fisheries Laboratory and the Department of Natural Science at the University of the Faroes.

2. RESEARCH

2.1 Species and stocks studied

Pinnipeds

* Grey seals (*Halichoerus grypus*) - coastal waters of the Faroes

Cetaceans

* Sperm whale (*Physeter macrocephalus*) - stranded animals
* Pilot whales (*Globicephala melas*) - landed animals
* White-sided dolphins (*Lagenorhyncus acutus*) - landed animals

2.2 Field Work

Pinnipeds

In the summer periods 1993-1995, a total of 68 grey seal were collected in Faroese coastal waters for scientific purposes, and comprehensive samples were taken from each. No further field activities have been conducted in 1996.

Cetaceans

Opportunistic sightings of whales were reported to the Museum of Natural History by the Faroese Fisheries Inspection Services (T, OH), the Danish Fisheries Inspection Services (Thetis), the Faroese fisheries research vessel (MH, Hvítiklettur), local ferries between the islands in the Faroes (Ritan, Sam, Sildberin, Teistin, Ternan, Ternan I, Tróndur), the weekly ferries between the Faroes and Aberdeen, Scotland (Smyril) and the Faroes and Stavanger, Norway (Magn), as well as numerous local sources. Summaries of offshore and inshore cetacean observations in Faroese waters are contained in Tables 4 and 5.

Samples have been collected from stranded whales, in 1996 for instance from one sperm whale (*Physeter macrocephalus*). In total, nine different sperm whales have stranded dead in the Faroes since 1987, as shown in Table 1.
One killer whale (*Orcinus orca*) was seen floating dead on the surface, first observed close to Rituvík 29 April, 200-300 m from shore and possibly the same was seen again 1 May off Tórshavn in Nólsoyarfjørður. The whale was too far to observe the size or sex or take samples.

An immature male harbour porpoise (*Phocoena phocoena*) 121 cm in body length was

found dead 20 April at Argir and samples were taken.

In 1996, a beluga (*Delphinapterus leucas*) was observed three times in Faroese coastal waters for the first time since 1920 (See Table 5).

Sex, *skinn* values and total body length in cm have been recorded from all pilot whales caught in 1996 with kind the assistance of local sheriffs and whalers.

Data on times-to-death in the pilot whale hunt were recorded at one whale drive in 1994, two in 1995 and one more in 1996. Data is now available from a total of 16 whales using the ball-pointed hook, and 180 whales where the traditional hook was used to secure the animals during the kill.

2.3 Laboratory work

Pinnipeds

The material from stomachs and intestines from the 68 grey seals sampled in 1993-1995 has been examined and is being prepared for presentation.

Teeth slides from the 1993 and 1995 material, a total of 41 grey seals, have been age-determined by the Institute of Marine Research in Bergen, Norway.

Cetaceans

Teeth slides of pilot whales from 1995 have been prepared for age determination by the NINA Laboratory in Trondheim. One tooth has been prepared from one of the stranded sperm whales for age determination.

2.4 Other studies

Pinnipeds

No other studies have been conducted on pinnipeds, but the ovaries/testes and tissue and blood samples from the sampled grey seals have been stored for later examination.

Cetaceans

A project has been started to examine thoroughly the historical data from the National Archives in Tórshavn with the purpose of investigating the distribution of the whale catch over the last 200 years compared with the size and distribution of the population.

2.5 Research results

Pinnipeds

The summer diet of grey seals in the Faroes is exclusively fish, mainly cod fish, catfish, and sand eel. Squids are not found in the diet. Despite the short distance in the Faroes, differences are shown in the diet between three localities, possibly indicating that grey seals feed quite locally in the summer months.

Sealworms were present in varying number in all stomachs examined.

A tagged grey seal from North Rona, Shetland, was collected in the 1994 season.

Cetaceans

The ICES Study Group on Long-Finned Pilot Whales had its third and final meeting in April 1996 in Cambridge, UK. After new comparative studies between landed pilot whales in Newfoundland, stranded pilot whales in Cape Cod, MS, USA and landed

pilot whales in the Faroes, it was accepted that long-finned pilot whales occur in an eastern and a western North Atlantic population, different from each other in external morphology.

The data from NASS-95 indicated that the areas from NASS-1987 and NASS-1989 containing many pilot whales were not exactly the same in NASS-95. A Hitter model showed that only a very small area around the Faroes contained an amount of pilot whales presumably too small to sustain the annual Faroese annual catch. The results from the Faroese pilot whale study 1986-1988 found large differences between schools in the levels of heavy metals, organochlorines, food items and parasites, indicating that the base population of the long-finned pilot whale for the Faroese harvest is extremely unlikely to be restricted to a year-round distribution only in the Faroe Island area.

Research on the efficiency of killing methods in the pilot whale hunt indicates that a simultaneous severing of the spinal cord and blood supply to the brain using the traditional Faroese pilot whale knife is the quickest, safest and most practical method for dispatching smaller whales (mean time-to-death: 34.7 ∀ 1.96 s; range 3.5-172 s; 50% dispatched in 26.0 s; N=180). A ball-pointed hook has been constructed to insert in either of the vestibular air sacs lateral to the blowhole. This hook has been tested and the total killing time was 23.9 ∀ 3.33s; range 6-46 s; 50% dispatched in 20.5 s (N=16).

3. CATCH DATA

3.1 Pinnipeds

A number of grey seals are shot every year in connection with salmon farming, but there is still no systematic reporting of these removals.

3.2 Cetaceans

Tables 2 and 3 provide an overview of catches of pilot whales and other cetacean species in the Faroe Islands in 1996.

4. PUBLICATIONS AND DOCUMENTS

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Caurant, F., Navarro, M. and Amiard, J.-C. 1996. Mercury in pilot whales: possible limits to the detoxification process. *The Science of the Total Environment* 186: 95-104.

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Table 1. Sperm whales (*Physeter marcocephalus*) stranded dead in the Faroes from 1987-1996

Year	Date	Locality	Length, m	Age, dl
1987	13/3	Rituvík	15.75	32
1988	31/3-25/4		15	
1988	24/7	Tórshavn	16	47
1989	18/12	Skálavík		14
1990	18/3	Sumba		34
1994	14/6	Nólsoy	9	15
1996	9/1	Fróðba	10	>15
1996	12/2	Svínoy	16-18	
1996	14-29/4			

Table 2. Pilot whales (*Globicephala melas*) caught in the Faroe Islands, 1996

Date	Locality	*No.*
27 June	Vestmanna	435
29 June	Miðvágur	270
4 July	Øravík	34
15 July	Hvalvík	16
25 July	Hvannasund	108
26 July	Vestmanna	41
10 August	Hvannasund	40
11 August	Sandavágur	95
23 August	Sandur	52
30 August	Sandavágur	228
18 September	Hvalvík	*137
2 October	Klaksvík	50
10 October	Tórshavn	32
31 December	Fuglafjørður	18
Total	**14 grinds**	**1,524**

* Mixed grind, see Table 3

Table 3. Catches of cetacean species other than *G. melas* in the Faroe Islands, 1996

Date	Locality	Number	***Species***
4 July	Hjalnestanki	1	*Ph. phocoena*
8 August	Tangafjørður	2	*Ph. phocoena*
12 August	Klaksvík	49	*L. acutus*
25 August	Tórshavn	19	*L. acutus*
27 August	Hvalba	19	*T. truncatus*
7 September	Funningsbotnur	13	*L. acutus*
18 September	Hvalvík*	2	*T. truncatus*
5 October	Vágur	30	*L. acutus*
6 October	Porkeri	9	*L. acutus*
7 October	Porkeri	6	*L. acutus*
19 October	Hvalvík	26	*L. acutus*

* Mixed school, see Table 2.

4.2
GREENLAND –
PROGRESS REPORT ON MARINE MAMMAL RESEARCH
1995

1. INTRODUCTION

This report summarises the Greenlandic research on pinnipeds and cetaceans done in 1995. Most of the research was conducted by the Greenland Institute of Natural Resources, but some projects also involved DFO (Department of Fisheries and Oceans, Canada), the National Environmental Research Institute, Department of Arctic Environment, Denmark.

2. RESEARCH

2.1 Species and stocks studied

Pinnipeds

* Harp seals *Phoca groenlandica* - West Greenland
* Hooded seals *Cystophora cristata* - West Greenland

Cetaceans

* Beluga *Delphinapterus leucas* - Northeast Canada/West Greenland
* Narwhal *Monodon monoceros* - Melville Bay, Greenland
* Harbour porpoise *Phocoena phocoena* - Central West Greenland

2.2 Field work

Six belugas were equipped with satellite-linked transmitters in Croker Bay (Northeast Canada), in order to monitor their autumn migration.

2.3 Laboratory work

103 harbour porpoises were dissected, and samples were used for various studies.

2.4 Other work

Pinnipeds

The distribution of the many tagged or branded **harp** and **hooded seals** caught in Greenland has been reviewed and a summary prepared for publication.

Cetaceans

Data on movements, swimming speed and diving behaviour of narwhals equipped with satellite transmitters in 1993 and 1994 has been analysed.

2.5 Research results

Pinnipeds

The review of tagged and branded **harp** and **hooded seals** contributes to knowledge of the general distribution, routes and timing of the annual migrations, but cannot be used

for assessment of stock size (mark-recapture analyses) because reporting efficiency is variable or unknown.

Cetaceans

The six belugas equipped with satellite transmitters in Northeast Canada all stayed in

the North water and did not migrate along the Greenland west coast as expected.

All nine tagged narwhals stayed in the Melville Bay area during the open water period. One whale from 1993 and one from 1994 were tracked after freeze-up. They both went south following the 500-1000 m. slope of eastern Baffin Bay. The overall surfacing periods from August through 18 February constituted 39.3 % of the time.

3. CATCH DATA

In Greenland hunters report their catches in a booklet known as *Piniarneq*, which also functions as an official hunting licence. It is reissued once a year upon submission of the completed records from the previous year. Fin whales and minke whales must however be reported separately to the Ministry of Fisheries

The only cetaceans listed in *Piniarneq* in 1995 were harbour porpoise, beluga and narwhal, but from 1996 killer whales and long-finned pilot whales have been included. Although some incorrect reporting has occurred (e.g. ringed seals reported as harbour seals), the reliability of all data has not been systematically validated.

3.1 Pinnipeds

Catch figures extracted from *Piniarneq* for 1995 were: 403 Walruses; 1,900 bearded seals; 6,884 hooded seals; 72,560 ringed seals; 57,812 harp seals; and 266 harbour seals.

3.2 Cetaceans

Catch figures extracted from *Piniarneq* for 1995 were: 606 belugas; 461 narwhals; 1,135 harbour porpoises; and 163 minke whales (7 on the east coast).

4. ADVICE GIVEN AND MANAGEMENT MEASURES TAKEN

The Scientific Working Group of the Canada/Greenland Joint Commission on the Conservation and Management of Narwhal and Beluga recommended that the annual removals of belugas should not exceed 250 animals.

Since 17 October 1995 the catch of narwhal and beluga from larger vessels has been restricted, so that vessels from 25 to 50 GRT only are allowed to catch these whales for their own consumption and not for sale. Vessels from 50 to 79.9 GRT are only allowed to take 2 narwhal or beluga a year. Furthermore, the drive hunt (which is a significant factor in the total catch of beluga) has been prohibited.

5. PUBLICATIONS AND DOCUMENTS

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Melville Bay, northwest Greenland. *Canadian Journal of Zoology* 73: 2106-2119.

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4.3
ICELAND -
PROGRESS REPORT ON MARINE MAMMAL RESEARCH IN 1996

G.A. Víkingsson and E. Hauksson

1. INTRODUCTION

The following reports on studies conducted by or in cooperation with the Marine Research Institute (MRI) and the Research Committee for Biological Seafood Quality (RCBSQ), Reykjavík, Iceland.

2. RESEARCH

2.1 Species/stocks studied

Pinnipeds

Main emphasis was on studying the local Icelandic seal stocks, common seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*). Little work was done on the vagrant species: hooded seals (*Cystophora cristata*) harp (*Phoca groenlandica*), ringed (*Phoca hispida*) and bearded seals (*Erignathus barbatus*).

Cetaceans

In 1996 research on cetaceans conducted by the MRI and cooperating institutions concentrated on the recently exploited minke (*Balaenoptera acutorostrata*), fin (*B. physalus*) and sei (*B. borealis*) whales. Special research projects were also continued on humpback (*Megaptera novaeangliae*) and killer whales (*Orcinus orca*), white-beaked dolphins (*Lagenorhynchus albirostris*) and harbour porpoises (*Phocoena phocoena*).

2.2 Field work

Pinnipeds

Some new and old grey seal haul-out sites were visited to study dispersal of grey seals, and time of breeding and moulting.

Cetaceans

Sampling of incidentally caught harbour porpoises and white-beaked dolphins continued in 1996. This project is a part of MRI's intensified research on multi-species interactions, initiated in the winter 1991/1992. In 1996 post-mortem examinations were conducted on 9 harbour porpoises and 9 white-beaked dolphins. The MRI staff investigated or received information on whales that beached or stranded at the Icelandic coast in 1996. These included:

- 2 northern bottlenose whales (*Hyperoodon ampullatus*) in South and SW Iceland in March and November respectively.
- 1 sperm whale (*Physeter macrocephalus*) in northern Iceland in December.
- 1 minke whale in August in NW-Iceland.
- 1 harbour porpoise in April in SW-Iceland.
- 1 humpback whale in August in NE-Iceland.
- 1 sei whale in September in SW-Iceland.
- 1 long-finned pilot whale (*Globicephala melas*) in November in SW-Iceland.

2.3 Laboratory work

Pinnipeds

Investigations on otolith-size/fish-length relationship of the major prey species of seals were continued.

Cetaceans

Sightings data collected during the NASS-95 sightings survey were analysed in cooperation with scientists from the Mathematical Institute, University of St. Andrews, Scotland. Preliminary results will be presented by the NAMMCO Working Group on Abundance Estimates at the fifth meeting of the Scientific Committee.

Identification of photographs and laboratory work on skin biopsies, obtained as a part of the YONAH project (Years of the North Atlantic Humpback whale, 1992-1993), was continued in cooperation with other participating countries.

Analysis of MRI's photo-id catalogue of killer whales was continued. Classification of photos collected in 1995 was completed and reanalysis of older photos was continued. The catalogue now contains around 350 individuals.

Laboratory work and validation of the data on stomach contents, age and reproduction of harbour porpoises and white-beaked dolphins, collected in 1991-1996 is in its final stage.

Research on genetic variation in baleen whales was continued. The main objective of these studies is to investigate population structure of fin, sei and minke whales in Icelandic and adjacent waters.

2.4 Other studies

A study on dynamic interactions between three cetaceans species and some fish resources in Icelandic and adjacent waters using a simulation model was continued. Grey and common seals were added to the model. Work continued on feeding and energetics of fin and sei whales, based on data collected during 1986-1989 (Víkingsson 1996).

In cooperation with the National Economic Institute of Iceland, work was continued on the development of management models for whaling.

2.5 Research results

Pinnipeds

Results of investigations of vital parameters and food of common seal and grey seal were presented at the Symposium of Multispecies Research, held by the MRI in September 1996. Cod (*Gadus morhua*) is by far the most dominant prey species of the common seal, while the diet of the grey seal is more evenly distributed between various fish species. This data is under final analysis and will be published in 1997.

Cetaceans

Studies on body condition of fin whales of Iceland have shown large variability due to reproductive condition. Thus, calculations on the deposition of energy reserves in the body throughout the summer range from around 30% in immatures to 80% of spring values in pregnant females (Víkingsson 1996). Rough calculations on the feeding rates required to deposit these energy reserves range from around 700 kgs/day (1.8% of body weight) to 1,300 kgs/day (2.8% b.w.) depending on reproductive class.

Investigations on the stomach content of fin whales have shown a pronounced diurnal variation in feeding with highest rates during night and early morning (Víkingsson 1996). These studies indicate a mean evacuation rate of the fore-stomach of around 3 hours and a feeding rate of around 1,300 kgs/day for adult fin whales.

Preliminary results from the analysis of the stomach content of harbour porpoises in coastal Icelandic waters indicate that capelin (*Mallotus villosus*) is the predominant prey species, followed by sandeel (*Ammodytidae sp.*) and then gadoids and cephalopods. There was considerable seasonal variation in prey frequency, where capelin appears to be dominant in late winter and spring and sandeel during the summer and through early winter (Sigurjónsson and Víkingsson 1996, Víkingsson and Sigurjónsson 1996).

Analysis of humpback whale fluke photographs has resulted in some matches between Iceland and the West Indies.

3. CATCH DATA

3.1 Pinnipeds

Preliminary catch figures for 1996 are: 935 grey seals, 850 common seals and 9 seals of other species.

3.2 Cetaceans

No directed catch of cetaceans took place in Icelandic waters in 1996.

4. ADVICE GIVEN AND MANAGEMENT MEASURES TAKEN

No whaling permits were issued in 1996. A precautionary TAC of 100 fin whales and 200 minke whales was recommended by the MRI for the 1997 season. No special management measures were taken regarding seals.

5. PUBLICATIONS AND DOCUMENTS

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4.4
NORWAY -
PROGRESS REPORT ON MARINE MAMMAL RESEARCH IN 1996

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1. INTRODUCTION

This report summarises the Norwegian research on pinnipeds and cetaceans conducted in 1996. The research on marine mammals described in this report was conducted at the University of Tromsø: the Department of Arctic Biology (UITØ-AAB) and the Norwegian College of Fishery Research (UITØ-NFH), at the Norwegian College of Veterinary Medicine, Department of Arctic Veterinary Medicine in Tromsø (NVH-IAV), at the National Veterinary Institute, Oslo (NVI) at the Institute of Marine Research in Bergen (IMR), at the Norwegian Institute for Fisheries and Aquaculture in Tromsø (NIFA), at the Norwegian Computing Centre in Oslo (NCC), at the Norwegian Institute for Nature Research in Oslo and Trondheim (NINA) and at the Norwegian Polar Institute in Oslo/Tromsø (NP).

2. RESEARCH

2.1 Species and stocks studied

Pinnipeds

* Walrus *Odobaenus rosmarus* - Barents Sea
* Bearded seals *Erignatus barbatus* - Svalbard
* Ringed seals *Phoca hispida* - Svalbard
* Harp seals *Phoca groenlandica* - Greenland and Barents Seas
* Hooded seals *Cystophora cristata* - Greenland Sea
* Common seals *Phoca vitulina* - Svalbard and Norwegian coastal waters
* Grey seals *Halichoerus grypus* - coastal waters of the Faroe Islands, Norway and Russia
* Crabeater seals *Lobodon carcinophagus* - Weddell Sea

Cetaceans

* Bottlenose whales *Hyperoodon ampullatus* - North Atlantic
* Minke whales *Balaenoptera acutorostrata* - Northeast Atlantic
* Harbour porpoises *Phocoena phocoena* - Norwegian coastal waters
* Killer whales *Orcinus orca* - Norwegian coastal waters
* Belugas *Delphinapterus leucas* - Svalbard

2.1 Field work

Pinnipeds

A surveillance flight with the Coastguard=s Orion for moulting **hooded seals** in the West Ice was conducted in July 1996. No conclusions on the status of hooded seals in this area could be drawn from this survey (IMR).

Studies of age and sex composition, body condition and feeding ecology were performed on **harp seals** invading the coast of North Norway in March/April (NIFA).

The ecology of seal pups, growth, changes in condition and diets, through the initial stages of their independent life, i.e. from weaning until they have started to feed independently, were studied in the Barents Sea (East Ice) and Greenland Sea (West Ice) in March-May. The pup ecology project includes both **harp** and **hooded seals**. Additional data on body condition were collected from adult **harp seals** (NIFA).

The studies on killing methods for seal pups in the West Ice which started in 1995 continued in 1996. Data were collected from 350 seal pups killed with the hakapik during the hunting of weaned seal pups in order to find out how effectively the animals were killed. The number of blows used for each animal, hitting site, eye reflexes and reflex movements were monitored and registered shortly after the animal had been hit by the hakapik. Samples of head and neck were taken from 75 of these animals for further analyses in the laboratory (NVH-IAV).

Studies of Barents Sea **harp seal** feeding ecology were continued with capture of seals for condition and stomach analyses and concurrent estimates of prey abundance using trawling and acoustic methods in July/August. During the survey some **ringed** seals were also captured in order to assess their ecological position in the drift ice belt. Prey specimens and blubber profiles from both seal species were collected for later analyses of fatty acid composition (NIFA - NFH).

Field work for various physiological studies of seals was conducted in the Greenland Sea (West Ice) between March 23 and April 8, 1996. A total of 6 **harp seals** and 6 **hooded seals** were killed for collection of tissue samples (blood, blubber, muscle, heart, spleen, brain, kidneys, liver, adrenal glands), to be analysed for background levels of the environmental pollutant PCB, and for use in histological/physiological studies of spleen function in relation to diving in seals. In addition, 17 harp seals and 2 hooded seals were captured live and transferred to facilities at the Department of Arctic Biology, University of Tromsø, for use in various physiological studies (diving physiology, thermoregulation, osmoregulation, effects of PCB-contamination, etc.) (UITØ-AAB).

Between April 30 and May 10, 1996, 6 female and 4 male White Sea **harp seals** were equipped with head-mounted 0.5 W satellite-linked dive recorders (Wildlife Computers, USA) for studies of the distribution and dive behaviour of seals from this stock after completion of the annual moult. (SevPINRO, Archangelsk, Russia, UITØ-AAB)

Sampling of biological material for studies of breeding biology (including tagging of pups) was performed for **grey seals** in Norwegian waters (NIFA).

Aerial photographic surveys of coastal seals was conducted off mid-Norway in August-October 1996. The surveys were conducted during moulting (**common seals**) and breeding (**grey seals**) seasons (IMR).

On the coast of Møre, 7 **common seals** were radio tagged. The seals were monitored for periods of three months using two automatic directional VHF radio receivers. In June, seals equipped with ultrasonic transmitters were tracked using inflatable boats with hydrophones to obtain detailed data on dive depth, swim speed, heart rate and

stomach temperature. Six common seal pups were tagged using conventional flipper tags (NINA).

Field work on **bearded seals** was conducted in May in Kongsfjorden, Svalbard. A total of 37 bearded seals were captured live, weighed and tagged, and some were fitted with time-depth recorders. Material was collected for analyses of vitamins in milk, and about 100 hours of observations of mother-pup interactions were collected for a M.Sc-programme. In addition, some bearded seals were shot as part of two other M.Sc-programmes, one on diet and one on life history parameters. These projects are cooperations between NP, and the Universities of Waterloo, Trondheim and Tromsø.

Ringed seal field work was conducted in St Jonsfjorden for a 14-day period in June/July. 20 ringed seals were captured live, and 8 of these were adults and had moulted and were fitted with satellite-transmitters. This project is a cooperation between NP and the Universities of Waterloo and Oslo. In addition, field work on ringed seals was conducted in Kongsfjorden in May. Here seals were shot and material collected for analyses of pollutants and P450 activity. This project is a cooperation between Akvaplan-niva, the Finnish Fish and Game Research Institute and NP.

Ten **crabeater seals** were equipped with 0.5 W satellite-linked dive recorders (Wildlife Computers, USA) during a U.S. circumantarctic cruise in January/February 1996. The purpose was to monitor seasonal changes in distribution and dive behaviour of this species, and to link this to the seasonal distribution of krill in Antarctic waters (National Marine Mammal Laboratory, U.S.A., UITØ-AAB).

During all seal and whale expeditions conducted in 1996, observations of pinnipeds were systematically recorded by species and position (NIFA).

Age and biological material has been collected on board catching vessels both during sealing (harp seals) and whaling (minke whales) operations (IMR).

Cetaceans

During summer 1996 a sighting survey was conducted in the Norwegian Sea. This was the first year of a six-year program to cover the Northeast Atlantic to ensure a new abundance estimate of **minke whales** every six years for management purposes (IMR).

During the commercial whaling season (May-June), stomach samples, body condition data and biological material for studies of demography, reproduction and stock identity were collected from **minke whales** by scientific personnel on 5 of the participating vessels. Additionally, tissue materials for studies of stock identity were collected by governmental inspectors from all whales taken by the other vessels participating in the minke whale hunt (NIFA). Times to death and several other data relevant to studies of the effectiveness of the killing process were also recorded (NVH).

A research cruise was performed in the Lofoten/Vesterålen area off northern Norway between 20 June and 2 July, 1996 to tag **minke whales** with VHF-radio transmitters in order to provide further data on surfacing rates for use in evaluation of survey results (UITØ-AAB).

Killer whale surveys were performed during late autumn in North Norway in order to study behaviour, sounds and problems concerning photoidentification of the animals (UITØ-NFH).

In Sognefjord, **harbour porpoise** movements and vocalisation during transit, foraging and resting were recorded on video and acoustic tapes. The objective is to study behaviour of porpoises in close proximity to fishing nets. In 1997, experimental deployment of nets will be conducted at the transit routes, resting and foraging sites of porpoises (NINA).

Field work on **belugas** was conducted for 12 days in July in the Van Mijen/Van Keulen area. Few whales were seen and only one captured. This individual was equipped with a satellite-transmitter, and samples were collected for studies of pollutants and genetics (NP).

2.3 Laboratory work

Pinnipeds

Physiological studies of captive **harp** and **hooded seals** at the Department of Arctic Biology, University of Tromsø: The direction and velocity of blood flow in the extradural intravertebral vein of **harp** and **hooded seals** is studied by use of doppler ultrasound instruments, before, during and after experimental diving of the seals. The purpose is to investigate potential circulatory changes which may enhance the efficiency of oxygen utilisation during diving. Further studies have been conducted on the function of the **hooded seal** spleen as a blood storing organ, in relation to diving. Physiological, anatomical and histological techniques have been used. Brain temperatures were recorded in diving **harp** and **hooded seals**, in order to test the hypothesis that diving seals economise with existing oxygen stores and extend submersion time by allowing brain (and possibly other core) temperatures to fall during diving. Sea water drinking was studied in three mature **harp seals**, by continuous collection of urine and blood during a 12-hour period, after initial experimental sea water administration. The purpose is to investigate how the excretory system of the seal is able to handle such loads, and to find out whether seals may have a net gain of water from drinking sea water.
Thermoregulatory studies are conducted in **harp seals**, to investigate the importance of different body parts (body trunk and flippers) in controlling heat loss rates, and to find out in which way circulatory adjustments are used to change the insulating properties of the blubber layer.

Measurements of metabolic rates are performed in **harp seals**, in order to find out to what extent blubber is metabolically active and contributes to the overall metabolism of the animal. Measurements of metabolism have been combined with studies of body composition in adult harp seals which have been subjected to various feeding regimes, and thus have had a blubber layer of variable thickness.

Experimental studies of physiological and immunological effects of exposure to the environmental pollutant PCB were conducted in **harp seal** pups. Samples from various tissues (blood, blubber, muscles, etc.) were collected from animals which were exposed to daily doses of PCB. The samples will be analysed for PCB levels and for potential immunological and physiological (e.g. hormonal) changes which may have occurred as a result of exposure to PCB.

Analyses of tissue (blood, blubber, hair) samples from **harp** and **hooded seals** are performed in order to investigate turnover rates of naturally occurring isotopes (^{15}N

and ^{13}C) and fatty acids, in relation to experimentally induced dietary changes (in cooperation with Texas A&M University, U.S.A.) (UITØ-AAB).

Cardiac cells were isolated from newly killed **harp seals** and studied under *in vitro* conditions, in order to investigate cellular mechanisms which can explain the seal heart's ability to function at extremely low contraction frequencies (heart rates down to 6 beats per minute) and under partially hypoxic conditions (UITØ-IMB/AAB).

A study of Brucellosis, a zoonotic disease which can cause reproduction failure in several domestic and wild animal species, on **harp seals, ringed seals** and **bearded** seals continues. Supplementary specimens have been collected during the commercial catch of **minke** whales during 1996, off the coast of Spitsbergen and Bear Island. Specimens were also collected during the commercial catch of **harp seals** in 1996 from the East Ice. A serologic survey for antibodies capable of recognising *Brucella sp*. is conducted by an ELISA-test. Tissue samples from serum positive animals are being checked for the presence of *Brucella* by direct cultivation and by Polymerase Chain Reaction (PCR) (NVH-IAV in cooperation with Institut National De Recherches Veterinaires, Brussels, Belgium).

Serum samples from **minke** whales (n=202), harp seals (n=335), **ringed seals** (n=48), and **hooded seals**(n=79) have been tested for antibodies against *Toxoplasma gondii*. The purpose of the study has been to find out if pinnipeds and cetaceans from the North Atlantic and Barents Sea have antibodies against *T. gondii*. The question arises whether the proper handling of marine mammal meat should include freezing or thorough cooking to destroy *Toxoplasma* tissue cysts (NVH-IAV).
Age readings from teeth have been conducted on **harp seals** taken during seal invasions and on their feeding grounds in the Barents Sea. Furthermore, data on body condition of adult **harp seals** (taken during the invasions and in the Barents Sea**)** and of **harp** and **hooded seal** pups from breeding grounds have been analysed (NIFA).

Stomach and intestine content samples taken from **harp seals** during invasions and on their feeding areas in the Barents Sea and from **harp** and **hooded seal** pups in the breeding areas have been analysed using traditional methods where the original biomass of prey items are reconstructed based on remaining hard parts in the contents. Stomach contents data collected on the feeding grounds are compared with data from concurrent estimates of prey abundance (NIFA).

Common seal vocalisations were analysed. Tests for regional variations in male display vocalisations were conducted based on recordings at Orkney in UK, Oslofjord, Møre, Trøndelag, Vesterålen and Finnmark in Norway. Recordings of dive profiles and stomach temperature in free ranging seals were analysed in order to explore the foraging behaviour and habitat use of this species (NINA).

Blood samples from **common seals** are analysed in connection with a phocine distemper virus study (NP).

Age, condition and stomach contents data from **ringed seals** from the Barents Sea drift and **common seals** from the Norwegian coast have been analysed (NIFA-NFH).

Studies of DNA for stock identity of **walruses** from East and West Greenland, Svalbard, and Frants Josef Land are carried out (NP).

Teeth and sex organs from **bearded seals** are analysed for age and sexual maturity. Stomach and intestine contents are analysed for a diet study, blood samples are analysed for different PCBs, and hair samples analysed for mercury content (NP).

Ringed seal blood, hair and samples from different organs are analysed for different studies of pollutants (NP).

Cetaceans

Age determination of bullae from **minke whales** and teeth from seals have been continued. A study on interpretations of zones in minke whale bullae in cooperation with Japanese scientists has been continued (IMR).

A study on reproduction in **minke whales** comparing data from several geographic areas has been initiated (IMR).

Recapture information and databases containing incidental observations of marine mammals have been updated (IMR).

Stomach content samples from **minke whales** have been analysed using traditional methods where the original biomass of prey items are reconstructed based on remaining hard parts in the contents (NIFA).

Material collected from **minke whales** for studies of temporal and regional variations in condition include girth and blubber measurements, meat and blubber masses and meat samples to be used in total lipid and protein content analyses. The analyses of this material is still in progress (NIFA-NFH).

Tissues sampled for stock identity studies of **minke whales** have been analysed using DNA techniques (NIFA).

Chemical analyses were performed on **minke whale** baleens and various prey species, in order to identify substances which may act as indicators of food selection in baleen whales. Isotopes of carbon and nitrogen (^{15}N and ^{13}C) were analysed using a mass spectrometer, while the concentrations of cadmium, fluoride and sulphur were determined by use of atomic absorption spectrometry, ionic analyser and gas chromatography, respectively (UITØ-AAB).

Analysis of polychlorinated biphenyls (PCBs) in different tissues of **harbour porpoises** was completed in 1996 (NINA + IMR), and analysis of toxic butyltins was initiated (NINA + NIVA).

A cooperative project on DNA studies of teeth and fixated reproductive material from earlier catches of **bottlenose whales** has been initiated together with Dalhousie University, Halifax, Canada (IMR).

2.4 Other work

Pinnipeds

Anatomical and feeding data from **harp seals**, collected in February 1993 and October 1995, have been prepared for publication/presentation. Furthermore, results from analyses of recent **harp seal** invasions to coastal waters of North Norway and from analyses of ecological data collected from **harp** and **hooded seal** pups in the East and West Ice have been presented. And finally, results from tagging experiments with **grey seals** in Russia and Norway have been analysed and presented (NIFA).

Seal pups and some harp seal pelts from the East Ice commercial catch were investigated for the presence of blood-sucking lice (*Echinopthirius hordus*) (NVH-IAV).

Cetaceans

Feeding data from **minke whales**, collected in special permit catches in 1992-1994, have been analysed and prepared for presentation/publication (NIFA).

Data from studies of **killer whale** behaviour and ecology, collected in 1990-1993, have been analysed and prepared for publication (UiTø-NFH).
A bioeconomic model has been developed to analyse the annual economic losses from the reduced harvesting of prey species resulting from an increase in a predator stock. The model has been applied to the case of Northeast Atlantic **minke** whale=s consumption of fish (UiTø-NFH).

2.5 Research results

Pinnipeds

Based on biological data collected in the south-eastern Barents Sea in February 1993, and in the north-eastern Barents Sea in October 1995, quantitative analyses of **harp seal** prey preferences have been performed. Both the abundance of prey and the composition of seal diets varied substantially between the two areas. Statistical analyses of potential prey preferences revealed that in the northern study area, the harp seals appeared to have a negative preference for the very abundant krill. Considering two prey species at a time and comparing the difference between diet and abundance composition, the most reliable prey preference conclusion on a 5% test level was that polar cod was preferred over the pelagic amphipod *Themisto libellula* in this area. An October shift from crustaceans to fish in the seal diets appears to be supported by the material from the northern study area. In parts of the southern area, herring was found in significantly smaller proportions in the seal diet than in the sea. A possible preference for herring over polar cod was also indicated, but this conclusion was more uncertain due to spatial variation in the prey abundance in the area. Two independent statistical methods were applied, one based on a standardised test statistic which was assumed to be normally distributed, and one based on bootstrap. Identical test conclusions were obtained with both methods (NIFA).

Food shortage, particularly the two important prey species capelin and herring, may have contributed to the invasions of **harp seals** that have occurred to the coast of North Norway in recent years. Investigations in 1995 revealed a first mid-winter (December-February) invasion wave of young (mainly one-year-old) animals to most coastal areas of North Norway. Many tags from the East Ice were recovered, and the diet of the young animals was generally dominated by small gadoids, particularly saithe. The body condition of the invading young animals were rather poor, and observed age composition of Barents Sea harp seals in their moulting lairs in 1995 suggests high mortality, with subsequent low recruitment to the stock, of the 1994 cohort. A second invasion wave of adult females occurred (post-weaning) to the northernmost coastal areas of North Norway (Finnmark) in April 1995. These animals were feeding in particular on cod and haddock. In 1996 there was no mid-winter invasion, but adult females occurred as usual in April (NIFA).

Results from the ecological studies of **harp** and **hooded seal** pups indicate that both species are capable of finding prey and feeding independently rather quickly after weaning. The first food of harp seal pups seems to be restricted to crustaceans

(particularly krill and *Themisto libellula*) both in the East and West Ice, whereas the hooded seal pups in the West Ice also feed on other prey groups such as fish and cephalopods. Body condition data from harp seal pups taken in the East Ice seems to indicate that the pups are not able to consume sufficient prey to meet energy requirements during the period from weaning (mid-March) to mid June (NIFA).
Data collected from **harp seals** that were satellite-tagged after moult in the White Sea show that the seals all migrated out of the White Sea shortly after the moult, to disperse into the Barents Sea. Tagged animals have mainly stayed in the northern parts of the Barents Sea throughout the study period, both in association with the ice edge and in open water. Dive depth data indicate that the seals mainly dive to depths of less than 100 meters. Data collection is not yet completed (4 transmitters still active on 31 December 1996), and processing and analyses of data are still in progress (SevPINRO, Archangelsk, Russia, UITØ-AAB).

Results of physiological studies at the Department of Arctic Biology, University of Tromsø: Studies of blood flow changes in the extradural intravertebral vein of diving **harp** and **hooded seals** are not yet completed, and results are not available. Studies of spleen function in **hooded seals** show that this species may store about 13% of its blood volume in the spleen. Spleen hematocrit may reach more than 90%, and the spleen is therefore capable of storing 20% of the total amount of red blood cells. Data suggest that red blood cells may be released through splenic contraction during diving. This process increases the oxygen-carrying capacity of the blood, and, hence, enhances re-oxygenation efficiency during surfacing periods. The mechanisms behind splenic trapping and release of red blood cells are not known, but are under investigation.

Harp and **hooded seals** that were subjected to experimental diving of 10-15 min duration, displayed decreases in brain temperature of 2-3°C. Such brain hypothermia may cause a pronounced reduction in cerebral oxygen consumption, and hence, contribute to extending oxygen stores and submersion endurance.

Preliminary results from a study of sea water drinking in **harp seals** show that adult animals cope with orally administered sea water volumes of 1500 ml by excreting surplus ions through the kidneys. However, this also causes a net loss of water, and harp seals are thus unable to gain body water by drinking sea water.

Thermoregulatory studies of **harp seals** show that at water temperatures close to the lower critical temperature of the animals, the insulative properties of their blubber is close to that of dead blubber, and heat loss from the flippers accounts for 2-6% of total heat loss. As the heat load on the animals increases with increasing water temperatures, the relative contribution of heat loss from the flippers increases to 19-48%, while the fraction lost from the trunk decreases, despite an increase in the active heat transfer through the blubber by enhanced blood perfusion. Studies of differences in metabolic rates between fat and lean **harp seals** imply that blubber makes a rather small contribution to the resting metabolic rate of these animals.

Analyses of tissue samples collected from **harp seals** which have been subjected to experimental PCB-exposure are in progress, and data are not yet available. This also concerns tissue samples for analyses of carbon and nitrogen isotopes and fatty acids, which were collected from **harp** and **hooded seals** which had been subjected to experimental changes in diet (UITØ-AAB).

In vitro studies of isolated cardiac cells from **harp seals** indicate that special adaptations in the cellular regulation of free calcium may help explain the tolerance to low contraction frequencies and partly hypoxic conditions in the phocid seal heart (UITØ-IMB/AAB).

The analyses of the age material from the catches of moulting **harp seals** in the West Ice and in the East Ice show that the 1987 cohort is virtually absent in both areas, and that the recruitment in the East Ice has probably been reduced in recent years (IMR).

Of **harp seals** tagged in the West Ice, six were recaptured in the moulting lairs there, while two were recaptured off Greenland and one recaptured in the East Ice in 1996. Two harp seals tagged in the White Sea in 1991 were recaptured during moulting in the East Ice (IMR).

The analyses of registrations from the studies on killing methods for seal pups in the West Ice have not been concluded. The preliminary results of the collected data and head samples showed that almost every blow with hammer (first blow) of the hakapik hit the scull over the brain, while the spike (second blow) sometimes did not hit exactly in the brain. However, the hammer blow gave extensive haemorrhages in the brain which most probably rendered the animals unconscious very rapidly or instantaneously. "Swimming movements" (reflex movements) of the tail were registered even if the brain was extensively damaged (NVH-IAV). Verification of results from serological screening of seals and whales for *Brucella*-specific antibodies is in progress (NVH-IAV).

No antibodies against Toxoplasma were found in any of the samples from the minke whale and different seal species (NVH-IAV).

Blood-sucking lice were found on harp seal fur from adults. The lice were abundant over the back, more than 200/animal (NVH-IAV).

In May 1996 new rules for management of **coastal seals** were introduced. Management shall be based on sustainable use and this requires the establishment of a survey programme. In 1996, photographic surveys in moulting lairs of common seals and in breeding areas of grey seals in mid-Norway showed numbers similar to previous estimates. The photographic survey information from the most recent years was supplemented with earlier data and information to provide advice in the short term until a satisfactory management system is established. This system also includes the collection of catch statistics (IMR).

Ecological studies of **common seals** in North Norway have revealed a diet dominated by saithe, but also with considerable proportions of herring, cod and sand eels. Methodological studies indicate that use of faeces samples in quantitative analyses is questionable. Common seals appear to feed little during summer (breeding, moulting), but feed sufficiently during autumn and winter to increase their blubber layer significantly (NIFA-NFH).
Studies of **grey seals** in North Norway have revealed a prolonged breeding period, starting in October and lasting to the middle of December. A tagging experiment in North Norway and Russia suggests extensive migrations of young grey seals. Many pups tagged in Russia were recaptured in Norway. By-catches of young grey seals in gill nets appears considerable in that more than 4% of the tagged pups were recaptured in this way within the first year after tagging (NIFA-NFH).

Ecological studies of **ringed seals** in the northern drift ice areas of the Barents Sea indicate that the species feeds mainly on crustaceans (krill and *Themisto libellula*) and polar cod (NIFA-NFH).

Data collected from satellite-tagged **crabeater seals** are presently being processed and analysed. No results are yet available (National Marine Mammal Laboratory, U.S.A., UITØ-AAB).

Cetaceans

During autumn 1995 and spring 1996 a large effort was put into analysing the **minke whale** survey data collected in 1995 as well as a reanalysis of the survey and experimental data from the years 1988-1990. Based on the 1995 survey the abundance of minke whales in the North-eastern stock area was estimated to be 112,000, with a 95% confidence interval of 91,500-137,000 and the revised estimate for 1989 was 65,000, with a 95% confidence interval of 44,500-94,000 (IMR).

Results from fore-stomach analyses of **minke whales**, taken in scientific whaling operations in 1992-1994, indicate a diet dominated by fish. Considerable heterogeneity occurred in prey species composition both between geographical areas, sampling periods and sampling years. Gadoid fish species generally dominated the spring diet. During summer in 1992, capelin dominated the whale diets in the two northernmost study areas (Spitsbergen/Bear Island), while in summer and autumn in 1993 and 1994 krill was the most important food item in these areas, with the addition of only small amounts of capelin. The latter is consistent with a recent increase in krill and severe decrease in capelin availability in the area. In coastal areas of northern Norway and Russia, minke whales had been feeding mostly on herring, to a lesser extent on gadoid fish (particularly during summer). Statistical analyses seem to indicate a preference for herring and capelin. Given the opportunity to choose, it appears that minke whales will generally favour these two prey species over other relevant species such as krill and gadoid fish species (NIFA).

Inclusion of **minke whales** in multispecies modelling of the Barents Sea resources has actualised development of an effective and feasible method designed to provide regular and representative information about stomach contents from the species. It is assumed that this may be obtained most conveniently by collection of data from commercial catches. However, the comprehensive and time- and resource-consuming methods used in scientific catch operations had to be simplified considerably. Experiments designed to achieve this were started on a pilot scale during scientific catches in 1994, and continued more comprehensively during commercial whaling in 1995 and 1996. The results indicate that such simplification is possible. Under certain assumptions, randomised collection of relatively small (2-3 l) sub-samples taken directly from the opened fore-stomach appears to be sufficient for an adequate and representative description of minke whale diets (NIFA).

Attempts to tag **minke** whales with VHF-radio tags failed due to a combination of unfavourable weather conditions and low local abundance of whales during the tagging period (UITØ-AAB).

The results of chemical analyses of **minke whale** baleens indicate that none of the tested elements (^{15}N and ^{13}C, cadmium, fluoride and sulphur) are suitable as indicators in studies of diets of Northeast Atlantic minke whales (UITØ-AAB).

Predation costs are estimated for the Northeast Atlantic **minke whale**. The annual average predation cost per whale in 1991-92 is between $US 1,780 and $US 2,370, using Norwegian cost and earnings data. A ten percent stock increase is estimated to cause an annual loss of almost $US 19 million to the fishers of the prey species (UiTø-NFH).

Abundance estimates for some **odontocete species** based on the survey in 1995 were presented to the IWC Scientific Committee at its annual meeting in June 1996 (IMR).

Killer whales have been shown to occur in different coastal areas of North Norway throughout the year, these areas coinciding with the distributional areas of the Norwegian spring spawning herring. Herring seems to be the main type of killer whale prey both during autumn-winter and summer, although predation upon saithe, mackerel, little auks, eider ducks, northern fulmars and jellyfishes has been observed. The dynamic nature of the seasonal migration patterns of Norwegian spring spawning herring clearly has consequences for the seasonal occurrence and habitat use of killer whales (NFH).

In 1995 the IWC Scientific Committee tentatively divided **harbour porpoises** in Norwegian waters into two populations: the North Norway - Barents Sea population, and the North Sea population. It was agreed to use 66°N to delineate the boundary between the two tentative populations. A morphometric comparison was conducted based on measurements of 53 female and 72 male porpoises north and south of this latitude. There were few significant differences between the groups. Essentially, it could only be concluded that significant differences among the geographic groups are restricted to two girths for males: at axilla and anterior to the dorsal fin. For females, differences are less apparent, but may be present in girth at axilla as well as mass. Definitive differences in both proportional and absolute size can only be determined with the introduction of new data (NINA).

Polychlorinated biphenyls (PCBs) were measured in six female and one male **harbour porpoises** incidentally caught in October 1993 off the Norwegian west coast 60°50'. Mean PCB concentrations (μg/g lipid) were in blubber (7.36), melon (8.08), brain (0.37), liver (2.37), spleen (1.12), kidney (1.05), dorsal muscle (2.35), heart muscle (2.15), blood (4.2) and in females only: mammary gland (1.15). A significant negative correlation in _PCP with age was noted for females. However the maximum concentrations of _PCB were recorded in blubber (12.9 μg/g lipid) and melon (13.9 μg/g lipid) of a six years old female (NINA + IMR).

3. CATCH DATA

3.1 Pinnipeds

Norwegian sealing in 1996 included four vessels, two of which operated in the West Ice (the Greenland Sea) and two in the East Ice (the south-eastern Barents Sea). The Norwegian ban on catching pups was lifted in the 1996 season, and up to half the quotas were allowed to be taken as weaned pups. The following table gives the Norwegian catches of harp and hooded seals in 1996.

Table 3.1 Norwegian catches of harp and hooded seals in 1996. 1+ means one year or older seals.

	The West Ice	*The East Ice*

Species	Pups	1+	Total	Pups	1+	Total
Harp seals	5,649	778	6,427	2,910	6,611[1)]	9,521
Hooded seals	575	236	811			

[1)] Including 22 seals taken for research purposes in July/August.

3.2 Cetaceans

A temporary halt in the commercial minke whaling in Norway was introduced after the 1987 season. With the exception of scientific catches, no whaling was allowed during the period 1988-1992. In 1993, commercial minke whaling was again allowed and quotas were established based on the Revised Management Procedure (RMP) developed by the IWC Scientific Committee. A part of the quota was allocated as scientific catches which were conducted during the period 1992-1994 to study the feeding ecology of minke whales.

The RMP allocates catch quotas to specific management areas. There are five such management areas within the region of interest to Norwegian whalers. These are (1) the Svalbard-Bear Island area (abbreviated ES); (2) the eastern Norwegian Sea and central and north-eastern Barents Sea (EB); (3) the Lofoten area (EC); (4) the North Sea (EN) and (5) the western Norwegian Sea/ Jan Mayen area (CM). During the years 1993-1994, only the EC area was open for scientific catches. Table 3.2 shows the number of minke whales taken in commercial whaling operations during the 1996 season.

Table 3.2 Catches of minke whales in 1996 by management area as defined in RMP

1996	Management area					
	EB	EN	ES	EC	CM	Total
Small-type whaling	200	23	112	13	40	**388**

4. ADVICE GIVEN AND MANAGEMENT MEASURES TAKEN

4.1 Sealing

Advice on management of harp and hooded seals is based on the deliberations in the ICES/NAFO Working Group on harp and hooded seals. For harp seals in the West Ice, pup production in 1991 has been estimated both from mark-recapture experiments and visual and photographic surveys and found to be 57,800 (95% confidence interval 46,000-69,000) and 55,300 (95% confidence interval 44,500-68,500), respectively. These findings were used to model the population to evaluate the impact of several catch scenarios. Russia has studied the East Ice harp seal population by conducting photographic surveys in the breeding lairs in the White Sea, and their most recent analyses indicate that the pup production in 1991 was approximately 140,000, but the status of this stock is uncertain due to apparent recruitment failure since the late

1980s. A survey to estimate hooded seal pup production in the West Ice in 1994 failed to meet its goal due to bad weather and ice conditions, and the status of this stock is still poorly known. A new survey is planned for the 1997 breeding season. The present TACs are 13,100 harp seals in the West Ice, 40,000 harp seals in the East Ice and 9,000 hooded seals in the West Ice, all quotas given as 1+ equivalents.

Russia and Norway both take part in the sealing operations in the West Ice and the East Ice and therefore allocate quotas on a bilateral basis. The Norwegian quotas in 1996 were 10,600 harp seals and 1,700 hooded seals in the West Ice and 9,500 harp seals in the East Ice. There is a general ban on catching females in the breeding lairs in the West Ice. The Norwegian ban on catching pups of the year, introduced in 1989, was lifted for the 1996 season. For the 1997 season the same total allowable quotas as in 1996 will be suggested, but the allocation between Russia and Norway will probably differ from last year. The Norwegian share of the harp seal quota in the East Ice will be reduced to 5,000 animals, while the Russian share of the hooded seal quota in the West Ice will be reduced to 2,800 animals. It is expected that at least a part of the Norwegian quota will be allowed as a catch of weaned pups.

4.2 Whaling

At the IWC Annual Meeting in 1992 Norway stated that it intended to resume commercial minke whaling in 1993. So far, the IWC has accepted the RMP developed by its Scientific Committee as a basis for future management decisions, but has not implemented it. The Norwegian Government therefore decided to set quotas for the 1993 and following seasons based on the RMP with parameters tuned to the cautious approach level as expressed by the Commission, and using the best current abundance estimates as judged by the IWC Scientific Committee.

The total quota in 1996 for the Northeast Atlantic and the Jan Mayen area was set to 425 minke whales based on the new estimates from the 1995 survey and the revised estimates for 1989. The catch quotas are set for each of five management areas, and allocated on a per vessel basis, in 1996 10-16 whales per vessel for the 32 vessels which participated. The catching season was from 20 May to 22 July. All the participating vessels had inspectors on board to survey the whaling activity. The quota for 1997 will be 580 minke whales.

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