Appendix 8

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REPORT OF THE WORKING GROUP ON SEALS

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1. EXCHANGE OF INFORMATION AND SUMMARY OF SEAL CATCHES IN 2013

Norwegian catches in the Greenland Sea in 2013 was taken by 4 vessels, whereas no Russian seal vessels participated in the area. Due to the uncertain status for Greenland Sea hooded seals, no animals of the species were permitted taken in the ordinary hunt operations in 2013. Only some animals were taken for scientific purposes. The 2013 TAC for harp seals in the Greenland Sea was set at 25 000 1+ animals (where 2 pups balance one 1+ animal), i.e. the removal level that would reduce the population with 30% over the next 10 year period. Total catches in 2013 were 16,033 (including 13,911 pups) harp seals, representing 54% of the identified sustainable levels.

A possible reduction in harp seal pup production in the White Sea may have prevailed after 2003. Due to concern over this, ICES recommended that removals be restricted to the estimated sustainable equilibrium level (TAC) of 15,827 1+ animals (where 2 pups balance one 1+ animal) in the White and Barents Seas in 2013. The Joint Norwegian-Russian Fisheries Commission (JNRFC) has followed this request and allocated 7,000 seals of this TAC to Norway. On this background, Russian sealing in 2013 was planned to be continued using the new boat-based approach introduced in the White Sea catch in 2008. This catch, using ice class vessels fitted with small catcher boats, would focus primarily on weaned pups (beaters), to a much less extent on adult seals. No white-coats would be taken. However, as was also the case in 2009-2012, Russian authorities implemented a ban of all White Sea pup catches. Despite considerable effort from PINRO specialists to explain that a sustainable harvest from the population would be perfectly possible, the Russian authorities concluded that all pup catches in the White Sea should be banned in 2013. Due to this, there were no commercial Russian harp seal catches in the White Sea in 2013. No Norwegian vessel aimed for this hunting area in 2013.

Norwegian and Russian catches in 2013, including catches under permits for scientific purposes, are summarized in the table below:

Area/species	Norway	Russia	Sum
GREENLAND SEA			
Harp seals			
Pups	13911	0	13911
Older seals (1yr+)	2122	0	2122
Sum	16033	0	16033
Hooded seals			
Pups	15	0	15
Older seals (1yr+)	7	0	7
Sum	22[1]	0	22
Area subtotal	16055	0	16055
BARENTS SEA / WHITE SEA			
Harp seals			
Pups	0	0	0
Older seals (1yr+)	0	0	0
Sum	0	0	0
Area subtotal	0	0	0
TOTAL CATCHES	16055	0	16055

[1] Animals taken under permit for scientific purposes

2. EXCHANGE OF INFORMATION AND SUMMARY REPORTS OF RESEARCH ACTIVITIES IN 2013

2.1 Norwegian research

2.1.1 Estimation of harp and hooded seal pup production in the Greenland Sea

In the period 18 March to 1 April 2012 IMR conducted aerial surveys in the Greenland Sea pack-ice (the West Ice), to assess the pup production of the Greenland Sea populations of harp and hooded seals. Two fixed-wing aircrafts, stationed in Constable Pynt (East-Greenland) and Akureyri (Iceland), were used for reconnaissance flights and photographic surveys along transects over the whelping areas. A helicopter, operated from the applied expedition vessel (M/V"Nordsyssel") also flew reconnaissance flights, and was subsequently used for monitoring the distribution of seal patches and age-staging of the pups. The reconnaissance surveys were flown by the helicopter (18 March - 1 April) and the fixed-wing aircrafts (22 March – 1 April) in an area along the eastern ice edge between 67°55'and 74°10'N. Obviously, the ice cover was narrow and the edge close to the Greenland coast in 2012. The reconnaissance surveys were adapted to the actual ice configuration, usually flown at altitudes ranging from 160 - 300 m. Repeated systematic east-west transects spacing10 nm (sometimes 5 nm apart) were flown from the eastern ice edge and usually 20-30 nautical miles (sometimes longer) over the drift ice to the west. Harp seal breeding was first observed on 19 March in an area between 73º00'N and 73º18'N; 14º28'W and 15º05'W (Patch A) and on 21 March in area between 72º00'N and 72º25'N; 15º30'W and 17º00'W (Patch B). Subsequent helicopter age-staging flights in the two patches confirmed substantially increase in the number of whelping harp seals in patch B which was also observed to include increasing numbers of whelping hooded seals to the east (i.e., closer to the ice edge) of the harp seals. The general drift of the two patches were in a south westerly direction. Due to more scattered and open drift ice in patch A, this patch drifted faster than patch B. Thus, on 28 March the two patches had merged, yielding one large patch. Outside the localized whelping patches no apparent harp seal breeding was observed, only a few scattered hooded seal families and, subsequently, solitary bluebacks were observed in the northeast.

Both aircrafts were equipped with Vexcel Ultracam Xp digital cameras, which provided multichannel images (Red Green Blue Infrared). On 28 March, a total of 27 photo transects, spacing 3 nautical miles, were flown using both aircrafts in the area between 70º43'N / 18º 31' - 18º 15' W and 72º 01'N / 17º 29' - 17º 29 W. The survey covered the entire area of the merged patches A and B. All transects were flown with cameras operating to ensure about 80-90 % coverage of the area along each transect line, resulting in a total of 2792 photos shot.The survey resulted in a total pup production estimate for harp seals of 89 590 (SE = 12 310, CV = 13.7%), which is lower than estimates obtained in similar surveys in 2002 and 2007. The total estimate of hooded seal pup production was 13 655 (SE = 1 900, CV = 13.9%), which is lower than estimates obtained from comparable surveys in 2005 and 2007.

2.1.2 *Brucella* in hooded seals

A Norwegian study has investigated seroprevalence of *Brucella pinnipedialis* in Greenland Sea

hooded seals. Pups (< 1 month) had a substantially lower probability of being seropositive (32 2.5 %, n=159) than yearlings (35.3 %, n=17), suggesting that exposure occurs post weaning. For seals older than one year, seroprevalence decreased with age, and there were no seropositives older than five years. No significant relationship was observed between *Brucella*-serostatus and body condition or parity status (based on the presence of *Corpora albicantia*). The authors hypothesize that young hooded seals are likely exposed to *B. pinnipedialis* through prey, with a subsequent clearance of infection.

2.2 Russian research

2.2.1 Estimation of harp seal pup production in the White Sea

Aerial surveys were conducted in 2013 to estimate pup production in the White Sea using the same multispectral methods as used in previous surveys. Six survey flights (15, 16, 17, 18, 20 and 21 March 2013) with a total duration of 31.5 hours were completed. Over 7000 km^2 were covered by the surveys. The first 5 surveys provided complete coverage of the area. The survey on 21 March provided a second independent coverage of the area where pupping occurred. Ice conditions in 2013 were typical, corresponding to long-term, mean ice conditions. Location of the whelping patch is given in figure below. More than 16,000 digital photos of the White Sea ice coverage and over 200 Gb of thermal images were obtained. These data are currently under analysis and it is anticipated that the estimates will be available later this year.

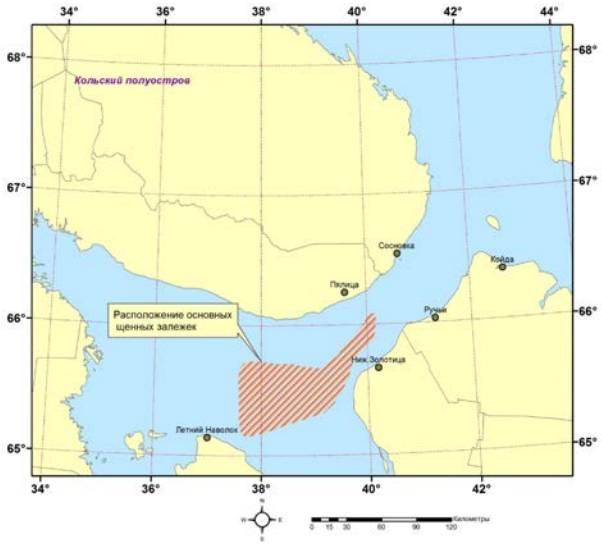

Figure – Location of the harp seal whelping patches in the White Sea in March 2013

2.2.2 Other issues

During late spring, summer and early autumn in 2013, several dedicated expeditions were carried out in the Kola Peninsula coastal zone including the Barents Sea and White Sea areas, using small boats and vessels. In the Barents Sea open area, opportunistic sighting surveys onboard research and fisheries vessels, including the annual joint Russian-Norwegian ecosystem surveys, were

carried out. During all surveys mentioned, data on marine mammal distribution and numbers were collected, taking into account also environmental conditions and fish species distributions and biomass. The main aim was to attempt to estimate marine mammals and fisheries interactions on one side, and influence of current climatic changes and human activity on marine mammals on the other. Research on mathematical modeling designed to estimate the total White Sea/Barents Sea harp seal population stock abundance and develop recommendations concerning harvesting strategy were continued.

2.3. Joint Norwegian-Russian work

2.3.1 Joint studies of life history parameters

To assess possible reasons for the apparent difficulties faced by the population of Greenland Sea hooded seals is a challenge. Based on new Norwegian reproductive samples collected in moulting patches off Northeast Greenland in July 2008 and July 2010, mean age at maturity was estimated at 3.7 (CI=0.4) years, which is considerably lower than the previous estimate of 4.6 years based on Russian moulting patch samples for the period 1990-94 used in previous models. In contrast, proportion based estimates of mean age at primiparity (MAP(P)) were similar for the 2008-10 and the 1991-94 data sets (5.5 years and 5.8 years, respectively) and a common MAP(P) of 5.7 years could be fitted. There were also no indications of consistent trends in frequency based estimates of mean age at primiparity based on both moulting and breeding patch data collected over the period 1958-2010. Ovary based pregnancy rates were calculated for a total of 699 hooded seal females collected in Greenland Sea breeding patches over the periods 1958-62, 1978-80, 1982-85, 1987 and 1999. Estimates ranged from 0.62 to 0.74 over the study period and comparisons of 95% confidence intervals did not suggest any significant differences between sampling periods. The pregnancy rate for the total sample was estimated at 0.68 (95% CI=0.06). This is 20% lower than the pregnancy rate earlier estimated for Russian samples from 1986-1990 – these were, however, based on a more unreliable method.

3. STATUS OF STOCKS AND MANAGEMENT ADVICE FOR 2014

The ICES Working Group of Harp and Hooded Seals (WGHARP) met during 26-30 August 2013 at PINRO, Murmansk, Russia, to assess the status and harvest potential of stocks of Greenland Sea harp and hooded seals and harp seals in the White Sea. The advice given by ICES in September 2013, based on the 2013 WGHARP meeting, were used by this Working Group on Seals to establish management advice for 2014 to the JNRFC.

The basis for the advice was a request from Norway in September 2012 where ICES was requested to assess the status and harvest potential of harp seal stocks in the Greenland Sea and White Sea/Barents Sea and of the hooded seal stocks in the Greenland Sea, and to assess the impact on the harp seal stocks in the Greenland Sea and the White Sea/Barents Sea of an annual harvest of: 1) Current harvest levels; 2) Sustainable catches (defined as the fixed annual catches that stabilizes the future 1+ population); 3) Catches that would reduce the population over a 10-year period in such a manner that it would remain above a level of 70% of current level with 80% probability.

ICES have developed a Precautionary harvest strategy for the management of harp and hooded seals. The strategy includes two precautionary and one conservation (limit) reference levels. The reference levels relate to the pristine population size, which is the population that would be present on average in the absence of exploitation, or a proxy of the pristine population (which in practical terms is referred to as the maximum population size historically observed, N_{max}). A conservation, or lower limit reference point, N_{lim}, identifies the lowest population size which should be avoided with high probability. The first precautionary reference level is established at 70% (N_{70}) of N_{max}.When the population is between N_{70} and N_{max}, harvest levels may be decided that stabilise, reduce or increase the population, so long as the population remains above the N_{70} level. ICES has suggested that this could be done by designing the TAC to satisfy a specific risk criterion which implicate 80% probability of remaining above N_{70} over a 10-year period. When a population falls below the N_{70} level, conservation objectives are required to allow the population to recover to above the precautionary (N_{70}) reference level. N_{50} is a second precautionary reference point where more strict control rules must be implemented, whereas the N_{lim} reference point (set by ICES at 30% (N_{30}) of N_{max}) is the ultimate limit point at which all harvest must be stopped.

The ICES management of harp and hooded seals require that the populations in question are defined as “data rich”. Data rich stocks should have data available for estimating abundance where a time series of at least three abundance estimates should be available spanning a period of 10-15 years with surveys separated by 2-5 years, the most recent abundance estimates should be prepared from surveys and supporting data (e.g., birth and mortality estimates) that are no more than 5 years old. Stocks whose abundance estimates do not meet all these criteria are considered “data poor”, and should be managed more conservatively.

Population assessments were based on a population model that estimates the current total population size, incorporating historical catch data, estimates of pup production and historical values of reproductive rates. The modelled abundance is projected into the future to provide a future population size for which statistical uncertainty is provided for various sets of catch options. In case of “data poor” populations, catch limits are estimated using the more conservative Potential Biological Removal (PBR) approach.

3.1. Greenland Sea

The Working Group **recommends** the opening dates for the 2013 catch season to be between 1 and 10 April for catches of both weaned harp seal pups and adult moulting harp seals. The Group recommends a closing date set at 30 June (2400 GMT) for harp seals. Exceptions on opening and closing terms may be made in case of unfavourable weather or ice conditions.

The Working Group agree that the ban on killing adult females in the breeding lairs should be maintained in 2013.

3.1.1 Hooded seals

Results from the most recent (2012) pup survey suggest that current pup production remains very low, and lower than observed in comparable surveys in 1997, 2005 and 2007. Due to some uncertainty regarding the historical data on pregnancy rates, the population model was run for a range of pregnancy rates (assuming that 50%, 70% or 90% of the mature females produced offspring, respectively). All model runs indicated a population currently well below N30 (30% of largest observed population size). Recent analyses have indicated that pregnancy rates have remained rather constant around 70% in the period 1958 – 1999. Using this scenario, the model estimates a 2013 total population of 82 830 (95% C.I. 67 104 – 98 573).

Catch estimation: Following the Precautionary harvest strategy and the fact that the population is below N_{lim}, ICES recommend that no harvest be allowed for Greenland Sea hooded seals at this time.

The Working Group recommends that this ICES advice is implemented in future managenment of hooded seals in the Greenland Sea: Removals should still be prohibited until more information about current stock status becomes available.

3.1.2 Harp seals

The assessment model trajectory suggests an increase in the Greenland Sea harp seal population abundance from the 1970s to the present 2013 abundance of 627 410 (95% C.I. 470 540 – 784 280) animals.

Catch estimation: ICES consider this population to be data rich, and above the N_{70} level (i.e., more than 70% of known maximum abundance measured). Thus, it is appropriate to provide catch advice using the assessment model and to apply the Precautionary harvest strategy. Current catch level will likely result in an increase in population size of 21% over the 10 years period 2013-2023, whereas a catch of 14 600 1+ animals, or an equivalent number of pups (where one 1+ seal is balanced by 2 pups), per year would sustain the population at present level over the same period.

Catches that would reduce the population over a 10-year period in such a manner that it would remain above a level of 70% of current level with 80% probability are 21 270 1+ animals, or an equivalent number of pups (where one 1+ seal is balanced by 2 pups), in 2014 and subsequent years. Any allowable catch should be contingent on an adequate monitoring scheme to detect adverse impacts before it is too late for them to be reversed, particularly if the TAC is set at a level where a decline is expected.

The Working Group recommend that the advice from ICES be used as a basis for the determination of a TAC for harp seals in the Greenland Sea in 2014:

- *If the management objective is to maintain the population at current level, a TAC of 14 600 1+ animals or an equivalent number of pups, is recommended.*

- *If the management objective is to reduce the population towards N_{70} over a 10-year period, a TAC of 21 270 1+ animals, or an equivalent number of pups, is recommended.*

In both harvest scenarios, one 1+ seal should be balanced by 2 pups.

3.2 The Barents Sea / White Sea

Current Russian regulations allows for seal hunting in the White Sea and southeastern Barents Sea from 20 March to 1 May. Both Parties **recommends** an extension of the hunting season which should include the entire period from 20 March to 15 May for the whole area. Exceptions from opening and closing dates should be made, if necessary, for scientific purposes.

The Working Group agreed that the ban on killing adult harp seal females in the breeding lairs should be maintained in 2013.

3.2.1. Harp seal.

Russian aerial surveys of White Sea harp seal pups were conducted March 2004, 2005, 2008, 2009 and 2010 using traditional strip transect methodology and multiple sensors. The results obtained may indicate a reduction in pup production as compared with the results obtained in similar surveys in 1998-2003:

YEAR	ESTIMATE	C.V.
1998	286 260	.150
2000	322 474	.098
	339 710	.105
2002	330 000	.103
2003	327 000	.125
2004	231 811	.190
	234 000	.205
2005	122 400	.162
2008	123 104	.199
2009	157 000	.108
2010	163 032	.198

As a result of the 2009 and 2010 surveys, regarded to be good by WGHARP, the Working Group feel that the reduced pup production observed since 2004 does not appear to be a result of poor survey timing, poor counting of imagery, disappearance/mortality of pups prior to the survey or increased adult mortality. According to WGHARP, the most likely explanation for the change in pup production seems to be a decline in the reproductive state of females.

The population assessment model used for the White Sea/Barents Sea harp seal population provided a poor fit to the pup production survey data. Nevertheless, ICES decided to use the model which estimated a total 2013 abundance of 1 419 800 (95% C.I. 1 266 910 – 1 572 690). The modelled total population indicates that the abundance decreased from 1946 to the early 1960s, but has generally increased since then.

Catch estimation: Based on current data availability, the Barents Sea / White Sea harp seal population is considered to be "data poor". The modelled total population in 2013 is estimated to be about 83% of N_{max}. Current catch level will likely result in an increase in the population size of 13% over the 10 year period 2013-2023. The equilibrium catch level is 17 400 1+ animals, or an equivalent number of pups (where one 1+ seal is balanced by 2 pups), in 2014 and subsequent years. A catch level of 26 650 1+ animals, or an equivalent number of pups (where one 1+ seal is balanced by 2 pups) will bring the population size down to N_{70} with a probability 0.8 within 10 years. The PBR removals are estimated to be 40 430 (14% pups) seals. This catch option indicates a 16% reduction of the 1+ population over the next 10 year period.

Despite the fact that this population is now classified as data poor, ICES expressed concerns over the high removals and declining population resulting from the PBR estimations, and concluded that the estimated equilibrium catches were the most preferred option.

The Working Group suggest that the advice from ICES be used as a basis for the determination of a TAC for harp seals in the White Sea / Barents Sea in 2014: A TAC of 17 400 1+ animals, or an equivalent number of pups (where one 1+ seal should be balanced by 2 pups), is recommended.

3.2.2 Other species

The Working Group agreed that commercial hunt of bearded seals should be banned in 2014, as in previous years, but it **recommend** to start catch under permit for scientific purposes to investigate results of long time protection.

4. RESEARCH PROGRAM FOR 2014+

4.1. Norwegian investigations

4.1.1 Estimation of harp and hooded seal pup production in the Greenland Sea

Data for pup production estimation were obtained from both harp and hooded seals in the Greenland Sea in March/April 2012. These data are now implemented in management advice - subsequent publication has high priority.

4.1.2 Studies of life history parameters

Biological material, to establish age distributions in catches as well as health, reproductive and

nutritive status of the animals, will be collected from commercial catches of harp seals in the Greenland Sea in April/May in 2014. If feasible, similar data should be obtained from harp seals in the southeastern Barents Sea.

4.1.3 Studies of killing methods in Norwegian commercial sealing

Material to assess efficiency and animal welfare issues in the Norwegian commercial sealing will be collected during commercial sealing of harp seals in the Greenland Sea in April/May in 2014.

4.1.4 Studies of seal diets

IMR harp and hooded seal diet data (contents from gastrointestinal tracts and faeces) have been collected in summer 2008 and 2010 in the Fram Strait. These data are now being analysed by a master student at the University of Tromsø. The student will also compare these results with data collected in the same area in 2004 – 2006. Samples to analyse stable isotopes in harp seals and relevant prey species are collected from the Barents Sea, and will be analysed in collaboration with the Norwegian Polar Institute this year.

4.1.5 Seal physiology

On research cruises to the Greenland Sea in March/April 2014, various physiological parameters of harp and hooded seals will be studied.

4.1.6 Harp seals taken as by-catches in gill nets

Provided harp seals invade the coast of North Norway also during winter in 2014, biological samples will be secured from animals taken as bycatches in Norwegian gill net fisheries.

4.2.Russian investigations

4.2.1 Estimation of the White Sea/Barents Sea harp seal pup production

The plan is to continue standard multispectral aerial surveys to estimate pup production – subsequently these data will be used to determine the total harp seal population size by modelling. This information is very important, both for the management of the stock and for the Joint Norwegian-Russian Research Program on Harp Seal Ecology (Harp Seal Ecology Program – HSEP). Also this research will be carried out under recommendations from the WGHARP 2013 meeting.

4.2.2 The White Sea/Barents Sea harp seal population biology

Research on harp seal reproductive biology is planned to be carried out in the White and the Barents Seas. The aim is to study harp seal biological data such as mortality, maturity, birth rate, and morphological and physiological indexes. During spring, work will be continued on pup mortality estimation in the White Sea. Plans include also continuation of research on harp seal

feeding in the White and the Barents Seas during spring and summer. All these research activities will be carried out under the HSEP and recommendations from the WGHARP 2013 meeting.

4.2.3 Marine mammal species distribution and numbers

In 2014 annual research of marine mammal distribution and numbers in dedicated surveys will be continued using specially equipped aircraft, research and commercial fisheries vessels in the coastal zones (on base of small boats and coastal sightings using) as well as in the open areas of the Barents Sea, White Sea, Kara Sea and Laptev Sea. The main purpose of these surveys are to study marine mammal role in the marine ecosystems, including influence upon fisheries as top predators.

4.3. Joint Norwegian - Russian investigations

4.3.1 Joint Research program on harp Seal Ecology

Harp seals are the most important marine mammal top predators in the Barents Sea. To be able to assess the ecological role of harp seals by estimation of the relative contribution of various prey items to their total food consumption in the Barents Sea, more knowledge both of the spatial distribution of the seals over time, and of their food choice in areas identified as hot-spot feeding areas is urgently needed. For this reason, the Joint Norwegian-Russian Fisheries Commission has decided to initiate a joint research program on harp seal ecology aimed to:

- assess the spatial distribution of harp seals throughout the year (experiments with satellite-based tags)
- assess and quantify overlap between harp seals and potential prey organisms (ecosystem surveys)
- identify relative composition of harp seal diets in areas and periods of particular intensive feeding (seal diet studies in selected areas)
- secure the availability of data necessary for abundance estimation
- estimate the total consumption by harp seals in the Barents Sea (modelling)
- implement harp seal predation in assessment models for other relevant resources (modelling)

The program was adopted by the Joint Norwegian-Russian Fisheries Commission in 2006. Although both ecosystem surveys and abundance estimation of harp seals are in progress, the core activities of the program have not yet been properly started. The parties had planned to deploy satellite transmitters on harp seals in the White Sea in late May in 2007-2011. However, the Federal Technical Committee has forbidden all satellite tagging in Russian waters in all years. In 2013, however, permission to tag harp seals in the White Sea was given by the Russian Authorities, but lack of funding hampered the tagging of seals this year. Both PINRO and IMR scientists regret this. In 2014 PINRO will do a new attempt to obtain funding for and carry out both aerial surveys and satellite tagging in the White Sea – if only one of the projects proves feasible, tagging will be given priority over the aerial surveys. Both PINRO and IMR scientists strongly recommend that Russian Fisheries and Funding Agencies support this very important project. During the tagging experiment, PINRO will provide the necessary logistics required for helicopter- or boat-based live catch of seals in April-May 2014. IMR will, as before, be

responsible for the satellite tags, including providing all necessary technical details, as well as for providing experienced personnel and equipment for anaesthetizing seals and tag deployment. All data obtained from the tags will be available for both PINRO and IMR scientists. For proper planning and budgeting on both institutes, PINRO scientist must obtain the necessary permissions from Russian authorities before December 2013. The permission from Russian authorities is not dependent on the origin of the transmitters, both US and Russian transmitters can be used. The transmitters cannot collect geographically positioned temperature and salinity data.

After the 2014 tagging season future seal tagging will be decided upon following an evaluation of both the tagging methods and the obtained seal movement data set. Due to low pregnancy rates and decline in pup production it will be important to focus on harp seal ecology and demographics in the coming years.

4.3.2 Life history parameters in seals

Russian scientists have participated in scientific work on Norwegian sealers during March-May both in the southeastern part of the Barents Sea and in the Greenland Sea. This type of Norwegian-Russian research cooperation is encouraged also in the future. This would enable coordinated and joint sampling of new biological material. If Russia can realize scientific or commercial vessel trips in the White, Barents and Greenland Seas, invitation for participation of Norwegian scientists is desirable.

Available, new material from Greenland Sea hooded seals (collected in 2007-2010) will be analyzed and compared with historical data (1956-1994) in 2014.

4.3.3 Reconnaissance of possible new harp and hooded seal breeding patches in the Greenland Sea

Substantial changes in extent and concentration of drift ice in the Greenland Sea may have triggered behavioral changes of such a magnitude as a relocation of breeding for at least parts of the seal populations. The Working Group **recommends** that this is further examined by using aerial surveys.

4.3.4 Reconnaissance of possible new harp seal breeding patches outside the White Sea

Possibilities to account for the reduced harp seal pup production in the White Sea since 2004 include a shift in contemporary pupping to areas outside of the traditional areas. During the late 1980s or early 1990s, some reports of harp seal pups being observed in Svalbard were received. Therefore, the Working Group conclude that it is important that areas in the northern and southeastern Barents Sea and Kara Sea (south western part) be searched during future aerial reconnaissance surveys.

4.3.5 Population model improvements

Work with improvements of the population model used for northeast Atlantic seal stocks, incorporating variable reproductive parameters and, if possible, also observed ecological

variations, continues. This work occurs in close cooperation with Canadian scientists, but also other relevant institutions (e.g., SMRU in St. Andrews) may be included.

4.3.5 Comparison of methods used in pup production estimation

The Parties plan to continue work on comparison of methods used in pup production estimation, including both reading of images and subsequent calculations of the aerial survey data. This will continue the successful work started in 2009, and should include participation from Canada and Greenland.

4.4. Necessary research takes

For completion of the proposed Norwegian and Russian research programs, the following numbers of seals are planned to be caught under special permits for scientific purposes in 2014:

Area/species/category	Russia	Norway
Barents Sea / White Sea		
Whelping grounds		
Adult breeding harp seal females	300	0
Harp seal pups	100	0
Outside breeding period		
Harp seals of any age and sex	120	300
Greenland Sea		
Whelping grounds		
Adult breeding harp seal females	0	0
Harp seal pups	0	0
Adult breeding hooded seal females	0	50
Hooded seal pups	0	50
Outside breeding grounds		
Harp seals of any age and sex	0	200
Hooded seals of any age and sex	0	0

5. OTHER ISSUES

5.1 Bans on seal hunting and products

From a scientific point of view there is no doubt that harp and hooded seal stocks in the North Atlantic are well managed and sustainably harvested with acceptable hunting methods. This is acknowledged both by ICES and NAMMCO. For this reason the Working Group regrets the decision by Russian authorities to implement a ban on all hunting of weaned harp seal pups in the White Sea in 2009-2013. Also, the Working Group strongly regrets the recent political and emotion-driven ban on all import of seal products in EU. As also concluded by NAMMCO, this is a non-scientific step backwards in relation to requested ecosystem based management of all marine resources, seals included. Excluding the possibilities to harvest at all levels in the

ecosystem may in the long run have implications for harvest possibilities at other levels than those decided to be excluded. If the subsequent results are reduced harvest possibilities for some species, the Working Group suggest that it be discussed whether the costs of such reductions should be covered by EU itself (e.g., by quota reductions) since this organization implemented the ban.

5.2 Observations of marine mammals on the ecosystem surveys

The PINRO and IMR scientists acknowledge the importance of ecosystem surveys in the research of the ecology of marine mammals in the Barents Sea. In 2012 marine mammal observers participated on all vessels during the ecosystem survey. A total of 1591 marine mammals from 10 species were observed – this is considerably lower than in 2011 when 2338 individual marine mammals were observed. The number of observed whales was reduced by about 50% relative to 2011 – thus, these numbers do not support a greater immigration of whales to the Barents Sea from the Norwegian Sea, which has been hypothesized during recent discussions on the food situation in the Norwegian Sea. Harp seals, which have shifted to new, unknown distributions during the last decades, were observed in the northernmost parts of the surveyed areas, the Yermak Plateau, indicating that their distribution at this time of year follows the sea ice distribution.

The PINRO and IMR scientists agreed on the necessity to continue aerial observation of marine mammals and environmental conditions from Russian research aircraft, which was carried out annually from 2003-2005 as part of ES. Aerial surveys are particularly efficient for obtaining high quality results from a large area over a short time period.

5.3 Whale sightings survey in REEZ

In the period 25 June to 18 August 2013 a whale sightings survey was conducted in the Barents Sea east of 28°E and latitudinal between the Kola coast and 80°N. The main purpose of the survey was to collect data for a new estimate of the minke whale population size in the Northeast Atlantic. The two vessels *Håkon Mosby* (25 June-15 July) and *Brennholm* (15 July-18 August) participated. A large part of the whale survey was conducted in the Russian EEZ. Unfortunately, the application for permission to operate in REZ for the latter vessel was delayed, and was not received by Russian authorities until 1.5 months prior to the survey. Nevertheless, permission was issued, and this was profoundly appreciated in that it secured successful conduction of the survey. The total covered area was divided into four survey blocks. In total for both vessels 3490 nautical miles were covered in primary minke whale search modus (i.e. with double platform and Beaufort ≤ 4) and approximately 990 nautical miles in large whale modus (i.e. single platform, Beaufort > 4). Overall, for both platforms combined, the following numbers of whale groups were observed: 291 minke whales, 52 fin whales, 79 humpback whales, 36 harbour porpoises, 171 white-beaked dolphin and other dolphins, 46 belugas and 14 sperm whales. The general impression was that the average density of cetaceans was rather modest, neither were significant densities of possible prey items registered. Minke whales were on some occasions (at the Goose Bank and west of Novaya Zemlya) observed in large accumulations and with simultaneous registrations of possible prey on the echo sounder. A large part of the humpback observations were made east of Hopen Island, together with observations of capelin. Belugas were observed in the southeastern Barents Sea and

outside the White Sea estuary. This was the last survey year in the cycle 2008-2013 and work is now starting to analyze these data for an initial presentation to the annual meeting in the Scientific Committee of the International Whaling Commission (IWC) in summer 2014.

5.4 Joint research program on grey seals

In Norway grey seal pup production surveys aimed to cover all the breeding colonies along the entire coast were conducted in 2006-2008 using boat based as well as aerial surveys. New pup production surveys will be initiated this autumn, presumably starting with coverage of the northmost parts of Norway (Finnmark and Troms). There are large breeding colonies of grey seals located on the Murman Coast in Russia. Previous tagging experiments have shown that there is exchange of seals between these colonies and feeding areas in North Norway. Abundance estimation, using pup counts, in the Russian colonies has not been performed since 1991. For this reason, both Parties **recommend** that the Russian grey seal breeding colonies at the Murman Coast should be covered again. Ideally each colony should be visited three times (minimum twice) during the breeding period. The Parties discussed possibilities of multispectral surveys carried out by PINRO using a smaller aircraft. Norwegian participation in the grey seal surveys in Russia is highly recommended by both Parties. Traditionally the Russian grey seal colonies have been surveyed by Murmansk Marine Biological Institute (MMBI), and continued cooperation with MMBI is encouraged.

The parties agreed that this task can be most effectively solved within the frames of a future joint research program, preferably developed within the frames of the JRNFC. In addition to abundance estimation, also other important issues should be addressed:

- Stock identity: Do the Murman Coast grey seal colonies constitute isolated stocks, or are they part of the stock distributed in North Norway north of Vesterålen? This question can be addressed using genetic analyses.
- Spatial distribution and habitat use, e.g., what are the feeding areas for the Russian grey seals? Could be addressed by using satellite tags.
- Feeding habits and conflicts with fisheries and fish farming (diet studies).

6. APPROVAL OF REPORT

The English version of the Working Group report was approved by the members on 9 October 2013.