Appendix 10

JOINT RUSSIAN – NORWEGIAN SCIENTIFIC RESEARCH PROGRAM ON LIVING MARINE RESOURCES IN 2013

Contents

1. Planning and coordination of investigations and submitting of results.

This program contains the investigations to be carried out in 2013 by Norway and Russia within the frames of the bilateral cooperation between the Norwegian and Russian Parties. The program is in accordance with the national research programs.

Planning coordination and exchange of specialists will be settled between the institutes involved.

PINRO, VNIRO and IMR will exchange results and data from joint investigations.

Scientists and specialists from PINRO, VNIRO and IMR will meet in Murmansk, Russia 11-15 March 2013 to discuss joint research programs, results from surveys and investigations in 2012/2013 and to coordinate survey plans for the rest of 2013. Missing names of vessels and time periods for surveys in this report will be agreed by correspondence, latest by the March meeting. Future plans for surveys and methodology for preparing biological and acoustic data will be discussed and coordinated. Urgent information according to surveys carried out before the meeting in March will be exchanged by correspondence.

By October 2012, 4 reports have been issued in the Joint IMR-PINRO report series during 2011-2012.

The joint book ”The Barents Sea – Ecosystem, resources, management”, celebrating more than half a century of Russian-Norwegian cooperation in marine research, is finished and available for both Parties and the public. The book gives a historic review of the cooperation and presents the vast knowledge obtained through joint investigations in the Barents Sea area and describes methods and models applied in the research. It may be widely used by students and researchers in Norway and Russia and will be of interest for other countries conducting marine research that provides the basis for resource and ecosystem management in arctic and subarctic regions.

The work of IMR and PINRO on the joint Program for estimation of optimal long-term harvest in the Barents Sea Ecosystem adopted at the 33rd session of the Commission is still ongoing.

In the future work it is very important to take into account experiences from recent developments in the ecosystem such as:

- High water temperatures and reduced ice cover,
- A record high cod spawning stock,
- Extreme northern/eastern geographical distributions of several important stocks.

A preliminary program for the planned surveys and cooperation for 2013 is presented below.

2. Investigations on fish and shrimp stocks, including stock size, structure and distribution.

IMR and PINRO will continue the co-operation on the monitoring of the most important commercial fish and shrimp stocks according to the Program listed below. The work will also include continued co-operative research on by-catch of juvenile fish in the shrimp fishery. The parties will exchange primary information during joint investigations according to agreed formats.

Norwegian investigations

Nation:	Norway	Survey title:	Cod spawning stock
Reference No.:	N-2-01		
Organization:	IMR		
Time period:	March-April	Vessel:	R.V. "Johan Hjort"
Target species:	Cod	Secondary species:	Haddock, saithe
Area:	Spawning areas Troms – Lofoten		
Purpose:	Acoustic survey of the North East Arctic Cod spawning stock. Investigations on maturity, fecundity and egg abundance.		
Reported to:	IMR survey report, ICES AFWG 2013		

Nation:	Norway	Survey title:	Fjord and coastal ecosystem survey
Reference No.:	N-2-02		
Organization:	IMR		
Time period:	October October	Vessel:	R.V. "Johan Hjort" R.V. "Helmer Hanssen "
Target species:	Saithe, coastal cod, 0-group herring	Secondary species:	Haddock, *Sebastes marinus*
Area:	Northern Norwegian fjords and coastal areas from Varanger to Skagerrak		
Purpose:	Acoustic and trawl abundance estimation of saithe, coastal cod and other groundfish species. Acoustic abundance estimation of 0-group herring. Environmental investigations.		
Reported to:	IMR survey report, ICES WGWIDE 2014, ICES AFWG 2014		

Nation:	Norway	Survey title:	Herring larvae, spring biology and production
Reference No.:	N-2-03		
Organization:	IMR		
Time period:	March-April	Vessel:	R.V. "Johan Hjort" or other
Target species:	Herring, cod, haddock, saithe, redfish	Secondary species:	Larger argentine, Norway pout
Area:	Northern coast, Norwegian Sea and Barents Sea		
Purpose:	Find the distribution of herring larvae and other larvae off the coast of Norway. Collect data to monitor production. Collect data on fish eggs.		
Reported to:	IMR survey report,		

Russian investigations

Nation:	Russia	Survey title:	Marine resource investigations of Greenland halibut for the collection of fisheries and biological information on stock state and for the development of recommendations on technical regulations
Reference No.:	R-2-01		
Organization:	PINRO		
Time period:	January-December	Vessel:	3 hired trawlers
Target species:	Greenland halibut	Secondary species:	Cod, haddock, saithe, long rough dab, catfishes, redfishes (*S. mentella, S. marinus*)
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway		
Purpose:	Collection of data on CPUE, biological data on species, sex and age composition of Greenland halibut catches. Study of spatial and temporal distribution of concentrations; study of trophic relationships between Greenland halibut and other species; study of seasonal dynamics of catches, investigation of Greenland halibut migration patterns, timing and distance using tagging; investigation of Greenland halibut behaviour in the		

	trawl mouth with the use of deepwater video-acoustic complex.
Reported to:	PINRO survey report, ICES AFWG in 2013 and 2014

Nation:	Russia	Survey title:	Resource investigations and the estimation of resource supply for long-line fishery on Greenland halibut
Reference No.:	R-2-02		
Organization:	PINRO, VNIRO		
Time period:	January-December	Vessel:	2 hired long-liners
Target species:	Greenland halibut	Secondary species:	Cod, haddock, wolffish
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway		
Purpose:	Collection of data on CPUE, biological data on species, sex and age composition of Greenland halibut catches. Study of spatial and temporal distribution of concentrations; study of trophic relationships between Greenland halibut and other species; study of seasonal dynamics of catches, investigation of Greenland halibut migration patterns, timing and distance using tagging.		
Reported to:	PINRO survey report, VNIRO survey report, ICES AFWG in 2013 and 2014		

Nation:	Russia	Survey title:	Evaluation of resources for long-line fishery.
Reference No.:	R-2-03		
Organization:	PINRO, VNIRO		
Time period:	January-December	Vessel:	2 hired long-liners
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Catfishes and other demersal fish
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Elaboration of recommendations on effective use of resources for long-line fishery on fish species taken as bycatch in the fishery for Greenland halibut, cod, haddock and catfishes		
Reported to:	PINRO survey report, VNIRO survey report, ICES AFWG in 2013 and 2014		

Nation:	Russia	Survey title:	Marine resource investigations of demersal fish for the collection of information characterizing fishery and its effects on marine species in order to develop measures aimed at conservation and comprehensive utilization of marine biological resources.
Reference No.:	R-2-04		
Organization:	PINRO		
Time period:	January-December	Vessel:	4 hired trawlers
Target species:	Cod, haddock, saithe	Secondary species:	Catfishes, Greenland halibut, long rough dab, redfishes and other species
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of biological materials for stock assessment by mathematical methods, collection of fisheries and biological data, estimation of discards and unreported catch, collection of CPUE data and materials on feeding, estimation of bycatches of undersized fish, development of recommendations on the protection of juveniles, collection of oceanographic data, studies of "environment-organism" relations, marine pollution control, studies of spatial and temporal distribution of fish aggregations, studies of time, duration and distances of migrations. Tagging, collection of oceanographic data, estimation of anthropogenic impact on marine species and their environment.		
Reported to:	PINRO survey report, ICES AFWG in 2013 and 2014		

Nation:	Russia	Survey title:	Marine resource investigations of demersal fish for the collection of biological information on the state of demersal fish stocks and on the impact of fishery on these stocks
Reference No.:	R-2-05		
Organization:	PINRO		
Time period:	February-June July-November	Vessel:	R.V. "Vilnjus" or hired trawlers
Target species:	Cod, haddock, saithe	Secondary species:	Catfishes, Greenland halibut, long rough dab, plaice, redfishes
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of CPUE data, biological state during wintering and spawning, species composition of catches, cod predation on their own juveniles and other fish species and invertebrates, discards of undersized cod and haddock. Study of intra-species structure using genetic methods, quantitative estimation of by-catch of undersized fish.		
Reported to:	PINRO survey report, ICES AFWG in 2013 and 2014		

Nation:	Russia	Survey title:	Trawl-Acoustic survey for the immature stock of haddock and saithe in the southern part of the Barents Sea
Reference No.:	R-2-06		
Organization:	PINRO		
Time period:	May-June	Vessel:	R.V. "Fridtjof Nansen", R.V. "Vilnjus" R.V. "Professor Boiko"
Target species:	Haddock, saithe, cod	Secondary species:	Redfishes, long rough dab, plaice, Greenland halibut, northern wolffish, spotted catfish and others
Area:	The Barents Sea and adjacent waters, Exclusive Economic Zone of Norway, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation.		
Purpose:	Assessment of immature part of the haddock stock, quantitative estimation of saithe; oceanography.		
Reported to:	PINRO survey report, ICES AFWG in 2014		

Nation:	Russia	Survey title:	Multispecies trawl-acoustic survey for estimation of juveniles and stock assessment of demersal fish in the Barents Sea and adjacent waters
Reference No.:	R-2-07		
Organization:	PINRO		
Time period:	October-December	Vessel:	R.V. "Fridtjof Nansen" R. V. "Vilnjus"
Target species:	Cod, haddock, saithe, redfish, Greenland halibut	Secondary species:	Northern wolffish, spotted catfish, (*S. mentella*), plaice, long rough dab and others
Area:	The Barents Sea and adjacent waters, , Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation.		
Purpose:	Evaluation of strength of yearclasses of cod and haddock at the stage of bottom juveniles, redfishes and other demersal fish; assessment of total and fishable stocks of Greenland halibut, cod, haddock, redfishes, catfishes, long rough dab and other fish species; estimation of zooplankton biomass; parasitologic and faunistic studies, study of "predator-prey" relations; oceanography; euphasiids.		
Reported to:	PINRO survey report, ICES AFWG in 2014		

Nation:	Russia	Survey title:	Trawl-Acoustic survey for spawning stock of capelin
Reference No.:	R-2-08		
Organization:	PINRO		

Time period:	January - April	Vessel:	R. V. "Vilnjus" or hired trawlers
Target species:	Capelin	Secondary species:	Herring, polar cod
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Russian Exclusive Economic Zone, internal sea waters and territorial sea of the Russian Federation.		
Purpose:	Spawning biomass and abundance estimating, oceanography		
Reported to:	PINRO survey report, JRNFC, ICES AFWG in 2013		

Joint investigations

Nation:	Norway/Russia	Survey title:	Joint Russian-Norwegian multispecies trawl-acoustic survey for demersal fish stock assessment (Winter Survey)
Reference No.:	J-2-01*		
Organization:	IMR, PINRO		
Time period:	January-March	Vessel:	R.V. "Helmer Hanssen " R.V. "Johan Hjort" R.V. "Fridtjof Nansen" R.V. "Vilnjus"
Target species:	Cod, haddock, Greenland halibut, catfishes, saithe, redfishes	Secondary species:	Other demersal and pelagic species
Area:	The Barents Sea and adjacent waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation, Exclusive Economic Zone of Norway, Spitsbergen area		
Purpose:	Assessment of the yearclasses, abundance and biomass cod and haddock, other demersal species, collection of biological samples, oceanography.		
Reported to:	Joint IMR/PINRO Report Series, ICES AFWG in 2013		

* - Application for permission to entering in the Russian EEZ has already been sent for R.V. "Johan Hjort" without this reference number being known. This is an annual joint survey that will be given the same reference number in the future.

Nation:	Norway/Russia	Survey title:	International trawl-acoustic survey for blue whiting in the spawning areas west of the British Isles
Reference No.:	J-2-02		
Organization:	IMR, PINRO		
Time period:	March	Vessel:	Hired vessels, R.V. "Fridtjof Nansen" or R.V. "Vilnjus"
Target species:	Blue whiting	Secondary species:	herring, mackerel
Area:	North-East Atlantic, Norwegian Sea , international waters, Exclusive Economic Zone of Norway, Faroese, UK and Ireland fishery zones, Rockall area		
Purpose:	Estimation of yearclasses, abundance, biomass and distribution of blue whiting, oceanography, plankton survey, oceanography.		
Reported to:	Joint IMR/PINRO survey report, ICES WGWIDE, ICES PGNAPES in 2013		

Nation:	Russia/Norway	Survey title:	International ecosystem survey in the Northern Seas
Reference No.:	J-2-03		
Organization:	PINRO, IMR		
Time period:	May – June	Vessel:	R. V. "Fridtjof Nansen", R.V."Vilnjus"
	May		R.V. "G.O.Sars" 3 other RVs

Target species:	Herring, blue whiting	Secondary species:	Other pelagic species
Area:	The Norwegian Sea, fishing zone of the Faeroe Islands, international waters, Exclusive Economic Zone of Norway, UK fishery zone, The Barents Sea and adjacent waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Estimation of yearclass strength, abundance and biomass of herring and blue whiting, studies of their distribution and behaviour. Acoustic survey of the stocks, oceanography, plankton.		
Reported to:	PINRO, IMR survey reports, International report, ICES WGWIDE, ICES PGNAPES in 2013		

Nation:	Norway/Russia	Survey title:	Multispecies trawl-acoustic survey for pelagic species (herring, mackerel, blue whiting) in the Norwegian Sea
Reference No.:	J-2-04		
Organization:	IMR, PINRO		
Time period:	June - August	Vessel:	2 vessels chartered by IMR 1 hired trawler by PINRO
Target species:	Herring, blue whiting, Mackerel	Secondary species:	Other pelagic fishes, marine mammals, seabirds, chlorophyll, zooplankton, oceanographic parameters
Area:	North-East Atlantic, Faroese fishery zone, international waters of the Norwegian Sea, Spitsbergen area, Exclusive Economic Zone of Norway.		
Purpose:	Herring. Blue whiting and mackerel abundance and biomass assessment, studies of their distribution and behaviour, oceanography and plankton surveys.		
Reported to:	Joint IMR/PINRO survey report, ICES, NEAFC		

Nation:	Norway/Russia	Survey title:	Joint Russian-Norwegian ecosystem survey.
Reference No.:	J-2-05		
Organization:	IMR, PINRO		
Time period:	August-September	Vessel:	R.V. “G.O Sars” R.V. “Johan Hjort” R.V. “Helmer Hanssen ” R.V. “Fridtjof Nansen” R.V. “Vilnjus” Research aircraft
Target species:	Cod, haddock, saithe, catfishes , redfishes, Greenland halibut, plaice, herring, capelin, polar cod, shrimp	Secondary species:	Other pelagic and demersal species, benthic organisms, sea mammals and birds, oceanographic and hydrobiological parameters
Area:	The Barents and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation , and territorial waters of the Russian Federation. The Kara Sea.		
Purpose:	Investigations of distribution and abundance of 0-group of different species, estimation of abundance and biomass of pelagic species, demersal species, shrimp, Greenland halibut juveniles. Oceanography, plankton, marine mammals, seabirds, species interactions, sampling for determining pollution levels.		
Reported to:	Joint IMR/PINRO Report Series, ICES in 2013, ACOM in autumn 2012, WGHARP, NAMMCO		

Nation:	Russia/ Norway	Survey title:	Marine resource investigations of demersal fish for the collection of information characterizing fishery and its effects on marine species in order to develop measures aimed at conservation and comprehensive utilization of marine biological resources.
Reference No.:	J-2-06		

Organization:	PINRO, IMR		
Time period:	January-December	Vessel:	4 hired vessel
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Catfishes, Saithe, long rough dab, redfishes and other species
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway		
Purpose:	Collection of biological materials for stock assessment by mathematical methods, collection of fisheries and biological data, estimation of discards and unreported catch, collection of CPUE data and materials on feeding, estimation of bycatches of undersized fish, development of recommendations on the protection of juveniles,		
Reported to:	ICES AFWG in 2012 and 2013		

Nation:	Russia/ Norway	Survey title:	Investigations for spawning and feeding migrations of herring in the Norwegian Sea
Reference No.:	J-2-07		
Organization:	PINRO, IMR		
Time period:	January-March August – September	Vessel:	hired vessels
Target species:	Herring	Secondary species:	Blue whiting, mackerel,
Area:	North-East Atlantic, Faroese fishery zone, international waters of the Norwegian Sea, Spitsbergen area, Exclusive Economic Zone of Norway.		
Purpose:	Study of distribution and migration of spawning and feeding herring, collection of biological data		
Reported to:	PINRO survey report, ICES WGWIDE in 2013		

Nation:	Russia/ Norway	Survey title:	Resource investigations of mackerel feeding migration
Reference No.:	J-2-08		
Organization:	PINRO, IMR		
Time period:	June-August August – September	Vessel:	2 hired trawlers or other vessels
Target species:	Mackerel	Secondary species:	Blue whiting, herring, marine mammals, seabirds, oceanographic and hydrobiological parameters
Area:	North-East Atlantic, Faroese fishery zone, international waters of the Norwegian Sea, Spitsbergen area, Exclusive Economic Zone of Norway, Jan-Mayen fishery zone.		
Purpose:	Trawl-acoustic survey. Study of mackerel feeding migration spatial and temporal distribution of pelagic fish, marine mammals, seabirds, oceanography and hydrobiology.		
Reported to:	PINRO survey report, ICES WGWIDE in 2013		

Nation:	Russia/Norway	Survey title:	Marine resource investigations of capelin for the collection of fisheries and biological information on the state of marine biological resources and the impact of fishery in order to develop measures aimed at conservation and comprehensive utilization of marine biological resources
Reference No.:	J-2-09		
Organization:	PINRO, IMR		
Time period:	January-April October-December	Vessel:	2 hired trawlers or other vessels
Target species:	Capelin	Secondary species:	Polar cod
Area:	The Barents Sea and adjacent waters, Spitsbergen area, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of biological materials, studies of the distribution of feeding and wintering		

	aggregations, studies of routes and rates of migrations depending on biological state of fish and environmental conditions. Assessment of abundance and biomass of fish from older age groups.
Reported to:	PINRO survey report, JRNFC, ICES AFWG in 2013

3. Research program on deep sea fishes

A multi annual survey plan for monitoring of deep sea species is in action for Norwegian surveys. In 2013 the northern deepwater slope is the area to be surveyed and both Greenland halibut and redfish are target species.

To assess the stock of Sebastes mentella in the open Norwegian Sea, an internationally coordinated redfish survey has been established (ICES-WGRS). This survey is a collaborative effort between Norway, Russia and the Faroes, coordinated by ICES. It is also supported by the Data Collection Framework of the EU. This survey was run as a coordinated effort by Norway, Russia and the Faroes in 2009. It was not conducted in 2010 and 2011 but planned by Norway in 2012. However, it was cancelled due to insufficient ship time availability and lack of participation from other country, which did not allow for a sufficient geographical coverage of the species distribution. WGRS (survey planning group), WKRED (benchmark assessment workshop) and AFWG (the arctic fisheries working group) have all recognised that this survey must be conducted to appropriately monitor the core distribution of the beaked redfish population in the northeast Atlantic. It is therefore essential to run it in 2013 in order to assess redfish status in open waters of the Norwegian Sea. It will as well contribute to identification of spawning/larval release grounds for demersal fishes on the Norwegian shelf. Results contribute directly to the ICES assessment groups WGDEEP and AFWG.

According to this the following surveys are applied for in 2013.

Norwegian survey

Nation:	Norway	Survey title:	Northern Deepwater Slope Survey (Egga-Nord)
Reference No.:	N-3-01		
Organization:	IMR		
Time period:	25 days in August-October	Vessel:	R.V. “G.O.Sars”
Target species:	Greenland halibut, Redfish	Secondary species:	Other DW-species and elasmobranches
Area:	Ecosystem along the Norwegian slope.		
Purpose:	Primary objective: to assess the state of commercial deepwater fish stocks. Secondary objective: to monitor the state of deepwater ecosystem along the Norwegian slope. Part of IMR's multiannual survey strategy for DW species.		
Reported to:	IMR survey report, ICES WGWIDE 2014, ICES AFWG 2014		

Joint survey

Nation:	Norway / Russia	Survey title:	Summer 2013 Norwegian Sea Deepwater survey
Reference No.:	J-3-01		
Organization:	IMR/PINRO		
Time period:	July-August	Vessel:	R.V. “G.O.Sars”

Target species:	Beaked redfish	Secondary species:	Hired vessel Meso-pelagic fishes and invertebrates
Area:	Ecosystem in the open Norwegian Sea.		
Purpose:	To assess the stock of Sebastes mentella in the open Norwegian Sea, as part of the internationally coordinated redfish surveys (ICES-WGRS). To collect data on the state of DEEPwater ecosystem in the open Norwegian Sea. Part of IMR's multiannual survey strategy for DW species.		
Reported to:	IMR survey report, PINRO survey report, ICES WGWIDE 2014, ICES AFWG 2014		

4. Red king crab (*Paralithodes camtschaticus*) and Snow crab (*Chionoecetes opilio*)

Both Parties exchanged information about the ongoing national Red king crab and snow crab research and fishery in 2012 and the research plans for 2013.

The Parties noted that 2012 is the final year of current 3-year research program on red king crab and snow crab in the Barents Sea. The Parties urged scientists of both countries to discuss results of this program at the meeting in March 2013 and elaborate a new research program on red king crab and snow crab in the Barents Sea, considering the practicability of increasing duration of the program from 3 to 5 years. This work should result in a joint report on 3-year research program on red king crab and snow crab in the Barents Sea and the research program for future investigations on crabs in the Barents Sea and will be reported to the JNRFC in 2013.

The Parties recalled that Russian Norwegian Workshop on Red king crab and Snow crab is to be held in Tromsø in summer 2013. The call and invitations will be sent by the end of 2012.

Scientists from IMR, VNIRO and PINRO will conduct a number of national trawl, traps and SCUBA surveys on the red king crab and snow crab in the Barents Sea. The objectives of these surveys are: assessment distribution, abundance, size/sex composition, biological characteristics of crabs, tagging experiments and so on. Some of investigations should be focused on red king crab by-catches in the trawl fishery for demersal fish with a view to search of means for minimization of the red king crab by-catches in fisheries for cod and haddock.

The results will be presented in surveys reports, articles and exchange between IMR, PINRO and VNIRO.

5. Fishing technology and selectivity of fishing gears

Research activity in these fields is carried out with the aim to develop:

- Fishing gears that are more species and size selective and that have less negative impact on fish that escape the gear, and have less negative ecosystem effects in general.
- Improved survey gears and methodology.

A Centre for Research-based Innovation (CRISP) has been established at the Institute of Marine Research in 2011. The Centre is a cooperation between industry partners and IMR and is funded by the Research Council of Norway. The research will focus on developing sustainable trawl and purse seine fisheries. The Centre will establish cooperation with international research institutes, including PINRO, working on similar topics.

As part of the CRISP activity, a photographic system that automatically identifies species and sizes of individuals passing through a trawl is under development in Norway. Another line of

development aims at developing trawl doors that may be remotely directed during trawl operations. The development also targets sweeping effects and new methods for real time catch regulation during fishing operations.

Other research activities include a project aimed to separate cod and haddock while trawling in the Barents Sea initiated in 2012 and will continue in 2013 and 2014.

On passive gears, new designs for pot fisheries are being developed on the basis of comparisons between the Norwegian "Two-chamber Pot" and the Canadian "New Foundland Pot" in order to develop an improved pot design for commercial cod fisheries, and a new large pot design termed "Lofotteina" is being developed for fishing in the near-field of aquaculture plants and is also being tested on commercial fishing grounds unaffected by aquacultural activities.

A standard pelagic survey trawl (Multpelt 832) was developed jointly between researchers and trawl producers in Norway, Iceland and the Faroe Island to be used for swept area estimates of the mackerel resources and for identification of acoustic recordings during surveys.

According to this program the following surveys are planned in 2013.

Norwegian investigations

Nation:	Norway	Survey title:	Trials with new pelagic/semipelagic concept of trawling
Reference No.:	N-5-01		
Organization:	IMR		
Time period:	May	Vessel:	RV "G.O.Sars" or other
Target species:	Cod and haddock	Secondary species:	
Area:	Norwegian coast and Barents Sea		
Purpose:	Testing of functionality of trawls and camera monitoring during trawling using pelagic – semipelagic trawl systems		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Semipelagic trawling and catch regulation
Reference No.:	N-5-02		
Organization:	IMR		
Time period:	October	Vessel:	Commercial vessel
Target species:	Cod and haddock	Secondary species:	
Area:	Norwegian coast and Barents Sea		
Purpose:	Development and testing of trawls and other equipment using pelagic – semipelagic trawl systems and instrumentation for monitoring of the fishing prosess and technology for regulation of catches		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Species selectivity for cod and haddock in fish trawls
Reference No.:	N-5-03		
Organization:	IMR		
Time period:	October - December	Vessel:	Commercial vessels

Target species:	Cod and haddock	Secondary species:	
Area:	Norwegian coast and Barents Sea		
Purpose:	Study of fish behaviour in relation to trawling for cod and haddock		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Pot catch comparison of "Lofotteina" and "Two-chamber pot"
Reference No.:	N-5-04		
Organization:	IMR		
Time period:	May	Vessel:	Commercial vessel
Target species:	Cod	Secondary species:	
Area:	Lofoten/ Vesterålen		
Purpose:	Developing an improved pot design for commercial cod fisheries		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Pot catch comparison of the "Lofotteina" and the "Two-chamber pot"
Reference No.:	N-5-05		
Organization:	IMR		
Time period:	September, October	Vessel:	Commercial vessels
Target species:	Cod	Secondary species:	
Area:	Lofoten/ Vesterålen		
Purpose:	Testing the "Lofotteina" pot in areas unaffected by aquacultural activities		
Reported to:	IMR survey report		

Russian investigations

Nation:	Russia	Survey title:	Comparative study of the Greenland halibut trawl and long-liner catchability in order to improve methods of stock assessment
Reference No.:	R-5-01		
Organization:	PINRO, VNIRO		
Time period:	May-November	Vessel:	1 hired trawler and 3 hired long-liner
Target species:	Greenland halibut, cod, haddock	Secondary species:	wolffish, redfish (*S.mentella*), long rough dab
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Improvement of stock assessment methods for Greenland halibut, estimation of comparative catchability of trawl and longline, comparative estimation of some factors related to the impact of longline and trawl fishery on marine biological resources, development of proposals on minimising their negative impact, collection of materials for the improvement of methods used in the trawl and longline survey of Greenland halibut.		
Reported to:	PINRO survey report, VNIRO survey report, ICES AFWG in 2013 and 2014		

Nation:	Russia	Survey title:	Selectivity studies of new fishing gear and sorting systems.
Reference No.:	R-5-02		
Organization:	PINRO		
Time period:	April-July	Vessel:	2 hired trawlers and RV "Vilnius"
Target species:	Cod, haddock, northern wolffish, spotted catfish, Greenland halibut	Secondary species:	Saithe, plaice, long rough dab, red fishes, crabs , wolffish
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Estimation of results from the use of current technical regulations in the trawl fishery for cod, haddock and other fish species, improvement of measures to ensure rational harvesting of biological resources, development of substantiation for optimal technical regulations, estimation of efficiency of new selection systems, estimation of pelagic trawl selectivity in the fishery for cod and haddock		
Reported to:	PINRO survey report, JRNFC		

Nation:	Russia	Survey title:	Study of a possibility to use Danish seine and pelagic trawl for cod and haddock fishery
Reference No.:	R-5-03		
Organization:	PINRO		
Time period:	May-September	Vessel:	1 hired Danish seiner and 1 hired trawler
Target species:	Cod, haddock	Secondary species:	northern wolffish, spotted catfish, flatfishes, redfishes
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, , international waters, Exclusive Economic Zone of the Russian Federation		
Purpose:	Evaluation of possibility and efficiency of using pelagic trawls equipped by selective devices in the fishery for cod and haddock in order to minimise the negative impact of fishery on bottom biocenoses. Investigation of possibilities and prospects of resource saving technology in the fishery with Danish seine		
Reported to:	PINRO survey report, JRNFC		

6. Monitoring of pollution levels in the Barents Sea

PINRO and IMR will continue to monitor pollution levels in accordance with national programs. Scientists plan to discuss and will exchange their research findings at a meeting of scientists in March 2013 and will report to the relevant organizations according to appropriate plans and programs.

7. Investigations on age determination of fish

The exchange of age reading specialists and material for cod, haddock, redfish, Greenland halibut and capelin will continue. Meetings between age readers are held every second year. The next meetings will be held in Bergen in 2013.

8. Marine mammals

The effect of various marine mammal species, in particular harp seals, on biological resources of the Barents and Norwegian Seas is considerable. Besides, harp, hooded, grey and harbour seals and minke whales have traditionally been target species for hunt operations. Other species, such as white whales, ringed and bearded seals, may also be of potential future interest for hunting. There is therefore a need for joint research on marine mammals, including boat based and airborne surveys, in offshore as well as coastal areas. The joint Russian-Norwegian research should be aimed at assessments of distribution and abundance of the most important species, and their trophic linkages with other marine resources, with particular emphasis on fish species. The low population size of hooded seals in the Greenland Sea and apparent decrease in harp seal pup production in the White Sea in recent years is a matter of concern which requires increased research and monitoring effort.

Norwegian activities in 2013 include abundance estimation of harp and hooded seals using data obtained in aerial and boat based surveys in the Greenland Sea in March 2012. Sampling of biological material will be performed from harp seals during commercial sealing in the Greenland Sea, both to assess the reproductive and nutritive status of the animals, and to assess the efficiency and animal welfare issues related to the hunting methods applied in the Norwegian commercial sealing. Analyses of biological material from hooded seals, collected during research surveys in the Greenland Sea, and reanalyses of historical biological material from harp seals continues. Comprehensive line transect sighting surveys for minke whales (and other whales) will be conducted in the Barents Sea, including the REZ, in 2013. This will complete the current six-year cycle (2008-2013) of sighting surveys and result in new, updated whale estimates for the Northeast Atlantic area. Satellite tags will be deployed on minke whales and other whale species in Svalbard (autumn) 2013. Furthermore, boat based surveys to estimate abundance and stock structure will be carried out in Norwegian coastal areas both for harbour seals and grey seals. Studies of harbour seal ecology using telemetric tagging of seals, scat sampling and concurrent mapping of resources in the Porsangerfjord, Finnmark, continues.

In 2013, the Russian Party plan to carry out multispectral aerial surveys of harp seals of the White/Barents Seas population on their traditional whelping patches in the White Sea as well as in non-traditional areas in the northern and south-eastern (Pechora Sea) parts of the Barents Sea using a Russian research aircraft. Later, in April, it is the plan to carry out multispectral aerial surveys of harp seals of the White/Barents Seas population during moult. Besides, complex dedicated aerial surveys are planned to study other marine mammal species distribution and numbers, and also information about environment conditions and the distribution of fish species and other marine organisms. During the annual ecosystem surveys in the Barents and Norwegian Seas, sightings of marine mammals from research vessels and research aircraft will be conducted. In addition, traditional annual coastal and boat surveys with the purpose to observe marine mammal species and to collect biological material will be carried out. Sampling of biological material will occur during the commercial harp seal catch.

As part of the Joint Norwegian-Russian Research Program on Harp Seal Ecology, telemetric investigations of harp seals will be carried out in the White Sea in a joint Norwegian-Russian project. This activity will be given priority over other planned research of harp seals of the White/Barents Seas population. Joint observations of marine mammals on the ecosystem surveys will continue.

All new information on harp and hooded seals will be discussed in the ICES Working Group on Harp and Hooded Seals (WGHARP) when this group meet next time, late in August 2013 at PINRO, Murmansk, Russia.

Norwegian investigations

Nation:	Norway	Survey title:	Monitoring of biological parameters and hunting methods, harp seals
Reference No.:	N-8-01		
Organization:	IMR		
Time period:	March-May	Vessel:	1 sealer
Target species:	Harp seal	Secondary species:	
Area:	Greenland Sea		
Purpose:	Collection of biological material from harp seals during commercial sealing.		
Reported to:	ICES, NAMMCO, JNRFC		

Nation:	Norway	Survey title:	Monitoring of harbour seal stock structure
Reference No.:	N-8-02		
Organization:	IMR		
Time period:	June	Vessel:	Hired vessel
Target species:	Harbour seals	Secondary species:	
Area:	West Norwegian coast		
Purpose:	Biopsy based collection of tissue from harbour seal pups for genetic studies aimed to assess stock structure.		
Reported to:	NAMMCO, ICES		

Nation:	Norway	Survey title:	Boat based survey of harbour seals
Reference No.:	N-8-03		
Organization:	IMR		
Time period:	August-September	Vessel:	Hired vessel
Target species:	Harbour seals	Secondary species:	
Area:	North Norwegian coast		
Purpose:	Visual survey to obtain total abundance of harbour seals during moult.		
Reported to:	NAMMCO, ICES		

Nation:	Norway	Survey title:	Line transect surveys of minke whales
Reference No.:	N-8-04		
Organization:	IMR		
Time period:	July - August	Vessel:	2 hired vessels
Target species:	Minke whales	Secondary species:	Other large whales
Area:	The Barents Sea (subarea EB, east of 28°E, including the REZ)		
Purpose:	Sighting surveys to assess abundance of minke whales, and abundance, distribution and species composition of other marine mammals.		
Reported to:	IWC, NAMMCO		

Nation:	Norway	Survey title:	Telemetric tagging of minke whales
Reference No.:	N-8-05		
Organization:	IMR		
Time period:	August-September	Vessel:	1 hired vessel

Target species:	Minke whales	Secondary species:	
Area:	Svalbard		
Purpose:	Telemetric tagging of minke whales.		
Reported to:	IWC, NAMMCO		

Nation:	Norway	Survey title:	Abundance estimation of grey seals
Reference No.:	N-8-06		
Organization:	IMR		
Time period:	November-December	Vessel:	Hired vessel
Target species:	Grey seals	Secondary species:	
Area:	Norwegian coast (Troms and Finnmark)		
Purpose:	Estimation of grey seal pup production.		
Reported to:	NAMMCO, ICES		

Joint investigations

Nation:	Russia/Norway	Survey title:	Harp seal tagging in the White Sea in the frames of marine mammals coastal research
Reference No.:	J-8-01		
Organization:	PINRO, IMR		
Time period:	February-May	Vessel:	1 helicopter, vessel, boats
Target species:	Harp seal	Secondary species:	Other seal species, whales
Area:	The White Sea area		
Purpose:	Study of the harp seal biology and ecology using satellite telemetry. Part of the Norwegian Russian Research Program on Harp Seal Ecology initiated by JNRFC. Marine mammals monitoring, assessment of marine mammals influence on fish species, assessment of climatic changes and human activities on marine mammals		
Reported to:	Joint IMR/PINRO survey report, JNRFC, ICES WGHARP, ICES AFWG, ICES WGMME, NAMMCO		

Russian investigations

Nation:	Russia	Survey title:	Multispectral aerial surveys of harp seal whelping and moulting patches
Reference No.:	R-8-01		
Organization:	PINRO		
Time period:	March-April	Vessel:	Research aircraft
Target species:	Harp seal	Secondary species:	White whale and other species of marine mammals
Area:	The White Sea and the Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Study of distribution and estimation of number of the White Sea harp seal on whelping patches for estimation of pup production aiming at stock abundance assessment, study of harp seal ecology and their influence on fish species as top predators.		
Reported to:	PINRO survey report, ICES WGHARP, ICES AFWG, ICES WGMME, JRNFC,		

	NAMMCO

Nation:	Russia	Survey title:	Investigation of reproduction biology and ecology of harp seals of the White/Barents Seas population in the frames of marine mammal coastal research
Reference No.:	R-8-02		
Organization:	PINRO		
Time period:	February-May	Vessel:	Coastal and ice hunting, 1 sealer or research vessel, small boats
Target species:	Harp seal	Secondary species:	Bearded, ringed, grey and common seals, white whale and other species of marine mammals
Area:	The White Sea		
Purpose:	Investigation of biology and ecology of harp seals of the White/Barents Seas population, monitoring and estimation of other marine mammals species abundance, assessment of marine mammals influence on fish species, assessment of climatic changes and human activities on marine mammals, data for ecosystem modelling		
Reported to:	PINRO survey report, ICES WGHARP, ICES AFWG, ICES WGMME, JRNFC, NAMMCO		

Nation:	Russia	Survey title:	Marine mammals coastal research and observations in the White Sea and Barents Sea
Reference No.:	R-8-03		
Organization:	PINRO		
Time period:	April-September	Vessel:	Coastal expedition with the use of available transport and different types of boats
Target species:	Harp seal, minke whale, ringed, grey and bearded seals	Secondary species:	Other species of marine mammals and fishes
Area:	Coast of the Barents and White Sea		
Purpose:	Collection of biological data, study of distribution and migration routes, estimation of numbers, marine mammals monitoring, assessment of marine mammals influence on fishes species, assessment of climatic changes and human activities on marine mammals, data for ecosystem modelling		
Reported to:	Internal PINRO survey report, ICES WGHARP, ICES AFWG, ICES WGMME, JRNFC, NAMMCO		

Nation:	Russia	Survey title:	Comprehensive aerial surveys of marine mammal in th, Barents Sea, Kara Sea and Laptev Sea
Reference No.:	R-8-04		
Organization:	PINRO		
Time period:	July-September	Vessel:	Research aircraft
Target species:	Minke whale, humpback whale, white-beaked dolphin, white whale	Secondary species:	Harp seal, walrus and other species of *Cetacea* and *Pinnipedia*, seabirds, fish schools, oceanographic and hydrobiological parameters
Area:	The Barents Sea, Kara Sea and Laptev Sea		
Purpose:	Study of marine mammals and seabirds distribution and abundance with taking into account of environment conditions and fish species and other marine organisms distribution for understanding of the effect of marine mammals and		

	seabirds on the main commercial fishes for further use in ecosystem models for management of commercial living marine resources
Reported to:	PINRO survey report, ICES AFWG, ICES WGMME, NAMMCO

Nation:	Russia	Survey title:	Marine mammals sightings and observations in the open sea and coastal zone
Reference No.:	R-8-05		
Organization:	PINRO		
Time period:	January-October	Vessel:	Research and fisheries vessels, boats and small boats, research aircraft
Target species:	Minke whale, killer whale, humpback whale, white-beaked dolphin, white-sided dolphin, northern bottlenose whale, white whale	Secondary species:	All other species of marine mammals, seabirds, oceanographic and hydrobiological parameters
Area:	The White and Barents Seas		
Purpose:	Marine mammals: study of main biological parameters, distribution and numbers assessment, taking into account the habitat, and marine mammals and seabirds influence on the main commercial fishes and other marine organisms for further use in ecosystem models for management of commercial marine resources		
Reported to:	PINRO survey report, ICES AFWG, ICES WGMME, NAMMCO		

9. Investigations on survey methodology, index calculations and assessment methods.

PINRO and IMR hold on to the ideas of developing a joint program on methods and procedures for assessment and quota advice of important fish stocks in the northern areas. This program should include methods for surveys, methods for calculations of survey indexes and methods for improving assessment tools, including the multispecies and ecosystem models.

According to the intention worded by the commission during the 40th session in 2011 (Appendix 10 section 10) and the plans made during the March meeting in 2011, a meeting was organized at PINRO in February 2012, where researchers and IT personnel from IMR and PINRO met to discuss common challenges in the field of data infrastructure and ecosystem modelling. During that meeting a joint working group was established, to follow up development in this field at both institutes. The aim of this work is to develop new databases and software to make stock size estimates in a consistent, common, and quality assured way.

During the March meeting in 2012 at Senja, further plans for the upcoming symposium on methodology were made, and the organizing committee has continued the planning by correspondence after the meeting. The symposium will be held in Sochi, Russia in September 2013.

Ecosystem surveys in the northern waters: A common goal for the IMR-PINRO Barents Sea Ecosystem Survey (BES)

The matter has been discussed, and the following aim has been agreed upon.

The aim of the Ecosystem survey is to monitor the state of the Barents Sea Ecosystem to support scientific research and management advice**.**

The March meeting agreed that a joint PINRO/IMR group should be formed to elaborate on these matters. The scientists agreed to continue BES and to improve and ensure that the Ecosystem survey, design, sampling techniques, personal skills, data treatment and so forth, are adaptable to achieve the goals and objectives in a proper scientific way at a high international levels. The scientist agreed to continue the development of identification (manuals and atlas) and quantification methods for species which not been identified or quantified yet. Scientists have agreed that all collected data should be available as spatial data and as relative indices or estimates for most of species and groups, and estimation of uncertainties for all indices and estimates may provide better input for an assessment, ecological models and estimation of the total production for the Barents Sea. In addition, the scientists continue to test new sampling equipment which can make sampling more efficient.

Alongside the basic deliveries to the departments, the Ecosystem Survey shall be operational on all biological trophic levels including also the monitoring of pollution and climate. This holistic operation should, via scientific projects and program, be developed into an ”Ecosystem based management”. To implement the ecosystem based management for the Barents Sea the development of ecosystem models are needed.

Ecosystem monitoring of juvenile fish and effect of by-catch of juvenile fish during fishery in the Barents Sea

The aim of this work is to improve the knowledge of the winter distribution of juvenile fish of commercially and ecologically important species (cod, haddock, capelin and herring), prey/predator interaction, giving better understanding of ecosystem processes during winter. Additionally, the project will provide new insight into by-catch of juvenile fish during Norwegian and Russian capelin fishery in the Barents Sea and quantify the effect of the fishery on their abundance.

The work will focus on the mapping of geographical distribution by acoustic measurements and trawl catches during the winter survey (January-March). The observers will monitor catches during capelin fishery on board both Norwegian and Russian vessels. Thus, mortality of juvenile fish of commercially and ecologically important species (cod, haddock, capelin and herring) will be estimated under the Norwegian and Russian capelin fishery.

10. Russian-Norwegian Fisheries Science Symposia

When the 15th Russian-Norwegian Symposium (“Climate change and effects on the Barents Sea marine living resources”) was held in Longyearbyen, Svalbard (Spitsbergen) in September 2011, it was evident that several presentations had a content and quality that would merit more than merely printing in the traditional Proceedings (IMR-PINRO Report number 2, 2011). Several contributions were therefore selected for potential inclusion in a thematic issue of the journal Marine Biology Research (MBR). Tore Haug (IMR) serves as coordinator for this issue which will be published early in 2013. Current status is that 7 articles are accepted and ready for inclusion, two are still under revision, whereas one final and summarizing article is due to be submitted before the end of October 2012.

The 16th Russian-Norwegian symposium “Assessments for management of living marine resources in the Barents Sea and adjacent waters - a focus on methodology” will be held in Sochi, Russia, 10-12 September 2013.

A symposium program committee has been appointed: Harald Gjøsæter, Espen Johnsen and Knut Sunnanå from IMR, Norway. Evgeny Shamray and Yuri Kovalev from PINRO and Dmitry Vasiliev from VNIRO, Russia.

The Parties suggest that the symposium should include three theme sessions, all starting with an invited keynote speaker:

Theme 1: Survey strategy and methodology
Theme 2: Index calculations
Theme 3: Stock assessment methods

The symposium language is English, and Proceedings of the symposium will be edited by the symposium program committee, and published in the IMR/PINRO Joint Report Series. If a sufficient number of presentations has a content and quality that would merit more than merely printing in the traditional Proceedings, selected papers from the symposium will get the opportunity to be published in a peer reviewed scientific journal, preferably Marine Biology Research (MBR).

The short scope for the symposium was developed, and names of key note speakers should be decided, by correspondence among the symposium program committee. Invitations were sent out, both to colleagues at IMR and PINRO and to colleagues at other relevant institutions in Norway and Russia. Information about the symposium was placed at the web via the websites of IMR and PINRO.

11. Development of an exchange program of scientific personal

It has been agreed that the program for exchange of scientific personal between PINRO, VNIRO and IMR, on all levels (students – research technicians – senior scientists) will continue.

A plan for next year will be developed and considered during the annual March meeting. The exchange should have first focus on young scientists and scientists for coordination of research programs and methods between the institutions at their laboratories and at their research vessels during investigations.

12. Revision of Greenland halibut assessment methodology

Arctic fisheries working group (AFWG) recognized the need to facilitate work toward accepted analytical assessment for Greenland halibut. ICES benchmark meeting for Greenland halibut is planned for autumn 2013. A PINRO/IMR working group should be established to make preparation work for benchmark meeting. The assessment of the NEA Greenland halibut stock is uncertain due to age-reading problems and lack of contrast in the data, as also reflected in recent AFWG reports. In the preparation for the benchmark meeting there is a need for a joint effort by Russia and Norway to prepare and make available necessary data in good time in advance. This way it is possible to do exploratory analysis with a variety of methods using models which can be structured in various ways (by biomass/age/length/sex), and allow for exploration of the consequences of various assumptions about growth patterns. The data needed are:

- Catch in tons (by quarter);
- Sex compositions;
- Length distribution in the catch (preferably for each quarter, but one each year would do);
- Length distribution in the survey(s);
- Survey index from the survey(s);
- Length-weight relationships;
- Age-length keys prepared based on both methods of age reading (preferably for each year).

Data should be prepared in adequate spatial and temporal resolution.

Parties agreed to exchange data needed for benchmark meeting before 31 December 2012.

In order to achieve the most accurate age estimates, ICES has recently recommended methods and best practice for age reading of both redfish and Greenland halibut. Still there continue to be differences in opinion between PINRO and IMR regarding age reading methods for these species. At the March meeting 2012 the parties recommended to start annual or bi-annual exchange of otoliths and age reading experts on these species in order to identify the differences in interpretation and to discuss possibilities for a common approach.

13. Research on benthic organisms

The program on investigations of benthic organisms is ongoing according to plans that were developed at the March meeting in 2011 in Murmansk. The parties agreed to continue the identification of the megabenthos from the demersal fish trawl on all vessels participating in the ecosystem survey. PINRO will also continue grab sampling of macro-zoobenthos in the Kola transect.

Some part of this work will be conducted under HAV-5 project of the joint Russian Norwegian environmental commission.

14. Determination of conversion factors for cod, haddock and other gadoids

Scientific and research institutes of Russia and Norway continue investigations on establishing accurate conversion factors for products produced at sea from cod and haddock.

Accurate conversion factors are necessary in order to estimate the actual catches of the joint stocks of cod and haddock. Varying fishing and processing conditions, such as fishing areas and seasons, length-weight characteristics, fishing gear, technological parameters of raw fish processing including different ways of processing (machine or manual), processing equipment, ways of freezing, packing and storage require continuous investigations. It is necessary to obtain additional data on conversion factors for cod and haddock taking into account annual, biological variations and effects of fishing gear and technological processing equipment.

Joint investigation

Nation:	Russia/Norway	Survey title:	Cod and haddock conversion factors
Reference No.:	J-14-01		
Organization:	Norw. Dir. of Fisheries., PINRO, VNIRO		
Time period:	September - December	Vessel:	Norwegian coastal vessels, Onshore fish processing plant in Norway
Target species:	Cod, haddock	Secondary species:	
Area:	Exclusive Economic Zone of Norway		
Purpose:	Experimental-control work on the determination of conversion factors for production of cod and haddock harvested by vessels of Norwegian coastal fleet		
Reported to:	Surveys reports, Norw. Dir. of Fisheries, VNIRO, PINRO.		

Nation:	Russia/Norway	Survey title:	Cod and haddock conversion factors
Reference No.:	J-14-02		

Organization:	Norw. Dir. of Fisheries, PINRO, VNIRO,		
Time period:	September - December	Vessel:	Hired trawler
Target species:	Cod, haddock	Secondary species:	Saithe
Area:	Exclusive Economic Zone of the Russian Federation		
Purpose:	To conduct experimental and checking works, to determine conversion factors.		
Reported to:	Surveys reports, Norw. Dir. of Fisheries, VNIRO, PINRO.		

15. Development of genetic database for fish species

During the March Meeting in 2009 Russian and Norwegian scientists agreed to begin developing a joint genetic database for Atlantic salmon.

Samples collected from Norwegian rivers will be stored at NINA or IMR (depending on where extraction and analysis is conducted). Both samples and DNA will be made available for other laboratories for further analyses in the future. Samples collected in Russia will be divided in two where possible, and stored both at PINRO and IMR. The ownership of the samples and DNA will remain with PINRO. Further use of the samples and DNA must be made through agreement with PINRO.

There will be a collection of samples of adult salmon from the coastal areas of the Barents and White Seas, including estuaries salmon rivers. Sample collection will be conducted in the exercise of fishing for scientific research purposes. All fish will be subjected to biological analysis. Scales collected will be used to determine the age and identification of fish farming. Genetic analysis of the samples will determine the region / River origin salmon.

Data from the analysis, both from Russian and Norwegian samples will be made available for the purposes of the project "Kolarctic-salmon" (KO-197). Further use of the data outside the realm of the "Kolarctic-salmon" project will be possible after agreement with the partners of project. The data from the analysis will also be used by a relevant partner for constructing a national genetic baseline for Atlantic salmon populations.

Cooperation between IMR and VNIRO has started to explore the genetic polymorphism of several fish species in the Barents Sea. Work has started with DNA markers on cod, capelin, polar cod and redfish may be subjects to investigations. The basis for sampling is the surveys conducted by both sides, specially the joint ecosystem surveys. Both IMR and VNIRO have already conducted sampling.

Scientists from IMR in Tromsø will visit VNIRO in spring 2013 and start work on exchange of working methods between the institutes. Also, there are plans to have PhD students working with these genetic studies.

For skates and rays it was suggested that IMR and PINRO make a joint effort in collecting samples of all species in the Barents Sea.

16. Investigations of cartilaginous fishes in the Barents Sea

Russian and Norwegian scientists have previously noted the importance of cartilaginous fishes (sharks, skates, ratfishes) in the Barents Sea ecosystem and their vulnerability to fisheries, as well as lacking scientific knowledge with respect to those species. Plans for joint work was presented at the March meeting in 2011 in Murmansk and both IMR and PINRO have started increased sampling of skates on their surveys, including egg capsules, vertebrae and maturity. It is agreed to

exchange information by correspondence and to seek to initialize joint projects and/or seminars to improve the knowledge of skate ecology in the Barents Sea.

17. Data exchange

It was agreed to exchange the following data collected in joint and national scientific surveys and data collected by observers on board of commercial vessels:

- all data collected in joint surveys relevant to stock assessments and environment conditions;
- filed data on temperature and salinity in the Barents Sea with 5 m depth interval from oceanographic stations;
- mean length and weight at age as far as maturity at age used in commercial stocks assessments;
- surveys abundance indexes and acoustic data used in commercial stocks assessments;
- stomach content of commercially important species;
- otoliths and scales collected under the program for age validation of bottom and pelagic fish;
- data on zooplankton and benthic fauna;
- data on the biology of seals of the White Sea population (mortality, maturation, size-at-age, feeding data, ice conditions in the White Sea and adjacent waters of the southeastern Barents Sea);
- fisheries statistics for key commercial fish species in ICES Sub-areas I, IIa, IIb needed for stock assessments of commercial fishes (catches, age composition of catches, mean weights at age in catch).

The above list of data exchange will be updated during March meeting.

18. Catch volumes needed for investigations of marine resources and monitoring of the most important commercial species, as well as management tasks

The catch volumes shall enable to carry out all tasks described in "Joint Norwegian – Russian Scientific Research Program on Living Marine Resources in 2013" including surveillance activities to provide recommendations on area closures/reopening as well as other decisions on management of fishing activities on living marine resources in ICES Subarea I and II including respective EEZs of Russia and Norway, international waters ("Loophole") and Svalbard (Spitsbergen) area.

To solve these tasks the following catch quantities are decided and shall be available in equal parts for both Parties in 2013:

- 14 000 tonnes of cod in addition to volumes mentioned in Appendix 3
- 8 000 tonnes of haddock in addition to volumes mentioned in Appendix 3
- 10 000 tonnes of capelin in addition to volumes mentioned in Appendix 3
- 1 500 tonnes of Greenland halibut in addition to volumes mentioned in Appendix 3
- 2 100 tonnes of other fish species in addition to volumes mentioned in Appendix 6, as follows:
  - Saithe - 400
  - Redfish *S. mentella* - 900
  - Redfish *S. marinus* - 60
  - Northern wolffish - 380
  - Spotted catfish - 240
  - Long rough dab - 240
  - Sea plaice - 500
  - Other species - 220

Both Parties will make all efforts to fulfil of the program.

If needed, an additional scientific catch quantity of capelin can be allocated.

All catches taken for research and management purposes should be recorded in the catch statistics separately.

Under "The Joint Russian – Norwegian Scientific Research Program on Living Marine Resources in 2013" the Norwegian party will grant permission to fish and catch their living marine resources to vessels owned or hired by PINRO in the Norwegian Economic Zone and areas around Jan-Mayen in amounts not exceeding:

- 5 000 tonnes of cod
- 3 000 tonnes of haddock
- 5 000 tonnes of capelin
- 700 tonnes of Greenland halibut
- 750 tonnes of other fish species as follows:
  - Saithe - 100
  - Redfish *S. mentella* - 400
  - Redfish *S. marinus* - 20
  - Northern wolffish - 150
  - Spotted catfish - 80
  - Long rough dab - 50
  - Other species - 50

Under "The Joint Russian – Norwegian Scientific Research Program on Living Marine Resources in 2013" the Russian party will grant permission to fish and catch their living marine resources to vessels owned or hired by IMR and other Norwegian scientific institutions in the Exclusive Economic Zone of the Russian Federation in amounts not exceeding:

- 5 000 tonnes of cod
- 3 000 tonnes of haddock
- 5 000 tonnes of capelin
- 700 tonnes of Greenland halibut
- 515 tonnes of other fish species as follows:
  - Saithe - 50
  - Redfish *S. mentella* - 15
  - Redfish *S. marinus* - 5
  - Northern wolffish - 75
  - Spotted catfish - 50
  - Long rough dab - 70
  - Sea plaice - 200
  - Other species - 50