Appendix 10

JOINT RUSSIAN – NORWEGIAN SCIENTIFIC RESEARCH PROGRAM ON LIVING MARINE RESOURCES IN 2012

Contents

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

This program contains the investigations to be carried out in 2012 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 and IMR will exchange results and data from joint investigations.

Scientists and specialists from PINRO, VNIRO and IMR will meet in Senja, south of Tromsø, Norway 12-16 March 2012 to discuss joint research programs, results from surveys and investigations in 2011/2012 and to coordinate survey plans for the rest of 2012. 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 2011, 5 reports have been issued in the Joint IMR-PINRO report series during 2010-2011.

A preliminary program for the planned surveys and cooperation for 2012 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 2012		

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 2013, ICES AFWG 2013		

Nation:	Norway	Survey title:	New knowledge on spring biology and production
Reference No.:	N-2-03		
Organization:	IMR		
Time period:	March-May	Vessel:	R.V. "Johan Hjort" or other
Target species:	Cod, haddock, saithe redfish	Secondary species:	Larger argentine, Norway pout
Area:	Northern coast, Norwegian Sea and Barents Sea		
Purpose:	Estimate the numbers and length distribution of fish in the West Fjord-Malangsgrunnen. Collect and identify eggs in the same area, for the identification of spawning redfish, larger argentine, haddock and pout. Finding the vertical distribution of eggs. Verify spawning concentrations.		
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:	5 rented 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 2012 and 2013		

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		
Time period:	January-December	Vessel:	2 rented 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, ICES AFWG in 2012 and 2013		

Nation:	Russia	Survey title:	Evaluation of resources for long-line fishery.
Reference No.:	R-2-03		
Organization:	PINRO		
Time period:	January-December	Vessel:	2 rented 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, "Grey zone" , 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, ICES AFWG in 2012 and 2013		

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:	13 rented 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, "Grey zone", 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 2012 and 2013		

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" and 5 rented 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, "Grey zone", 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 2012 and 2013		

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, “Grey zone”, 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 2013		

Nation:	Russia	Survey title:	Assessment survey on juvenile saithe, cod, haddock and other demersal species in Murman fjords
Reference No.:	R-2-07		
Organization:	PINRO		
Time period:	August-September	Vessel:	R.V. “Professor Boiko”
Target species:	haddock, saithe, cod	Secondary species:	redfish (*Sebastes mentella*), long rough dab, plaice, northern wolffish, spotted catfish
Area:	The Barents Sea and adjacent waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Investigation of distribution of juvenile commercial fish in Murman fjords, collection of data on biology, distribution and density of concentrations.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2012		

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-2-08		
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, “Grey zone”, 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.		
Reported to:	PINRO survey report, ICES AFWG in 2013		

Nation:	Russia	Survey title:	Trawl-Acoustic survey for spawning stock of capelin
Reference No.:	R-2-09		
Organization:	PINRO		
Time period:	January - April	Vessel:	R. V. “Fridtjof Nansen” R. V. “Vilnjus”, or 2 rented trawlers
Target species:	Capelin	Secondary species:	Herring, polar cod
Area:	The Barents Sea and adjacent waters, Spitsbergen area, Exclusive Economic Zone of Norway, “Grey” zone, 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 2012		

Nation:	Russia	Survey title:	Investigations for spawning and feeding migrations of herring in the Norwegian Sea
Reference No.:	R-2-10		
Organization:	PINRO		
Time period:	January-March August – September	Vessel:	rented trawlers
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 2012		

Nation:	Russia	Survey title:	Investigations of mackerel feeding migration
Reference No.:	R-2-11		
Organization:	PINRO		
Time period:	June-August	Vessel:	2 rented trawlers Research aircraft
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 2012		

Nation:	Russia	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.:	R-2-12		
Organization:	PINRO		
Time period:	October-December	Vessel:	2 rented trawlers
Target species:	Capelin	Secondary species:	Polar cod
Area:	The Barents Sea and adjacent waters, Spitsbergen area, "Grey zone", 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		

Nation:	Russia	Survey title:	Trawl-acoustic survey for redfish *(Sebastes mentella)* of the Norwegian-Barents Sea population.
Reference No.:	R-2-13		
Organization:	PINRO		
Time period:	April-May	Vessel:	R.V. "Fridtjof Nansen", R. V. "Vilnjus" or rented trawler
Target species:	Redfish (*S. mentella*), redfish (*S. marinus*),	Secondary species:	cod, haddock, Greenland halibut, northern wolffish and others
Area:	The Barents Sea and adjacent waters, Exclusive Economic Zone of Norway and Spitsbergen area		
Purpose:	Evaluation of strength of redfish yearclasses; study of distribution of redfish and other species; collection of biological data; evaluation of resources for fisheries through analysis and collection of statistical data on CPUE; oceanography.		
Reported to:	PINRO survey report, ICES AFWG in 2012 and 2013		

Nation:	Russia	Survey title:	Investigation of intra-annual spatio-temporal distribution of elder cohorts of cod.
Reference No.:	R-2-14		
Organization:	"National Fish Resources", VNIRO		
Time period:	January-March, April-June, July-December	Vessel:	1 trawler, 1 long-liner
Targeting species:	Cod	Secondary species:	Haddock, Northern wolfish, spotted catfish, Greenland halibut, redfish (*S. mentella*), other demersal fish
Area:	Exclusive Economic Zone of Norway, Exclusive Economic Zone of the Russian Federation, Spitsbergen area and international waters		
Purpose:	Investigation of intra-annual spatio-temporal distribution of elder cohorts of cod basing on the synoptic monitoring methodology. Data collection of cod elder cohorts in the trawl and long-line catches for the assessment of the stock.		
Reported to:	«National Fish Resources», Federal Agency for Fisheries, VNIRO, PINRO		

Nation:	Russia	Survey title:	Investigation of the intra-annual spatio-temporal distribution of commercial concentrations of Greenland halibut depending on abiotic factors.
Reference No.:	R-2-15		
Organization:	«National Fish Resources», VNIRO		
Time period:	October-November	Vessel:	1 trawler
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes, redfish (*S. mentella, S.marinus*), other demersal fish
Area:	Exclusive Economic Zone of Norway and Spitsbergen area.		
Purpose:	Elaboration of recommendations for rational exploitation of the halibut stock by use of new informational technologies for analysis of spatio-temporal distribution of the commercial stocks depending on the variability of the abiothic factors.		
Reported to:	«National Fish Resources», Federal Agency for Fisheries, VNIRO, PINRO.		

Nation:	Russia	Survey title:	Investigation of spatio-temporal distribution of feeding aggregations of herring and blue whiting in the Norwegian Sea.
Reference No.:	R-2-16		
Organization:	«National Fish Resources», VNIRO		
Time period:	September-December	Vessel:	1 trawler
Targeting species:	Herring	Secondary species:	Blue-whiting, Mackerel
Area:	Norwegian Seas, including the waters under jurisdiction of the third countries, international waters.		
Purpose:	Investigation of herring and blue whiting in the Norwegian Sea. Spatio-temporal mapping of the blue whiting and herring distribution based on the synoptic monitoring methodology.		
Reported to:	«National Fish Resources», Federal Agency for Fisheries, VNIRO, PINRO.		

Nation:	Russia	Survey title:	Investigation of physical mechanisms of formation of high concentrations of feeding mackerel in the Norwegian Sea.
Reference No.:	R-2-17		
Organization:	"National Fish Resources", VNIRO		
Time period:	June-September	Vessel:	1 trawler
Targeting species:	Mackerel	Secondary species:	Blue whiting, herring
Area:	International waters of the Norwegian Sea.		
Purpose:	Investigation of spatio-temporal dynamics of distribution of mackerel commercial concentrations in relation with the weather conditions in the synoptic-scale variability, elaboration of short-term advices for the fishery.		
Reported to:	«National Fish Resources» survey report, Federal Agency for Fisheries, VNIRO, PINRO.		

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, "Grey zone", 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 2012		

* - 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 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:	R. V. "G. O. Sars" 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 2012		

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. "Johan Hjort" 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, "Grey zone" , 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.		
Reported to:	PINRO, IMR survey reports, International report, ICES WGWIDE, ICES PGNAPES in 2012		

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 rented 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, "Grey zone", 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:	1 rented 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		

3. Research program on deep sea fishes

A new Norwegian survey strategy for deep sea fish was presented at the March meeting in Murmansk between PINRO and IMR. It is based on previous Greenland halibut, redfish and greater Argentine surveys, which are combined in a multi-annual framework. Analyses of time series on Greenland halibut in the northern continental slope showed that it was possible to reduce number of stations per year considerably, as well as reducing the frequency to once every second year, without jeopardizing the time series of abundance and composition. On the other hand it was necessary to increase the area coverage to include the Bear Island Trench and to use large bottom trawls for the whole coverage. Alternating years a survey on the southern continental slope should be run during the spawning period for greater Argentine and redfish, and every 2-3 years an international survey on pelagic beaked redfish is conducted in the Norwegian Sea. Finally, the plan accounts for a limited number of deeper trawls on surveys in the Skagerrak Deep, the deeper fjords, and in the northern part of Barents Sea ecosystem survey. In addition to the recent reduction in surveys relating to the joint Russian-Norwegian research program on Greenland halibut, the plan result in a reduction in mean total survey days on deep sea species from 80 to 40 days per year.

According to this the following surveys are applied for in 2012.

Norwegian surveys

Nation:	Norway	Survey title:	Spring 2012 Deepwater Slope Survey
Reference No.:	N-3-01		
Organization:	IMR		
Time period:	March April	Vessel:	R.V. "G.O.Sars"
Target species:	Redfish, Greenland halibut, greater argentine	Secondary species:	
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.		
Reported to:	IMR survey report, ICES WGWIDE 2013, ICES AFWG 2013		

Nation:	Norway	Survey title:	Summer 2012 Norwegian Sea Deepwater survey
Reference No.:	N-3-02		
Organization:	IMR		
Time period:	July August	Vessel:	Hired vessel
Target species:	Redfish	Secondary species:	
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.		
Reported to:	IMR survey report, ICES WGWIDE 2013, ICES AFWG 2013		

4. Red king crab (*Paralithodes camtschaticus*)

Both Parties exchanged information about the ongoing national Red king crab research in 2011 and the plans for 2012.

According to Appendix 10 to the protocol of the 38th session of the JNRFC, the meeting of scientists in March 2010 adopted a new 3-year program on king and snow crabs, and this program is continuing in 2012.

There will be a new Russian Norwegian symposium on Red king crab and Snow crab in June 2012 in Tromsø. The call and invitations will be sent at the end of 2011. A committee has been appointed for the symposium; however there has yet been no discussion on the theme and agenda to be included in the symposium.

Norwegian investigations

Nation:	Norway	Survey title:	Red king crab stock survey
Reference No.:	N-4-01		
Organization:	IMR		
Time period:	August-September	Vessel:	Hired vessel
Target species:	Red king crab	Secondary species:	
Area:	Fjords in Finnmark		
Purpose:	Abundance estimation and ecological investigations		
Reported to:	IMR survey report, PINRO and VNIRO		

Nation:	Norway	Survey title:	Red king crab distribution and abundance
Reference No.:	N-4-02		
Organization:	IMR		
Time period:	August-December	Vessel:	Hired vessels
Target species:	Red king crab	Secondary species:	
Area:	Off shore areas in Finnmark		
Purpose:	Abundance estimations and spreading of the crab		
Reported to:	IMR survey report, PINRO and VNIRO		

Russian investigations

Nation:	Russia	Survey title:	Stock assessment of the red king crab by trawl survey
Reference No.:	R-4-01		
Organization:	PINRO		
Time period:	August-September	Vessel:	1 rented vessel
Target species:	Red king crab	Secondary species:	Snow crab, cod, haddock
Area:	The Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Assessment of the total, fishable and spawning stocks of the red king crab; study of the crab distribution; collection of biological data, crab tagging to study migration, oceanography, underwater video.		
Reported to:	PINRO survey report, IMR		

Nation:	Russia	Survey title:	Red king crab trap survey
Reference No.:	R-4-02		
Organization:	PINRO		
Time period:	August-September	Vessel:	2 rented vessels
Target species:	Red king crab	Secondary species:	Snow crab
Area:	The Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Assessment of the total, fishable and spawning stocks of the red king crab, comparison of stock estimates by trawl survey results, TAC estimation. Study of the distribution of red king crab. Collection of biological data, crab tagging to study migration, oceanography.		
Reported to:	PINRO survey report, IMR		

Nation:	Russia	Survey title:	Investigations aimed at elaboration of measures to decrease the red king crab by-catches in the trawl fishery for demersal fish.
Reference No.:	R-4-03		
Organization:	PINRO		
Time period:	August-November	Vessel:	1 rented vessel
Target species:	Red king crab	Secondary species:	Snow crab, Cod, haddock, catfishes and other demersal fish
Area:	The Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Search of means for minimization of the red king crab by-catches in fisheries for cod and haddock. Recommendations on improvement of trawl design.		
Reported to:	PINRO survey report, IMR		

Nation:	Russia	Survey title:	SCUBA-diving and trap survey of red king crab
Reference No.:	R-4-04		
Organization:	PINRO		
Time period:	July-August	Vessel:	R.V. "Professor Boiko" SCUBA-divers
Target species:	Red king crab	Secondary species:	
Area:	The Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Estimation of abundance and biological diversity in the coastal 7-mile zone of the Kola Peninsula. Calculation of abundance indices of the total and commercial stocks at 0-30 m and 30-150 m depth. Collection of biological data for the stock assessment and estimation of TAC.		
Reported to:	PINRO survey report, IMR		

Nation:	Russia	Survey title:	Marine resource investigations of the red king crab for the collection of fisheries and biological information on the state of marine biological resources and the impact of fisheries on these stocks in order to develop measures aimed at conservation and comprehensive utilization of marine biological resources.
Reference No.:	R-4-05		
Organization:	PINRO		
Time period:	January-December	Vessel:	5 rented vessels
Target species:	Red king crab	Secondary species:	Snow crab
Area:	The Barents and White Seas, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Studies of distribution, collection of biological material, development of advice on rational harvesting of the stock, tagging of crabs, studies of migrations, collection of CPUE data for different trap types, collection of oceanographic data.		
Reported to:	PINRO report		

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.

According to this program the following surveys are planned in 2012.

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 fiunctionality of trawls and camera monitoring during trawling using pelagic – semipelagic trawl systems		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Development of new pelagic/semipelagic concept of trawling
Reference No.:	N-5-02		
Organization:	IMR		
Time period:	October	Vessel:	Hired 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		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Species selection in pelagic trawl
Reference No.:	N-5-03		
Organization:	IMR		
Time period:	October	Vessel:	RV "G.O.Sars" or other
Target species:	Cod and haddock	Secondary species:	
Area:	Norwegian coast and Barents Sea		
Purpose:	Species selection in pelagic trawl – use of light		
Reported to:	IMR survey report		

Nation:	Norway	Survey title:	Development of observation systems and study of fish behavior in trawls
Reference No.:	N-5-04		
Organization:	IMR		
Time period:	April - May	Vessel:	Hired vessel
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		

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		
Time period:	May-November	Vessel:	1 rented trawler and 1 rented 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, "Grey zone", 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, ICES AFWG in 2012 and 2013		

Nation:	Russia	Survey title:	Selectivity studies of new fishing gear and sorting systems.
Reference No.:	R-5-02		
Organization:	PINRO		
Time period:	January -December	Vessel:	2 rented 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, "Grey Zone", 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:	January-December	Vessel:	1 rented Danish seiner and 1 rented 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, "Grey Zone", 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. Optimal harvesting of commercial species in the Barents Sea ecosystem

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.

During the last year the use of the STOCOBAR model was continued in PINRO and work on the ATLANTIS model has been started at IMR, in addition to continued work with Bifrost and Gadget. The results of the STOCOBAR model were presented at the 15th Norwegian-Russian Symposium.

Most of the effort relating to long-term harvest has been aimed at preparation for MSY advice and the work of adapting the advice to comply with this framework. Developing MSY reference points for the Barents Sea stocks is a major task. Such work was done for haddock and similar work for other stocks will be done by the ICES Working Groups.

Mapping of the genetic structure of commercial species in the Barents Sea and adjacent waters is ongoing from IMR and an initiative is taken to cooperate with VNIRO and PINRO on a further development of this research, including exchange of young scientists between the institutions.

7. Monitoring of pollution levels in the Barents Sea

PINRO and IMR will continue to monitor pollution levels in accordance with national programs. The results of the monitoring program will be reported in the joint report on ecosystem status and in the reports of the work with the Norwegian management plans.

8. Investigations on age and growth of fish

The exchange of age reading specialists and material for cod, haddock, redfish and capelin will continue in the future according to the established routines. The percent agreement between the PINRO and IMR age readings on cod and haddock have stabilized in recent years, which suggests that annual meetings are not necessary. Considering this activity in cost-effective terms it is now correct to adjust the meeting (workshops) frequency to every second year. Meetings of age readings were held in Murmansk in May and October 2011.

9. 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 2012 include abundance estimation of harp (if possible, also hooded) seals using aerial and boat based surveys in the Greenland Sea. Sampling of biological material from harp seals during commercial sealing in the Greenland Sea will be performed as well, as part of the abundance estimation efforts. 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. Aerial surveys of harp and hooded seals is a large logistic operation which require substantial resources. Due to economical constraints, therefore, line transect sighting surveys for minke whales (and other whales) cannot be conducted in the Barents Sea in 2012. Instead, more intensive whale surveys will be performed in 2013 to finalize new, updated whale estimates based on data from 2008-2013. Satellite tags will be deployed on minke whales and other whale species in Svalbard (autumn) 2012. Furthermore, surveys to estimate abundance will be carried out in Norwegian coastal areas both for harbour seals (aerial) and for grey seals (boat based). Studies of harbour seal ecology using telemetric tagging of seals, scat sampling and concurrent mapping of resources in the Porsangerfjord, Finnmark, continues.

In 2012, the Russian Party will continue to carry out annual 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, and during their feeding migrations, using the Russian research aircraft. Besides, complex and dedicated aerial surveys are planned to study other marine mammal species distribution and numbers, and also information about the distribution of fish species. 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, annual coastal and vessel expeditions 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.

Norwegian investigations

Nation:	Norway	Survey title:	Abundance estimation of harp and hooded seals
Reference No.:	N-9-01		
Organization:	IMR		
Time period:	March-April	Vessel:	Rented vessel, helicopter, aeroplane
Target species:	Harp seals	Secondary species:	Hooded seals
Area:	Greenland Sea (West Ice)		
Purpose:	Estimation of harp and, if possible, hooded seal pup production using ship, helicopter and aeroplane		
Reported to:	IMR survey report, NAMMCO, ICES, JNRFC		

Nation:	Norway	Survey title:	Monitoring of biological parameters in harp seals
Reference No.:	N-9-02		
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 seals
Reference No.:	N-9-03		
Organization:	IMR		
Time period:	June	Vessel:	Rented vessel
Target species:	Harbour seals	Secondary species:	
Area:	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:	Aerial survey harbour seals
Reference No.:	N-9-04		
Organization:	IMR		
Time period:	August-September	Vessel:	Rented airplane
Target species:	Harbour seals	Secondary species:	
Area:	Norwegian coast		
Purpose:	Aerial photographic survey to obtain total abundance of harbour seals during moult.		
Reported to:	NAMMCO, ICES		

Nation:	Norway	Survey title:	Telemetric tagging of minke whales
Reference No.:	N-9-05		
Organization:	IMR		
Time period:	August-September	Vessel:	1 rented 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-9-06		
Organization:	IMR		
Time period:	November-December	Vessel:	Rented 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-9-01		
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 survey of harp seal whelping and moulting patches
Reference No.:	R-9-01		
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 in the White Sea in the frames of marine mammal coastal research
Reference No.:	R-9-02		
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, common seal, white whale and other species of marine mammals
Area:	The White Sea		
Purpose:	Investigation of biology and ecology of harp seals in the White Sea, monitoring and estimation of abundance in marine mammals populations, 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-9-03		
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 resources in the, Barents Sea, Kara Sea and Laptev Sea
Reference No.:	R-9-04		
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
Area:	The Barents Sea, Kara Sea and Laptev Sea		
Purpose:	Study of the effect of marine mammals and seabirds distribution and abundance including information about fish species 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, JRNFC, ICES AFWG, ICES WGMME, NAMMCO		

Nation:	Russia	Survey title:	Marine mammals sightings and observations in the open sea and coastal zone
Reference No.:	R-9-05		
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 with habitat taking into account and marine mammals and seabirds influence 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, JRNFC, NAMMCO		

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

PINRO and IMR would like to develop 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.

During the March meeting in 2011 in Murmansk IMR organised a seminar on stock index calculation programs and invited PINRO to join this work. This work included databases Sea2data-project as well as work with aggregate databases such as Sjømil and FishExchange. Meetings will be arranged in autumn 2011 or spring 2012 to follow up this work.

IMR also presented the problem of not being able to continue with extended geographical and temporal coverage of surveys – and this problem was also raised by PINRO at the present meeting. There is thus an agreement on the need to develop joint Norwegian and Russian surveys further.

The commission also points to the need of developing better assessment programs to avoid the problems of not giving stable and precise advice on fish quotas in the future.

PINRO and IMR agree to start the process of developing this program by conducting a symposium on the theme – and use the results presented at the symposium to develop a program proposal. Planning of this concept and the symposium will take place during the winter and be presented at the March meeting in Senja south of Tromsø in 2012.

11. Russian-Norwegian Fisheries Science Symposia

The 15th Russian-Norwegian Symposium ("Climate change and effects on the Barents Sea marine living resources") was held at the UNIS (University Studies at Svalbard) in Longyearbyen, Svalbard (Spitsbergen), during the period 6-9 September 2011. A total of 53 participants attended the symposium which included 3 opening addresses, 4 keynote talks, 31 oral presentations and 13 posters. The symposium language was English, and production of Proceedings (edited by Tore Haug, Ingolf Røttingen and Knut Sunnanå from IMR, and Konstantin Drevetnyak, Yuri Lepesevich and Oleg Titov from PINRO) is in progress – the Proceedings will be published in the IMR/PINRO Joint Report Series.

It was evident that several presentations had a content and quality that would merit more than merely printing in the traditional Proceedings, and 12 of these were selected for potential inclusion in a thematic issue of the journal Marine Biology Research (MBR). As agreed by the Parties, Tore Haug (IMR) serves as the thematic issue coordinator and will assist in providing high–quality manuscripts. The 12 selected contributions will be checked with regard to language and be subjected to an internal review process and subsequent – if found acceptable – submitted to the MBR thematic issue. All selected manuscripts must of course undergo the usual review process of MBR.

The Parties has agreed that the title of the 16th Russian-Norwegian symposium should be "Assessments for management of living marine resources in the Barents Sea and adjacent waters - a focus on methodology".

A symposium program committee has been appointed: Harald Gjøsæter, Espen Johnsen and Knut Sunnanå from IMR, Norway. Yuri Lepesevich and Yuri Kovalev from PINRO and Dimitry Vasiliev from VNIRO, Russia. The symposium will be held in Russia during September in 2013.

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: 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, for example in a thematic issue of the ICES Journal of Marine Science. Other journals may be considered.

It was agreed that a short scope for the symposium should be developed, and names of key note speakers decided, by correspondence among the symposium program committee. No later than 15 June 2012, invitations should be sent out, both to colleagues at IMR and PINRO and to colleagues at other relevant institutions in Norway and Russia. By that time the symposium should be visible at the web via the websites of IMR and PINRO.

12. Development of an exchange program of scientists

It has been suggested to develop a program for exchange of scientists between PINRO, VNIRO and IMR, on all levels (students – research technicians – senior scientists).

A plan for this program will be developed and considered during the March meeting in Senja south of Tromsø in 2012. The program should have first focus on exchange of young scientists between the institutions at their laboratories and at their research vessels during investigations. The institutions will agree on the program before its implementation.

As a start of the program the PINRO director will visit IMR in 2012.

13. Ecosystem and fisheries effect on 2011 year class of cod

Within the frame of the joint research program, special attention will be given to the development of the 2011 year class of cod. This year class was measured to be the largest since 1970, and is coming at a time when the cod stock is at a high level. The focus will be research on ecosystem and fisheries effects of such large year classes of cod, in particular in a period with a large cod stock.

Further elaborations on how these issues shall be addressed, will be discussed and decided during the March meeting in Norway in 2012, and the results reported to the 41st session of the joint Norwegian – Russian Fisheries Commission in October 2012.

14. Research on benthic animals

The program on investigations of benthic organisms is ongoing and further plans were discussed 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.

IMR and PINRO agreed to have the "geo-bio mapping" workshop (HAV 5 project under the joint Russian Norwegian environmental commission) in the localities of PINRO during 2011.

15. 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-15-01		
Organization:	PINRO, VNIRO, Norw. Dir. of Fisheries.,		
Time period:	January - April	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-15-02		
Organization:	PINRO, VNIRO, Norw. Dir. of Fisheries,		
Time period:	September - December	Vessel:	Rented 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.		

16. Joint project “The Barents Sea Ecosystem Book”

The joint book on the Barents Sea, ”The Barents Sea – Ecosystem, resources, management”, celebrating more than half a century of Russian-Norwegian cooperation in marine research, is close to being finished and a preprint was presented by the editors at the Commission meeting. The book will have more than 800 pages and involves 51 Norwegian authors (mainly from IMR) and 53 Russian authors (from PINRO). The book is delayed by about a year compared to the original plan, but has been concluded within a period no longer than normal for a monography of this type and size. The book gives a historic review of the cooperation and presents the vast knowledge obtained through joint research efforts in the Barents Sea area and also describes methods and models

applied in the research. It is expected to 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.

17. 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. This work will both expand the existing genetic baseline in northern Norway, as well as analyze samples from a number of Russian rivers with the objective of developing a model for coastal migration of returning spawners to the northern salmon rivers and providing a more informed basis for the management of the coastal fisheries. DNA will be extracted from the samples using methods yielding high quality DNA for later storage and the DNA analyzed for variation of microsatellite markers. IMR will conduct genetic analyses of the samples and provide PINRO with the data from the analysis. The subsequent interpretation of the data will be conducted in collaboration.

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.

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

At the March meeting in Murmansk in 2011 IMR presented their vision for the implementing of genetic stock identification into fisheries management. IMR invited PINRO to contribute to this work of collecting samples from most important marine species throughout their ranges Parties would like to create a database over these samples and perform population genetic studies on these samples and in that way contributing to improved management. IMR have this year started this process and will be collecting samples from 1-2 species each year through scientific cruises, reference fishing fleet and international network. In 2011 there has been a sampling program for cod in the whole Barents Sea area.

A new project has been proposed to the scientific group and the main idea of the project is to explore the genetic polymorphism of Atlantic cod and to compare samples from different areas of the Barents Sea and adjacent waters. The collaboration institutions are: Laboratory of population biology (VNIRO - Russia) – and the Genetic laboratory (IMR, Tromsoe - Norway). A project plan will be prepared and the project is planned to be conducted in 2012.

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.

18. Investigations of cartilaginous fishes in Barents Sea

Russian and Norwegian scientists 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.

19. 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 each party to carry out all tasks described in "Joint Norwegian – Russian Scientific Research Program on Living Marine Resources in 2012" 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, "Grey zone", international waters ("Loophole") and Svalbard (Spitsbergen) area.

To solve these tasks the following catch quantities are decided for each party for 2012:

- 7 000 tonnes of cod in addition to volumes mentioned in Appendix 3
- 4 000 tonnes of haddock in addition to volumes mentioned in Appendix 3
- 5 000 tonnes of capelin in addition to volumes mentioned in Appendix 3
- 750 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 - 250
  - Redfish *S. mentella* - 100
  - Redfish *S. marinus* - 30
  - Northern wolffish - 650
  - Spotted catfish - 440
  - Atlantic wolffish - 5
  - Long rough dab - 120
  - Skates - 5
  - Sea plaice - 500

Both Parties will make all efforts to fulfil their respective parts 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.