

**JOINT RUSSIAN – NORWEGIAN SCIENTIFIC RESEARCH PROGRAM ON LIVING  
MARINE RESOURCES IN 2010**

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

This program contains the investigations to be carried out in 2010 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 Tromsø, Norway 16-19 March 2010 to discuss joint research programs, results from surveys and investigations in 2009/2010 and to coordinate survey plans for the rest of 2010. 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 2009, 5 reports have been issued in the Joint IMR-PINRO report series during 2008-2009.

A preliminary program for the planned surveys and cooperation for 2010 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:	Internal IMR survey report, ICES AFWG 2010		

Nation:	Norway	Survey title:	Cod spawning stock
Reference No.:	N-2-02		
Organization:	IMR		
Time period:	March	Vessel:	R.V. "Håkon Mosby"
Target species:	Cod	Secondary species:	Haddock, saithe
Area:	Spawning areas Troms – Møre		
Purpose:	Acoustic survey of the Norwegian coastal Cod spawning stock. Investigations on maturity, fecundity and egg abundance.		
Reported to:	Internal IMR survey report, ICES AFWG 2010		

Nation:	Norway	Survey title:	Fjord and coastal ecosystem survey
Reference No.:	N-2-03		
Organization:	IMR		
Time period:	October-November November-December	Vessel:	R.V. "Johan Hjort" R.V. "Jan Mayen"
Target species:	Saithe, coastal cod, 0-group herring, sprat	Secondary species:	Haddock, <i>Sebastes marinus</i>
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:	Internal IMR survey report, ICES WGWISE 2011, ICES AFWG 2011		

### ***Russian investigations***

Nation:	Russia	Survey title:	Collection of data on CPUE, biological data on species, sex and age composition, Greenland halibut catches for the stock assessment
Reference No.:	R-2-01		
Organization:	PINRO		
Time period:	January-March April-June	Vessel:	2 trawlers
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes, redfishes ( <i>S. mentella</i> , <i>S. marinus</i> ), other demersal fish
Area:	Exclusive Economic Zone of Norway		
Purpose:	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:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Collection of data on CPUE, biological data on species, sex and age composition, Greenland halibut catches for the stock assessment
Reference No.:	R-2-02		
Organization:	PINRO		
Time period:	January-March April-June	Vessel:	2 trawlers
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes, redfishes ( <i>S. mentella</i> , <i>S. marinus</i> ), other demersal fish
Area:	Spitsbergen area, "Grey zone"		
Purpose:	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:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Collection of data on CPUE, biological data on species, sex and age composition, Greenland halibut catches for the stock assessment
Reference No.:	R-2-03		
Organization:	PINRO		
Time period:	July-September October-December	Vessel:	2 trawlers
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes, redfishes ( <i>S. mentella</i> , <i>S. marinus</i> ), other demersal fish
Area:	Exclusive Economic Zone of Norway		
Purpose:	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:	Internal PINRO survey report, ICES AFWG in 2011		

Nation:	Russia	Survey title:	Collection of data on CPUE, biological data on species, sex and age composition, Greenland halibut catches for the stock assessment
Reference No.:	R-2-04		
Organization:	PINRO		
Time period:	July-September October-December	Vessel:	2 trawlers
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes, redfishes ( <i>S. mentella</i> , <i>S. marinus</i> ), other demersal fish
Area:	Spitsbergen area, "Grey zone"		
Purpose:	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:	Internal PINRO survey report, ICES AFWG in 2011		

Nation:	Russia	Survey title:	Refinement of methods for Greenland halibut stock assessment by long-line, CPUE
Reference No.:	R-2-05		
Organization:	PINRO		
Time period:	January-December	Vessel:	1 long-liner and 1 trawler
Target species:	Greenland halibut	Secondary species:	Cod, haddock, catfishes
Area:	Exclusive Economic Zone of Norway, Spitsbergen area, "Grey zone"		
Purpose:	Investigation into the stock status, year-to-year dynamics of catch per unit effort, comparative fishing efficiency "long-line – trawl".		
Reported to:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Evaluation of resources for long-line fishery. Investigation of species and sex-size compositions in long-line and trawl catches.
Reference No.:	R-2-06		
Organization:	PINRO		
Time period:	January-December	Vessel:	2 long-liners
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Catfishes, long rough dab, redfishes ( <i>S. mentella</i> , <i>S. marinus</i> ) and other fish
Area:	Exclusive Economic Zone of Norway, Spitsbergen area, Exclusive Economic Zone of the Russian Federation and "Grey zone"		
Purpose:	Elaboration of recommendations on effective use of resources for long-line fishery.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Complex investigation of stocks of commercial species based on modern research technology.
Reference No.:	R-2-07		
Organization:	VNIRO, PINRO		
Time period:	January-December	Vessel:	5 vessels, trawl and long-line
Target species:	Cod, haddock	Secondary species:	Catfishes, long rough dab, Greenland halibut, saithe and other species
Area:	Exclusive Economic Zone of the Russian Federation and Norway, "Grey zone", international waters, Spitsbergen area		
Purpose:	Complex investigation of stocks of commercial species based on modern research technology. Collection of CPUE data, biological state during wintering and spawning, species composition of catches, including histological data.		
Reported to:	Internal VNIRO survey report, PINRO, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Assessment of stocks and distribution of commercial species of living marine resources. Collection of CPUE data
Reference No.:	R-2-08		
Organization:	PINRO		
Time period:	January-March April-June July-September October-December	Vessel:	R.V. "Vilnjus" and 5 trawlers
Target species:	Cod, haddock	Secondary species:	Catfishes, long rough dab, saithe
Area:	"Grey zone", 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:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Assessment of stocks and distribution of commercial species of living marine resources. Collection of CPUE data
Reference No.:	R-2-09		
Organization:	PINRO		
Time period:	January-March April-June July-September October-December	Vessel:	R.V. "Vilnjus" and 5 trawlers
Target species:	Cod, haddock	Secondary species:	Catfishes, long rough dab, saithe
Area:	Exclusive Economic Zone of Norway, "Grey zone", international waters and Spitsbergen area		
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:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	Survey for haddock, saithe and other demersal species
Reference No.:	R-2-10		
Organization:	PINRO		
Time period:	May-June	Vessel:	R.V. "Fridtjof Nansen", R.V. "Professor Boiko"
Target species:	Haddock, saithe, cod	Secondary species:	Redfishes, northern wolffish, spotted catfish, long rough dab
Area:	The Barents Sea basin including 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 migrating for feeding from the EEZ of Norway to EEZ of the Russian Federation and the "Grey Zone"; oceanography, investigation of possibilities and conditions of summer and autumn fishery for haddock and saithe in the EEZ of the Russian Federation.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2011		

Nation:	Russia	Survey title:	Testing of methods to assess juveniles of saithe, cod, haddock and other demersal species in Murman fjords
Reference No.:	R-2-11		
Organization:	PINRO		
Time period:	August-September	Vessel:	1 trawler
Target species:	Cod, haddock, saithe	Secondary species:	Plaice, redfish ( <i>Sebastes mentella</i> ), long rough dab, northern wolffish, spotted catfish
Area:	The Barents Sea basin, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Assessment of relative abundance of juvenile saithe, cod, haddock and other demersal species in Murman fjords, collection of data on biology, distribution and density of concentrations.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2011		

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-2-12		
Organization:	PINRO		
Time period:	October-December	Vessel:	R.V. "Fridtjof Nansen" R. V. "Vilnjus"
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Northern wolffish, spotted catfish, redfish ( <i>S. mentella</i> ), saithe, long rough dab
Area:	The Barents Sea basin, Exclusive Economic Zone of Norway, Spitsbergen area, "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 cod, haddock, Greenland halibut, redfishes, catfishes, long rough dab and other fish species in the survey area; oceanography, estimation of zooplankton biomass; parasitologic and faunistic studies, study of "predator-prey" relations.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2011		

Nation:	Russia	Survey title:	Acoustic survey for prespawning capelin
Reference No.:	R-2-13		
Organization:	PINRO		
Time period:	January - March	Vessel:	R. V. "Fridtjof Nansen" or R. V. "Vilnjus", 2 trawlers
Target species:	Capelin	Secondary species:	Herring, cod, polar cod, haddock
Area:	Russian Exclusive Economic Zone, Norwegian Exclusive Economic Zone, "Grey" zone, international waters, Spitsbergen area.		
Purpose:	Spawning biomass and abundance estimating, distribution, migration, approaching the coast for spawning, oceanography		
Reported to:	Internal PINRO survey report, JRNFC, ICES AFWG in 2010		

Nation:	Russia	Survey title:	Trawl-Acoustic survey for spawning concentrations of herring in the Norwegian Sea
Reference No.:	R-2-14		
Organization:	PINRO		
Time period:	February-March	Vessel:	2 trawlers
Target species:	Herring	Secondary species:	Blue whiting, mackerel, saithe, cod
Area:	Norwegian Sea including areas under jurisdiction of foreign states, international waters		
Purpose:	Study of distribution and migration of spawning and post-spawning herring in the Norwegian Sea, collection of biological data on size-age composition and fecundity of fish.		
Reported to:	Internal PINRO survey report, ICES WGWIDE in 2010		

Nation:	Russia	Survey title:	Delimitation of mackerel feeding concentrations; study of mackerel feeding migration in the Norwegian Sea in summer
Reference No.:	R-2-15		
Organization:	PINRO		
Time period:	May-September	Vessel:	2 trawlers
Target species:	Mackerel	Secondary species:	Blue whiting, herring
Area:	Fishing zone of the Faroe Islands, Exclusive Economic Zone of Norway, international waters of the Norwegian Sea		
Purpose:	Study of mackerel feeding migration in the Norwegian Sea in summer and the effect of biotic and abiotic factors on spatial and temporal distribution of pelagic fish.		
Reported to:	Internal PINRO survey report, ICES WGWIDE in 2010		

Nation:	Russia	Survey title:	Complex aerial survey on the research into distribution and biomass assessment of feeding mackerel within the frames of international herring survey in the Barents and Norwegian Seas (ecosystem survey)
Reference No.:	R-2-16		
Organization:	PINRO		
Time period:	July-August	Vessel:	2 trawlers, 1 R. V. Airborne laboratory
Target species:	Mackerel	Secondary species:	Herring, blue whiting, marine mammals, seabirds, chlorophyll, zooplankton, oceanographic parameters on the sea surface.
Area:	Fishing zone of the Faroe Islands, international waters of the Norwegian Sea, Exclusive Economic Zone of Norway and Iceland, UK Fishery zone		
Purpose:	Distribution of feeding mackerel and other pelagic fish, approaches to assess biomass of feeding mackerel; abundance, distribution and species composition of marine mammals and seabirds; environmental parameters on the sea surface including identification of areas with high biological productivity.		
Reported to:	Internal PINRO survey report, ICES PGNAPES, ICES WGWIDE, NAMMCO, NEAFC		

Nation:	Russia	Survey title:	Study of formation of herring concentrations
Reference No.:	R-2-17		
Organization:	PINRO		
Time period:	August-October	Vessel:	2 trawlers
Target species:	Herring	Secondary species:	Blue whiting, saithe, mackerel
Area:	Norwegian Sea, Exclusive Economic Zone of Norway, Spitsbergen area, international waters		
Purpose:	Study of formation of herring concentrations during feeding period, herring distribution and behaviour in dependence on the environmental conditions, biological state and intensity of fishing. Collection of fisheries and biological data necessary for the stock assessment.		
Reported to:	Internal PINRO survey report, ICES WGWIDE in 2010		

Nation:	Russia	Survey title:	Improvement of a method to assess biomass of feeding mackerel
Reference No.:	R-2-18		
Organization:	VNIRO, PINRO		
Time period:	June-July	Vessel:	2 rented vessels
Target species:	Mackerel	Secondary species:	Herring, blue whiting
Area:	Norwegian Sea, international waters		
Purpose:	Estimation of biomass of feeding mackerel in the international waters. Study of population structure of the mackerel stock.		
Reported to:	Internal VNIRO survey report, PINRO, ICES WGWIDE in 2010 and 2011		

Nation:	Russia	Survey title:	Study of distribution of capelin fishable concentrations
Reference No.:	R-2-19		
Organization:	PINRO		
Time period:	January-April October-December	Vessel:	3 trawlers
Target species:	Capelin	Secondary species:	Polar cod
Area:	The Barents Sea basin, Spitsbergen area, "Grey zone", international waters, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Study of distribution of capelin fishable concentrations, migration routes and rates and conditions of formation of concentrations in dependence on biological state of the object and abiotic environmental factors.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2010		

Nation:	Russia	Survey title:	International ecosystem survey of herring and blue whiting stocks in the Barents and Norwegian Seas
Reference No.:	R-2-20		
Organization:	PINRO		
Time period:	May-June	Vessel:	R.V. "Fridtjof Nansen", R. V. "Vilnjus"
Target species:	Herring, blue whiting	Secondary species:	Other pelagic species
Area:	The Barents and Norwegian Seas, Exclusive Economic Zone of Norway, Exclusive Economic Zone of the Russian Federation, "Grey zone", internal sea waters and territorial sea of the Russian Federation		
Purpose:	Acoustic survey of the stocks, oceanography.		
Reported to:	Internal PINRO survey report, ICES WGWIDE, ICES PGNAPES in 2010		

Nation:	Russia	Survey title:	Trawl-acoustic survey for redfish ( <i>Sebastes mentella</i> ) of the Norwegian-Barents Sea population. Evaluation of strength of redfish yearclasses
Reference No.:	R-2-21		
Organization:	PINRO		
Time period:	April-May	Vessel:	trawler
Target species:	Redfish ( <i>Sebastes mentella</i> )	Secondary species:	Redfish ( <i>Sebastes marinus</i> ), cod, haddock, northern wolffish, Greenland halibut
Area:	Exclusive Economic Zone of Norway and Spitsbergen area		
Purpose:	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 to enhance the database.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2010 and 2011		

Nation:	Russia	Survey title:	International trawl-acoustic survey for pelagic fish
Reference No.:	R-2-22		
Organization:	PINRO		
Time period:	June-August	Vessel:	trawler
Target species:	Pelagic fish survey	Secondary species:	Herring, mackerel, blue whiting, other pelagic fish, marine mammals, seabirds, chlorophyll, zooplankton
Area:	The Norwegian Seas, Fishing zone of the Faroe Islands, international waters, Exclusive Economic Zone of Norway, UK fishery zone		
Purpose:	Stock assessment, delimitation of feeding concentrations, study of feeding migration and the effect of biotic and abiotic factors on spatial and temporal distribution of pelagic fish in summer in the Norwegian Sea; oceanographic and hydrobiological surveys.		
Reported to:	Internal PINRO survey report, ICES WGWIDE, ICES PGNAPES in 2010, NEAFC		

Nation:	Russia	Survey title:	Investigation of intra-annual spatio-temporal distribution of elder cohorts of cod.
Reference No.:	R-2-23		
Organization:	«National Fish Resources»		
Time period:	January-March, April-June, July-December	Vessel:	1 trawler, 1 trawler, 1 long-liner
Targeting species:	Cod	Secondary species:	Haddock, Northern wolffish, spotted catfish, Greenland halibut, redfish ( <i>S. mentella</i> ), other demersal fish
Area:	Exclusive Economic Zone of Norway, Exclusive Economic Zone of the Russian Federation, «Grey zone», 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:	Internal «National Fish Resources» survey report, Federal Agency for Fisheries, VNIRO, PINRO, 2010.		

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-2-24		
Organization:	«National Fish Resources»		
Time period:	October-November	Vessel:	1 trawler
Targeting species:	Greenland halibut	Secondary species:	Cod, Haddock, catfishes, redfish ( <i>S. mentella</i> , <i>s.marinus</i> ), other demersal fish.
Area:	Exclusive Economic Zone of Norway and Spitsbergen area.		
Purpose:	Development of recommendations for rational exploitation of the halibut stock on the basis of analysis of spatio-temporal distribution of the commercial concentrations depending on the variability of the abiotic factors basing on new informational technologies.		
Reported to:	Internal «National Fish Resources» survey report, Federal Agency for Fisheries, VNIRO, PINRO, 2010.		

Nation:	Russia	Survey title:	Investigation of spatio-temporal distribution of feeding aggregations of herring and blue whiting in the Norwegian Sea.
Reference No.:	R-2-25		
Organization:	«National Fish Resources»		
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 distribution of blue whiting and herring based on the synoptic monitoring methodology.		
Reported to:	Internal «National Fish Resources» survey report, Federal Agency for Fisheries, VNIRO, PINRO, 2010.		

Nation:	Russia	Survey title:	Investigation of physical mechanisms of formation of high concentrations of feeding mackerel in the Norwegian Sea.
Reference No.:	R-2-26		
Organization:	“National Fish Resources”		
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 patterns of spatio-temporal dynamics of distribution of commercial concentrations of mackerel, in relation with the weather conditions in the synoptic-scale variability, development of short-term advices for the fishery.		
Reported to:	Internal «National Fish Resources» survey report, Federal Agency for Fisheries, VNIRO, PINRO, 2010.		

### ***Joint investigations***

Nation:	Norway/Russia	Survey title:	Joint Winter Survey
Reference No.:	J-2-01*		
Organization:	IMR, PINRO		
Time period:	January-March	Vessel:	R.V. “Jan Mayen” R.V. “Johan Hjort” R.V. “Fridtjof Nansen” R.V. “Vilnjus”
Target species:	Cod, haddock, capelin, herring	Secondary species:	Redfishes ( <i>Sebastes mentella</i> , <i>Sebastes marinus</i> ), Greenland halibut, catfishes, saithe
Area:	Exclusive Economic Zone of the Russian Federation and Exclusive Economic Zone of Norway, “Grey zone”		
Purpose:	Distribution and stock assessment, collection of biological samples. Multi-species interactions with focus on cod diet, oceanography and plankton.		
Reported to:	Joint IMR/PINRO Report Series, ICES AFWG in 2010		

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

Nation:	Norway/Russia	Survey title:	Survey of blue whiting spawning areas
Reference No.:	J-2-02		
Organization:	IMR, PINRO		
Time period:	March-April	Vessel:	R. V. "G. O. Sars" 1 Russian R.V.
Target species:	Blue whiting	Secondary species:	Other pelagic species
Area:	To the west of British Islands, international waters, UK and Faroese fishery zones, Exclusive Economic Zone of the Ireland and Norway		
Purpose:	Estimation of abundance, biomass and distribution of spawning blue whiting, oceanography, plankton, survey of the Rockall haddock, methods for acoustic survey, oceanography and plankton.		
Reported to:	Joint IMR/PINRO survey report, ICES WGWIDE, ICES PGNAPES in 2010		

Nation:	Russia/Norway	Survey title:	International ecosystem survey of herring and blue whiting stocks in the Norwegian Sea
Reference No.:	J-2-03		
Organization:	PINRO, IMR		
Time period:	May - June	Vessel:	R. V. "Fridtjof Nansen", R.V."Vilnjus" R.V. "G.O.Sars" 3 other RVs
Target species:	Herring, blue whiting	Secondary species:	Other pelagic species
Area:	The Norwegian Seas, fishing zone of the Faroe Islands, international waters, Exclusive Economic Zone of Norway, UK fishery zone		
Purpose:	Acoustic survey of the stocks, oceanography.		
Reported to:	Internal PINRO survey report, ICES WGWIDE, ICES PGNAPES in 2010		

Nation:	Norway/Russia	Survey title:	Joint survey for herring, mackerel, minke wale etc in the Norwegian Sea
Reference No.:	J-2-04		
Organization:	IMR, PINRO		
Time period:	June - August	Vessel:	2 vessels chartered by IMR R. V. "Fridtjof Nansen" or R.V."Vilnjus"and 2 chartered vessels Airborne laboratory
Target species:	Mackerel	Secondary species:	Herring, blue whiting, other pelagic fishes, marine mammals, seabirds, chlorophyll, zooplankton, oceanographic parameters
Area:	The Norwegian Sea, fishing zone of the Faroe Islands, international waters, exclusive Economic Zone of Norway and Iceland, UK fishery zone		
Purpose:	Distribution and approaches to assess biomass of feeding mackerel; sighting survey of minke whale, abundance, distribution and species composition of marine mammals and seabirds; a complex of oceanographic and hydrobiological data, joint experimental and calibration works.		
Reported to:	Joint IMR/PINRO survey report, ICES WGs, NAMMCO, NEAFC		

Nation:	Norway/Russia	Survey title:	Joint annual ecosystem survey, autumn
Reference No.:	J-2-05		
Organization:	IMR, PINRO		
Time period:	August-September	Vessel:	R.V. "G.O Sars" R.V. "Johan Hjort" R.V. "Jan Mayen" R.V. "Fridtjof Nansen" R.V. "Vilnjus" and 1 chartered vessel Airborne laboratory
Target species:	Greenland halibut, redfishes, shrimp, herring, capelin, cod, haddock, polar cod, catfishes, 0-group of different species	Secondary species:	Other pelagic and demersal species, benthic organisms, sea mammals and birds, oceanographic and hydrobiological parameters
Area:	The Norwegian, Barents and Kara Seas, Exclusive Economic Zone of the Russian Federation, "Grey zone", Exclusive Economic Zone of Norway, international waters, area adjacent to Spitsbergen and territorial waters of the Russian Federation		
Purpose:	Abundance and distribution of Greenland halibut (including juveniles north and east of Spitsbergen ), redfish <i>Sebastes mentella</i> , <i>Sebastes marinus</i> , shrimp, herring, capelin, polar cod, cod, haddock, catfishes, 0-group of different species. Oceanography, plankton, marine mammals, seabirds, species interactions, sampling for determining pollution levels.		
Reported to:	Joint IMR/PINRO Report Series, ICES WGs in 2011, ACOM in autumn 2010, WGHARP, NAMMCO		

### 3. Research program on Greenland Halibut

The Joint Russian-Norwegian Fisheries Commission at its 34<sup>th</sup> session (2005) requested scientists from Russia and Norway to develop a joint Russian-Norwegian research program for Greenland halibut aimed at improvement of its stock assessment methods and elaboration of optimal management strategy for this stock (Appendix 10 to the Protocol).

The content of the program was agreed at the Russian-Norwegian meeting of scientists in March 2006 and approved at the 35<sup>th</sup> session of the Joint Russian-Norwegian Fisheries Commission (Appendices 10 and 12 to the Protocol).

The program includes the following studies:

- improve the methods of ageing;
- improve methods of survey and aggregation of data from different surveys;
- make quantitative estimation of Greenland halibut stock which is distributed in pelagic layers;
- investigate sexual dimorphism and effect of fisheries on population structure;
- improve methods of stock assessment;
- develop an optimal long-term harvesting strategy.

The program is to be implemented in 2007-2009. A final report on the program will be presented to the Joint Russian-Norwegian Fisheries Commission in 2010.

#### 4. Red king crab (*Paralithodes camtschaticus*)

Having considered the report and resolution of 14<sup>th</sup> Russian-Norwegian Fishery Science Symposium on red king crab and snow crab in the Barents Sea (Moscow, 11-13 August, 2009) the Parties noted effectiveness of specialized crab symposiums between the scientists of the two countries and important role of such meetings in the exchange of scientific information and coordination of national and joint scientific researches of the crabs in the Barents Sea.

The Sides agreed that such Russian-Norwegian Symposiums on crabs in the Barents Sea shall be held regularly at least once every third year. Scientists from other institutions suggested by PINRO, VNIRO and IMR may attend these Symposiums.

Both Parties exchanged information about the ongoing national Red king crab research and the plans for 2010.

The Sides instructed the scientists of both countries to elaborate a new 3-year research program on red king crab and snow crab in the Barents Sea and adopt this program at the meeting of scientists in March, 2010.

##### *Norwegian investigations*

Nation:	Norway	Survey title:	Red king crab 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:	Internal 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:	Fjords and coast in Finnmark		
Purpose:	Methodological investigations		
Reported to:	Internal 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 medium-tonnage vessel
Target species:	Red king crab	Secondary species:	Snow crab, cod, haddock
Area:	The Barents and White Seas, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of data for assessment of the total and fishable stock of the red king crab; study of the crab distribution in the period before commencement of its fishery; collection of biological data, crab tagging to study migration, underwater video.		
Reported to:	Internal PINRO survey report, IMR		

Nation:	Russia	Survey title:	Red king crab trap survey
Reference No.:	R-4-02		
Organization:	VNIRO, PINRO		
Time period:	January-March, September - December	Vessel:	4 vessels
Target species:	Red king crab	Secondary species:	
Area:	Exclusive Economic Zone, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Study of the distribution of red king crab. Stock assessment. Trap survey.		
Reported to:	Internal VNIRO survey report, PINRO		

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 trawler
Target species:	Red king crab	Secondary species:	Cod, haddock and other demersal fish species
Area:	The Barents and White Seas, 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:	Internal PINRO survey report, IMR		

Nation:	Russia	Survey title:	SCUBA-diving survey of red king crab
Reference No.:	R-4-04		
Organization:	VNIRO, PINRO		
Time period:	June-September	Vessel:	2 vessels, boats SCUBA-divers
Target species:	Red king crab	Secondary species:	
Area:	Internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of biological data (size, sex and age composition of aggregations and other data necessary for the stock assessment and estimation of TAC). Estimation of juvenile red king crab abundance.		
Reported to:	Internal VNIRO survey report, PINRO		

Nation:	Russia	Survey title:	SCUBA-diving survey of red king crab
Reference No.:	R-4-05		
Organization:	PINRO		
Time period:	July	Vessel:	Vessel, boat SCUBA-divers
Target species:	Red king crab	Secondary species:	
Area:	Internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of biological data for the stock assessment and estimation of TAC. Estimation of juvenile red king crab abundance. Investigations of feeding of the red king crab in coastal area.		
Reported to:	Internal PINRO survey report, IMR		

Nation:	Russia	Survey title:	Collection of data on CPUE. Biological sampling
Reference No.:	R-4-06		
Organization:	PINRO		
Time period:	January-December	Vessel:	5 vessels
Target species:	Red king crab	Secondary species:	
Area:	Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation		
Purpose:	Collection of data on catch per unit effort, study of biology, abundance dynamics, migration, feeding, trophic links with local species and distribution of the crab. Evaluation of the red king crab effect on the benthos ecosystem.		
Reported to:	Internal PINRO report		

Nation:	Russia	Survey title:	Stock assessment of the snow crab by trawl survey
Reference No.:	R-4-07		
Organization:	PINRO		
Time period:	September- November	Vessel:	1 medium-tonnage vessel
Target species:	Snow crab	Secondary species:	Red king 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:	Collection of data for assessment of the total stock of the snow crab; study of the crab distribution; collection of biological data.		
Reported to:	Internal PINRO survey report, IMR		

## 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.

### *Norwegian investigations:*

Nation:	Norway	Survey title:	Shrimp trawl selectivity
Reference No.:	N-5-01		
Organization:	IMR		
Time period:	May -June	Vessel:	Hired vessel
Target species:	Cod	Secondary species:	
Area:	The Barents sea		
Purpose:	Selection experiments, pelagic trawl		
Reported to:	Internal IMR survey report		

Nation:	Norway	Survey title:	Comparison of catch efficiency for pelagic and bottom trawls
Reference No.:	N-5-02		
Organization:	IMR		
Time period:	October	Vessel:	R.V."G.O.Sars"
Target species:	Cod, haddock	Secondary species:	Saithe
Area:	The Barents Sea		
Purpose:	Pelagic trawl catch efficiency and selectivity		
Reported to:	Internal IMR survey report		

***Russian investigations:***

Nation:	Russia	Survey title:	Study of comparative fishing efficiency “trawl – long-line”. Refinement of methods for Greenland halibut stock assessment
Reference No.:	R-5-01		
Organization:	PINRO		
Time period:	May-December	Vessel:	1 long-liner 1 trawler
Target species:	Greenland halibut, cod, haddock	Secondary species:	Catfishes, skates
Area:	Exclusive Economic Zone of Norway and Spitsbergen area		
Purpose:	Collection of data to validate a method of trawl and long-line survey of Greenland halibut stocks. Collection of data to reveal peculiarities of bottom fish long-lining selectivity, to substantiate a procedure of trawl – long-line survey for Greenland halibut stocks.		
Reported to:	Internal PINRO survey report, ICES AFWG in 2011		

Nation:	Russia	Survey title:	Selectivity studies of new sorting systems and codends, improvement of their design.
Reference No.:	R-5-02		
Organization:	PINRO		
Time period:	January -December	Vessel:	1 trawler
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Saithe, northern wolffish, spotted catfish
Area:	Exclusive Economic Zone of the Russian Federation		
Purpose:	Evaluation of actual results of application of technical regulatory measures in the fishery for cod and haddock in areas with different regimes of their application, including midwater trawls. Evaluation of application of modern materials in sorting systems, improvement of system design. Study of effect of new materials and fishing gear design on selectivity characteristics.		
Reported to:	Internal PINRO survey report, JRNFC		

Nation:	Russia	Survey title:	Selectivity studies of new sorting systems and codends, improvement of their design.
Reference No.:	R-5-03		
Organization:	PINRO		
Time period:	January -December	Vessel:	1 trawler
Target species:	Cod, haddock, Greenland halibut	Secondary species:	Saithe, northern wolffish, spotted catfish
Area:	The Barents Sea, Spitsbergen area, Exclusive Economic Zone of Norway		
Purpose:	Evaluation of actual results of application of technical regulatory measures in the fishery for cod and haddock in areas with different regimes of their application including midwater trawls. Evaluation of application of modern materials in sorting systems, improvement of system design. Study of effect of new materials and fishing gear design on selectivity characteristics.		
Reported to:	PINRO survey report for internal use, JRNFC		

Nation:	Russia	Survey title:	Study of a possibility to use Danish seine
Reference No.:	R-5-04		
Organization:	PINRO		
Time period:	April -November	Vessel:	1 Danish seiner
Target species:	Cod	Secondary species:	Saithe, northern wolffish, spotted catfish, flatfishes
Area:	The Barents Sea, Exclusive Economic Zone of the Russian Federation, internal sea waters and territorial sea of the Russian Federation,		
Purpose:	Study of a possibility to use Danish seine with the purpose of application of resource-saving technology to fisheries.		
Reported to:	Internal PINRO survey report, JRNFC		

## 6. Optimal harvesting of commercial species in the Barents Sea ecosystem

According to the mandate from the Joint Norwegian-Russian Fisheries Commission this project has been going since 2005 and is scheduled to continue until 2014. The objective is to evaluate the long-term yield of the main commercial species in the Barents Sea. The work involves several projects and researchers that may work independently of each other. The same data will be used in different sub-projects. However the different models (Gadget, STOCOBAR, Bifrost and EcoCod) are applied. The study on comparative analysis of these models and producing the joint outputs will be done. In the end, the different sub-projects will be synthesized to give an overall picture of the ecosystem and what long-term yield from each stock might be expected when taking into account its interaction with other stocks and with the environment. Details of the work in 2009 are given in the report from the Basic Document Working Group (Appendix 13).

The Parties agreed to ask the scientists of Russia and Norway to analyze available knowledge on biology and distribution of capelin in order to advice on the areas where the fishery for capelin can take place to avoid catches of immature and young fish.

## 7. Monitoring of pollution levels in the Barents Sea

PINRO and IMR will continue to monitor pollution levels in accordance with national programs. Scientists from both institutes plan to discuss and exchange results from investigations during the meeting of scientists in March 2010.

The investigations of both countries are based on the material collected during the surveys in the Barents Sea (see chapter 2 of this appendix).

IMR, PINRO and VNIRO scientists will probably be involved in the development of a new joint programme for measurement and reporting of contaminants in seafood and the marine environment under the domain of the Food Control Authorities in Norway and Russia.

## 8. Investigations on age and growth of fish

The Parties will continue the cooperation on establishing an international historic database on growth in length and weight of fish (cod, haddock, redfish, capelin) as well as catch statistics archived at PINRO and IMR. The exchange of age reading specialists and material will continued in future according to the established routines. The percent agreement between the PINRO and IMR age readings 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) frequencies to every second year. Next meeting will then be held in Murmansk in 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 harbor 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 resources. 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 2010 include sampling of biological material from harp seals during commercial sealing in the southeastern Barents Sea, from hooded seals during a research survey in the Greenland Sea, and from grey seal research surveys in Norwegian coastal areas. Surveys to estimate abundance of harbor seals will be carried out in Norwegian coastal areas, whereas line transect sighting surveys for minke whales (and other whales) will be conducted in the Norwegian Sea in combined surveys which also include monitoring of pelagic fish species such as herring and mackerel. Samples to assess minke whale diet and effect of seismic activity will be obtained from the commercial hunt. Satellite tags will be deployed on minke whales and other whale species in the Barents Sea. Studies of harbor seal ecology will be conducted with telemetric tagging of seals, scat sampling and concurrent mapping of resources in the Porsangerfjord, Finnmark.

In 2010, the Russian Party will continue to carry out annual multispectral aerial surveys of harp seals of the White Sea population on their whelping patches in the White Sea as well as during their feeding migrations, using the Russian research aircraft. Besides, complex airborne surveys are planned during investigations of white whale as well as joint surveys on the ecology of minke whales and other whales and seals in the framework of the annual joint ecosystem surveys, and also during dedicated aerial surveys. 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. Alternatively, the parties agreed to organize a cruise in late May / early June in 2010, to deploy satellite tags on harp seals on ice in the Hopen area. Joint observations of marine mammals on the ecosystem surveys will continue. If funding becomes available, it is planned to carry out aerial surveys to investigate whether relocation of breeding has occurred for parts of the harp and hooded seal populations in the Greenland Sea, and for harp seals in the Barents sea. If new breeding patches are observed, this will have considerable implications for future research, management and hunting activities in the area.

### *Norwegian investigations*

Nation:	Norway	Survey title:	Monitoring of harbor seal ecology
Reference No.:	N-9-01		
Organization:	IMR		
Time period:	January-October	Vessel:	Research vessel "Johan Ruud"
Target species:	Harbour seals	Secondary species:	
Area:	Norwegian coast (Porsangerfjord in Finnmark)		
Purpose:	Telemetric tagging of seals, scat sampling, concurrent estimates of prey availability, repeated surveys within the given period).		
Reported to:	Internal IMR survey report, NAMMCO, ICES		

Nation:	Norway	Survey title:	Monitoring of biological parameters in Grey seals
Reference No.:	N-9-02		
Organization:	IMR		
Time period:	February-March	Vessel:	Rented vessel
Target species:	Grey seals	Secondary species:	
Area:	Norwegian coast		
Purpose:	Collection of necessary input data for modeling the grey seal population status and catch forecast.		
Reported to:	NAMMCO, ICES		

Nation:	Norway	Survey title:	Monitoring of biological parameters in harp seals
Reference No.:	N-9-03		
Organization:	IMR		
Time period:	March-April	Vessel:	1 sealer
Target species:	Harp seal	Secondary species:	
Area:	Southeastern part of the Barents Sea		
Purpose:	Collection of biological material from harp seals during commercial sealing.		
Reported to:	ICES, NAMMCO, JNRFC		

Nation:	Norway	Survey title:	Monitoring of biological parameters in hooded seals
Reference No.:	N-9-04		
Organization:	IMR		
Time period:	July	Vessel:	Research vessel ("Jan Mayen")
Target species:	Hooded seal	Secondary species:	
Area:	Greenland Sea		

Purpose:	Collection of biological material from hooded seals during a dedicated research cruise to the moulting areas of the species in drift ice areas east of Greenland.
Reported to:	ICES, NAMMCO, JNRFC

Nation:	Norway	Survey title:	Aerial survey harbour seals
Reference No.:	N-9-05		
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-9-06		
Organization:	IMR		
Time period:	April- May	Vessel:	1 rented vessel
Target species:	Minke whales	Secondary species:	
Area:	Norwegian Coast: Lofoten-Vesterålen		
Purpose:	Telemetric tagging of minke whales.		
Reported to:	IWC, NAMMCO		

Nation:	Norway	Survey title:	Ecological studies of minke whales
Reference No.:	N-9-07		
Organization:	IMR		
Time period:	May- July	Vessel:	Whalers
Target species:	Minke whales	Secondary species:	
Area:	Barents Sea - Spitsbergen		
Purpose:	Collection of material from whales taken in commercial hunt, material to assess diet and effect of seismic activity.		
Reported to:	IWC, NAMMCO		

***Joint Norwegian/Russian investigations:***

Nation:	Norway/Russia	Survey title:	Aerial survey to assess possible new harp and hooded seals breeding patches
Reference No.:	J-9-01		
Organization:	IMR, PINRO		
Time period:	March-April	Vessel:	Russian research aircraft
Target species:	Harp and hooded seals	Secondary species:	Other seal species, whales
Area:	The Denmark Strait		
Purpose:	To assess if harp and hooded seals may have established new breeding areas south of those traditionally used by the two species for breeding purposes in the Greenland Sea. The driving force behind such a shift maybe ice reductions.		
Reported to:	Joint IMR/PINRO survey report, JRNFC, ICESWGHARP, ICES AFWG, ICES WGMME, NAMMCO.		

Nation:	Russia/Norway	Survey title:	Harp seal tagging in the White Sea
Reference No.:	J-9-02		
Organization:	PINRO, IMR		
Time period:	February-May	Vessel:	1 helicopter, vessel, boats
Target species:	Harp seal	Secondary species:	
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.		
Reported to:	Joint IMR/PINRO survey report, JNRFC, ICES WGHARP, ICES AFWG, ICES WGMME, NAMMCO		

Nation:	Norway/Russia	Survey title:	Tagging of harp seals with satellite tags
Reference No.:	J-9-03		
Organization:	IMR, PINRO		
Time period:	May-June	Vessel:	Rented vessel
Target species:	Harp seal	Secondary species:	
Area:	Northern Barents Sea		
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.		
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 patches in the White Sea
Reference No.:	R-9-01		
Organization:	PINRO		
Time period:	February-March	Vessel:	Airborne laboratory
Target species:	Harp seal	Secondary species:	White whale and other species of marine mammals
Area:	The White Sea and the Barents Sea south-eastern part		
Purpose:	Study of distribution and estimation of number of the White Sea harp seal on whelping patches for estimation of pup production.		
Reported to:	Internal PINRO survey report, ICES WGHARP, ICES AFWG, ICES WGMME, JRNFC, NAMMCO		

Nation:	Russia	Survey title:	Investigation of reproduction biology and ecology of harp seal in the White Sea
Reference No.:	R-9-02		
Organization:	PINRO		
Time period:	February-May	Vessel:	Coastal and ice hunting, 1 helicopter 1 sealer or research vessel.
Target species:	Harp seal	Secondary species:	Bearded seal, white whale and other species of marine mammals
Area:	The White Sea		
Purpose:	Investigation of biology and ecology of harp seal in the White Sea, estimation of number of animals in the population, data for the ecosystem modeling.		
Reported to:	Internal PINRO survey report, ICES WGHARP, ICES WGMME, ICES AFWG, JRNFC, NAMMCO		

Nation:	Russia	Survey title:	Coastal research and observations in the White Sea and Barents Sea
Reference No.:	R-9-03		
Organization:	PINRO		
Time period:	April-September 4 expeditions of 20-30 days duration each	Vessel:	Coastal expedition with the use of available transport and motor boat "Zodiak"
Target species:	Harp seal, Minke whale, ringed and bearded Seals	Secondary species:	Other species of marine mammals
Area:	Coast of the Barents and White Seas		
Purpose:	Collection of biological data, study of distribution and migration routes, estimation of number, data for the ecosystem modeling.		
Reported to:	Internal PINRO survey report, ICES WGHARP, ICES AFWG, ICES WGMME, NAMMCO, JRNFC		

Nation:	Russia	Survey title:	Aerial survey of marine mammals within the frames of their complex estimation including annual Russian-Norwegian ecosystem research
Reference No.:	R-9-04		
Organization:	PINRO		
Time period:	May-September	Vessel:	2 vessels Research aircraft
Target species:	Minke whale, humpback whale, white-beaked dolphin, white whale	Secondary species:	Harp seal, walrus and other species of <i>Cetacea</i> and <i>Pinnipedia</i> , seabirds
Area:	The Barents Sea		
Purpose:	Study 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:	Internal 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:	March-December	Vessel:	Research and fisheries vessels
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 parameter
Area:	The White and Barents Seas		
Purpose:	Marine mammals study of 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:	Internal PINRO survey report, ICES AFWG, ICES WGMME, JRNFC, NAMMCO		

## 10. Investigations on survey methodology

To continue development a common methodology for acquisition and post-processing of data on estimation of target strength (TS) in respect of commercial fish species observed during surveys and establishment a joint database on TS estimates.

To continue investigations into trawl catchability used in surveys, applying underwater video and acoustic methods.

To continue work to study a possibility to aggregate acoustic and hauling data during trawl and

acoustic surveys.

Scientists from both countries supported research directions for using of special technical methods for study of marine mammals in the first remote sensing including LIDAR technology, especially as regards research on feeding mackerel in the Norwegian Sea.

Commercial CPUE data is an important source of information for stock assessment. However, methodology of the analysis of this data and procedure of their collection require further improvement.

The future investigations in these issues will be discussed by correspondence and during the March meeting 2010.

“The Norwegian Side informed about a new project using a low frequency acoustic system for monitoring abundance and behaviour of schooling pelagic fish. This is a joint project involving IMR and the Massachusetts Institute of Technology (MIT) in the US. The goal is to test the system off the Norwegian coast and in the Barents Sea. Scientists from Russia are invited to join the scientific team that will be established. A comprehensive description of the project plans and contact persons at IMR was given to the Russian side.”

## **11. Russian-Norwegian Fisheries Science Symposia**

The 13<sup>th</sup> Russian-Norwegian Symposium was held on 11-13 August 2009 in Moscow, Russia. The title of the symposium was: “The Kamchatka (red king) crab in the Barents Sea and its effects on the Barents Sea ecosystem”.

Theme sessions:

- Red King Crab fishery biology and stock management;
- Ecosystem effect of the Red King Crab in the Barents Sea;
- Biology, physiology and genetics of the Red King Crab;
- Aquaculture of the Red King Crab in the Barents Sea;
- Snow crab in the Barents Sea.

The 14<sup>th</sup> Russian-Norwegian Symposium shall be arranged in Norway in 2011. The topic is suggested to be on the “Climate change effects on the Barents Sea marine living resources”. Further planning of the Symposium will be done during the March Meeting in Tromsø 2010.

## **12. Development of an exchange program of scientists**

In 2006 it was suggested to develop a program for exchange of scientists between PINRO, VNIRO and IMR, on all levels (students – research technicians – senior scientists).

The program will be further developed in 2010, and considered during the March meeting. The program should include exchange of scientists between the institutions at their laboratories and at their research vessels during investigations. The institutions will agree on the program before its implementation.

## **13. Development of joint assessment model for herring stock**

The new assessment model for the Norwegian spring spawning herring stock (TASACS) has been successfully developed and applied in WGWIDE in 2008. Further development will be needed to take into account ecosystem aspects.

#### **14. Joint three-year program on benthic animals**

A draft report on the implementation of the Joint three-year program on benthic animals in the Barents Sea has been produced. The following findings of joint investigations conducted by PINRO and IMR into benthic animals in the Barents Sea in 2006-2008 are reflected in the draft report:

- results of monitoring investigations on demersal macro-organisms in the Barents Sea (benthic animals from bycatches in trawls used in surveys) carried out by PINRO and IMR during ecosystem research activities;
- preliminary results of processing of material obtained during benthos surveys in the Barents Sea in 2003-2008: a general characteristic of benthic animals in Varangerfjord, the Motov Bay and offshore in the south-central part of the Barents Sea;
- description of the methodological aspects of work related to benthic material – development of an electronic atlas of mass forms of benthic invertebrates in the Barents Sea and a database containing data on benthic animals.
- The report suggest 6 different monitoring areas to monitor changes in bottom fauna due to climate change and to eventual effects of bottom trawling

The three year project will be terminated by:

1. The report will be printed in the Joint IMR-PINRO series
2. A workshop will be arranged in Tromsø (March 2010, in connection with the annual IMR/PINRO meeting) to discuss how results from the 3 year benthic project could be implemented in monitoring and practical management measures.

#### **15. Determination of conversion factors for cod, haddock and other gadoids**

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

True conversion factors are necessary to estimate actual catch of objects of the joint fishery.

Varying fishing conditions, such as fishing areas and seasons, length-weight characteristics of fishing objects, technological parameters of raw fish processing including different ways of cutting (manual or mechanized), types of equipment, ways of freezing, packing and storage require continuous investigations.

It is necessary to obtain additional data during fishery onboard Norwegian vessel taking into account biological variations in cod, haddock and other gadoids, analysis of technological process including norms of raw materials consumption during production of their products.

### ***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:	All fishing seasons	Vessel:	Rented vessels
Target species:	Cod, haddock	Secondary species:	Saithe
Area:	The main joint areas of fisheries		
Purpose:	To conduct experimental and checking works, to determine conversion factors.		
Reported to:	Joint and internal surveys reports, Norw. Dir. of Fisheries., VNIRO, PINRO.		

### **16. Joint project “The Barents Sea Ecosystem Book”**

In 2007 Russian and Norwegian scientists agreed to begin works on a joint book summarizing 50-year experience of research and management of stocks in the Barents Sea. The aim is to have the book printed in autumn 2010.

The process is behind schedule. This is partly because the translation from Russian to English of some of the Russian contributions to the chapters took much longer than expected and partly because many of the authors have simply not delivered on time. Possibly the time needed for preparing a joint chapter by authors from somewhat different cultures concerning publications, has been underestimated. However, several chapters have been submitted and a first editing has been carried out on those.

The aim is still to finish the book on time. To help with the editing, IMR has contracted a language and editing consultant. In order to have it printed next autumn, the deadline for submitting the book manuscript to the publisher will be around Easter 2010.

### **17. Development of joint genetic database for Atlantic salmon populations.**

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.

The data from the analysis, both from Russian and Norwegian samples, will be entered into the trans-European database being developed for SALSEA-Merge (NASCO), and made available for the purposes of the SALSEA-Merge project. Further use of the data outside the realm of SALSEA-Merge 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.

### **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 each party to carry out all tasks described in “Joint Norwegian – Russian Scientific Research Program on Living Marine Resources in 2010” 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 Spitsbergen area.

To solve these tasks the following catch quantities are decided for each party for 2010:

- 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
- 1 600 tonnes of Greenland halibut for Russia and 750 tonnes of Greenland halibut for Norway as mentioned in Appendix 3
- 2 500 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 wolfish - 850
  - Spotted catfish - 640
  - Atlantic wolfish - 5
  - Long rough dab - 120
  - Skates - 5
  - Sea plaice - 500

Both Parties will make all efforts to fulfill 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.