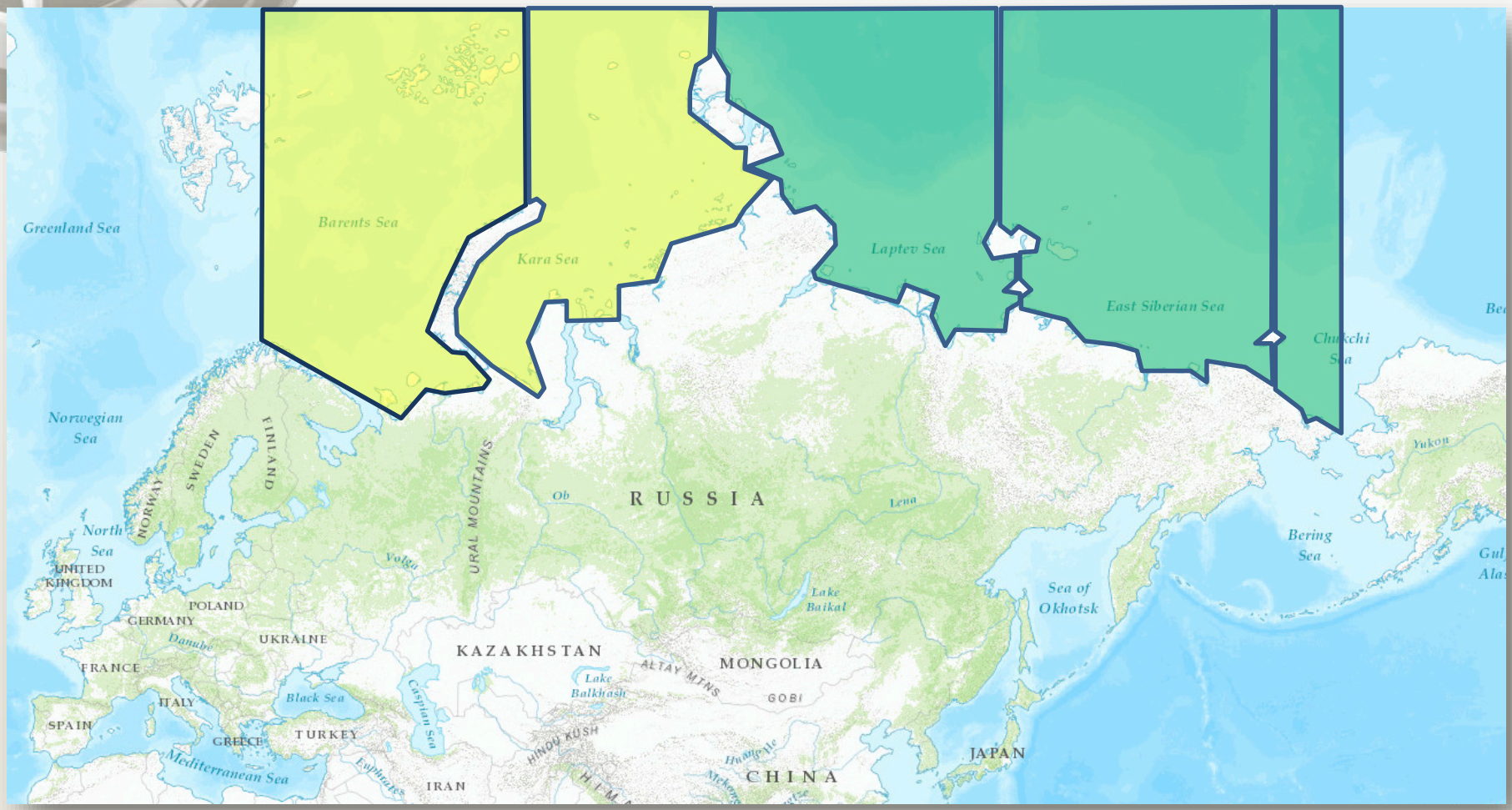
Perspective Arctic Research Activities

Russian Federation

Based on data of «VNIRO», «PINRO» and «TINRO-Center»

Seattle, 2015.

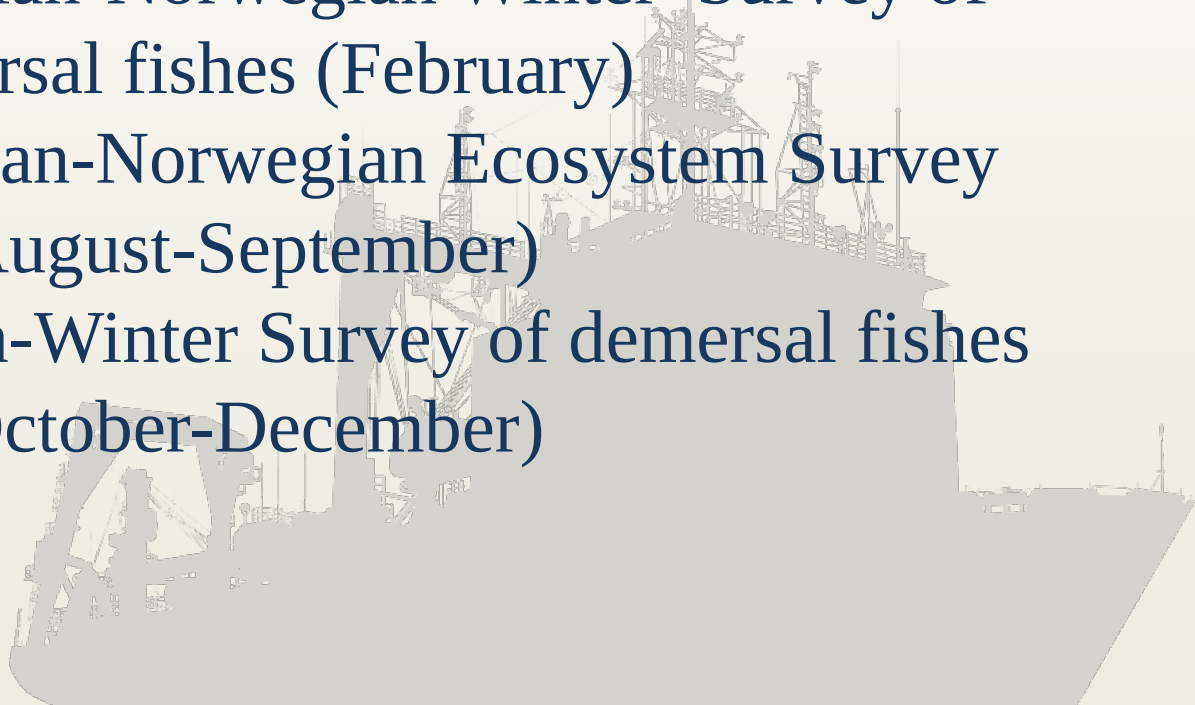
Russian Federation Arctic sea region



Investigations of PINRO in the Barents and Kara Seas in 2013-2014

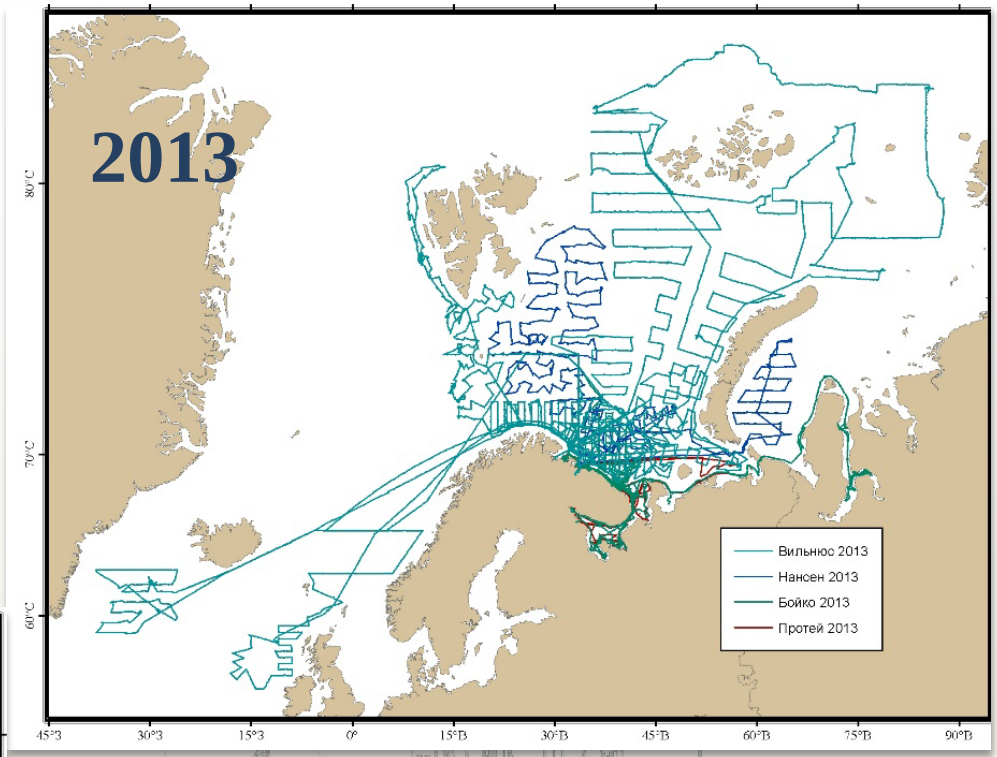
There is 3 main research surveys of PINRO in the Arctic

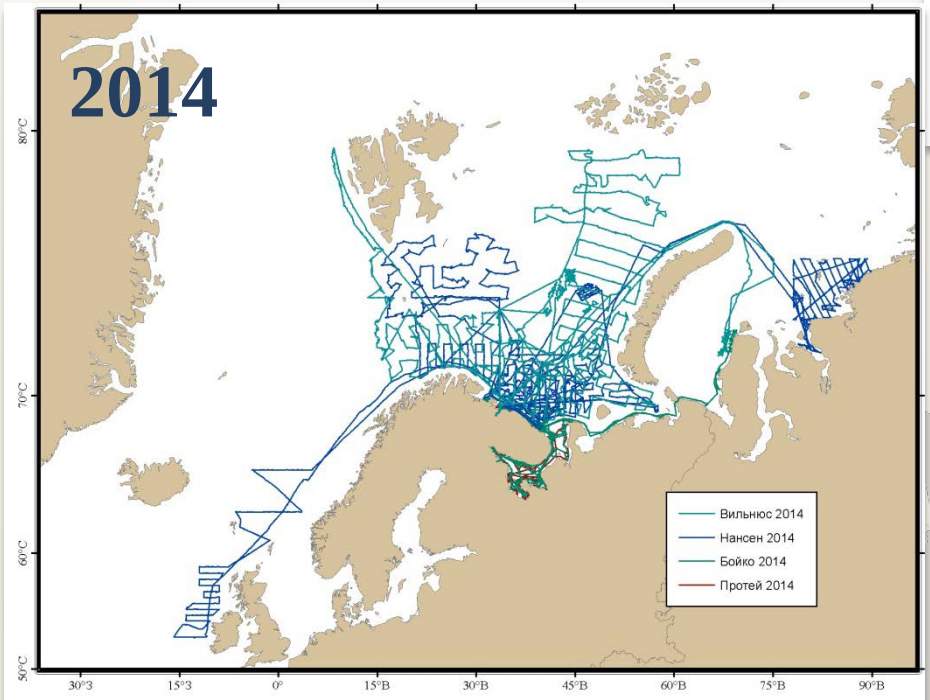
1. The joint Russian-Norwegian Winter Survey of demersal fishes (February)
2. The joint Russian-Norwegian Ecosystem Survey (August-September)
3. Russian Autumn-Winter Survey of demersal fishes (October-December)



Cruise tracks of PINRO research vessels in 2013-2014

In 2013-2014 PINRO continues to investigate Arctic including the Barents, White and Norwegian Seas, as well as the Kara Sea and some parts of Central Arctic Ocean, free of ice.

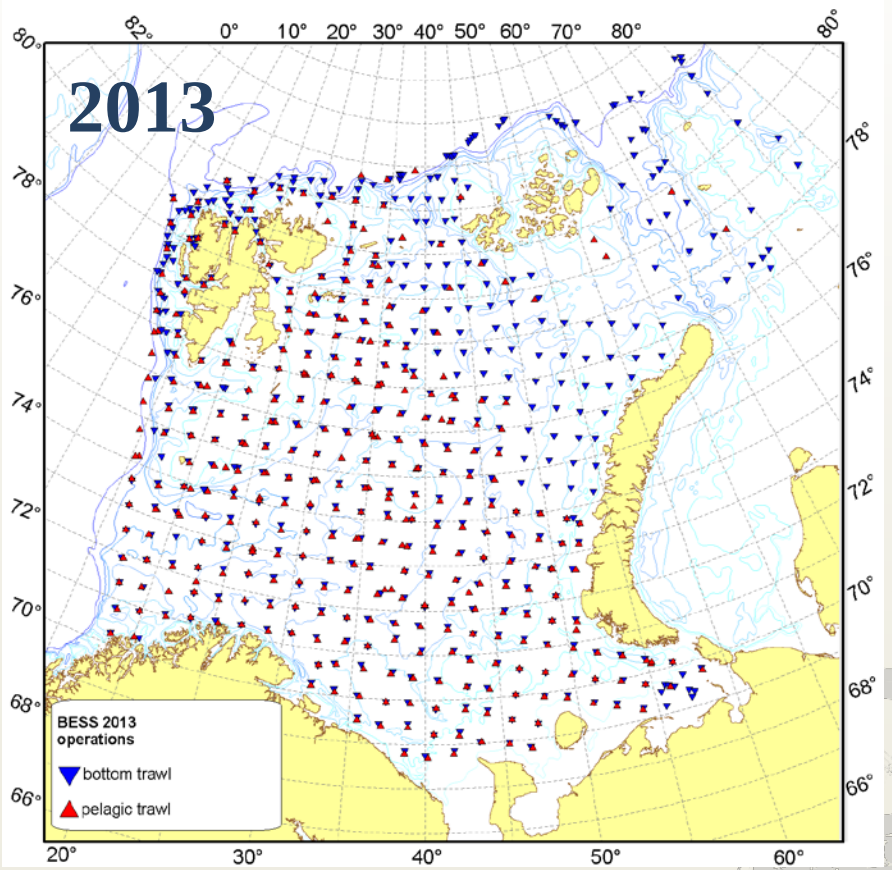


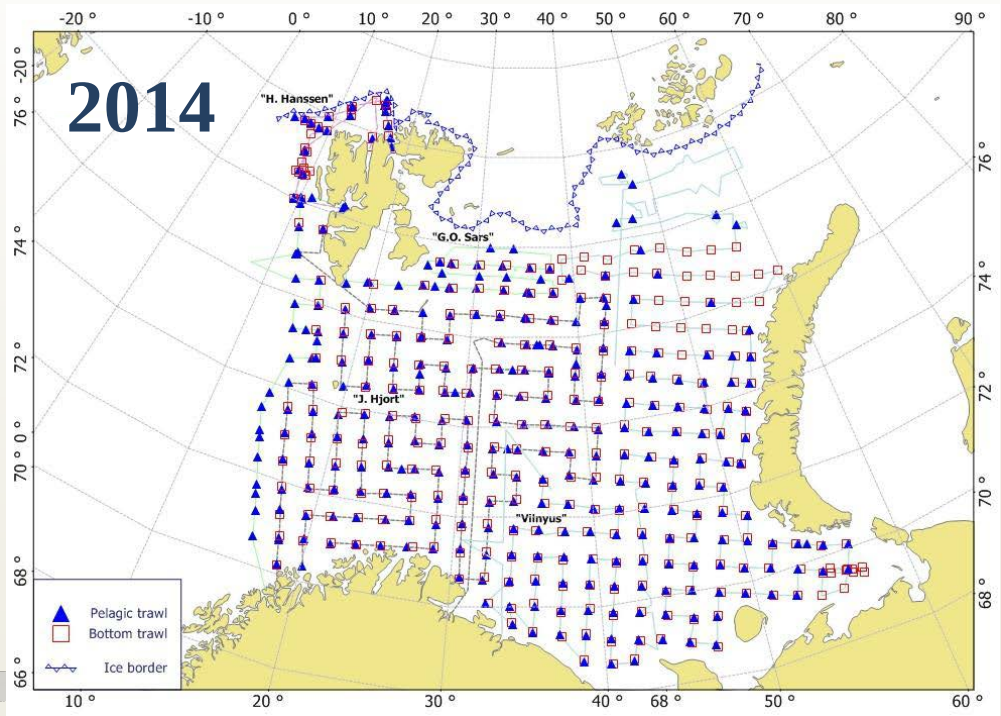


It should be noted that surveyed areas decreased in 2014 due to lower financial support.

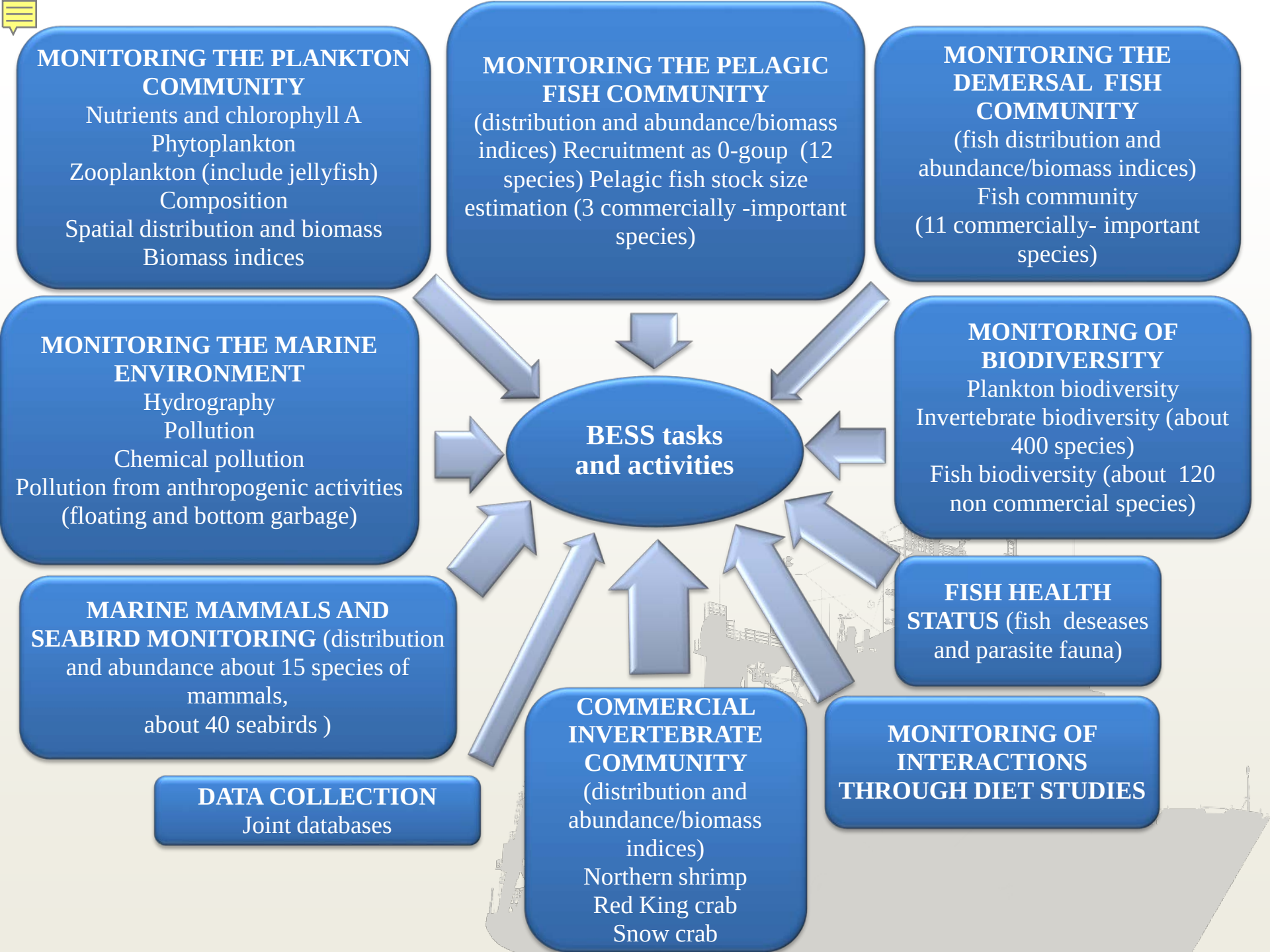
Russian-Norwegian ecosystem survey (BESS 2013-2014), survey routes and trawl stations

In 2013-2014 PINRO continued to conduct an annual joint Russian-Norwegian ecosystem survey – the Barents Ecosystem survey (BESS).

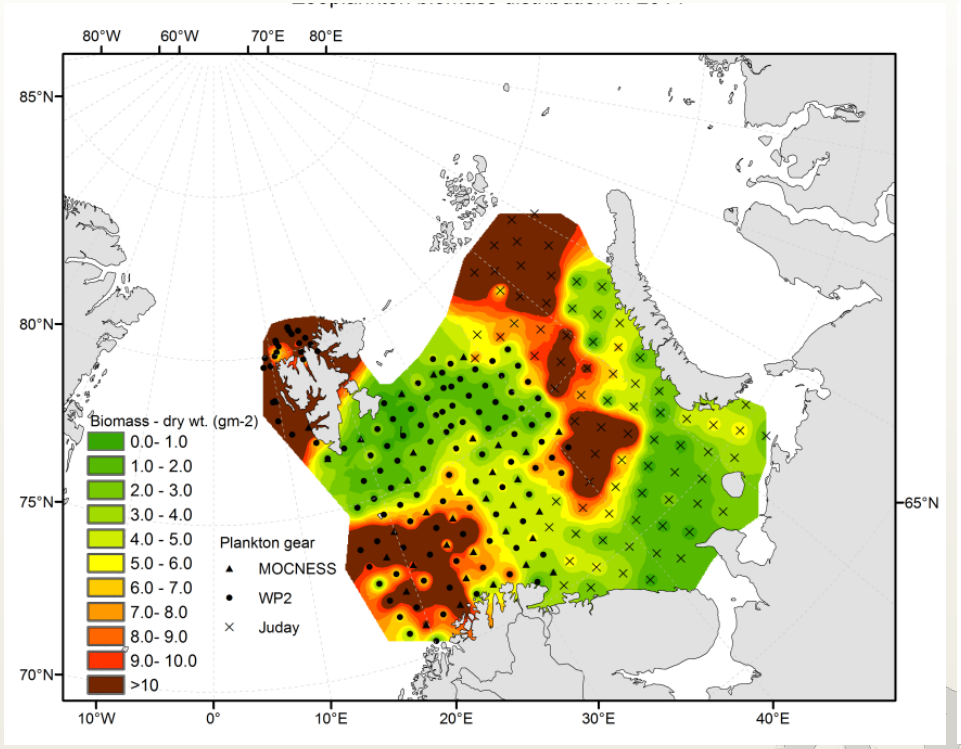




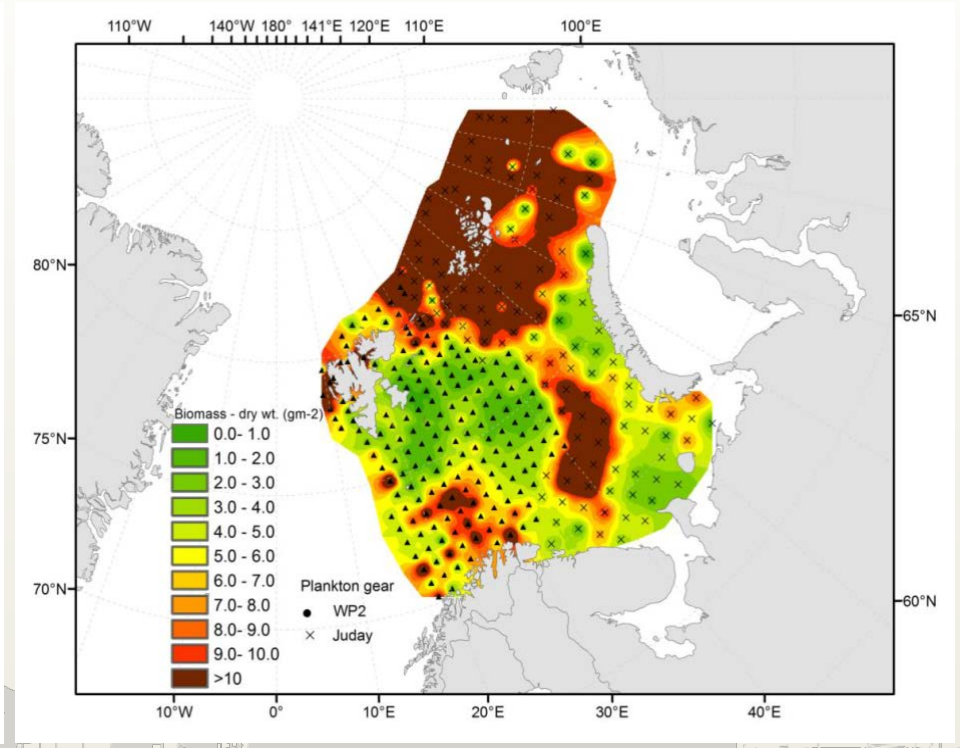
In 2013 the northern Kara Sea was covered too. In 2014 northern and north-eastern areas were not fully covered due to hard ice conditions and problems with financial support.


MONITORING THE PLANKTON COMMUNITY
Nutrients and chlorophyll A
Phytoplankton
Zooplankton (include jellyfish)
Composition
Spatial distribution and biomass
Biomass indices
MONITORING THE PELAGIC FISH COMMUNITY
(distribution and abundance/biomass indices) Recruitment as 0-goup (12 species) Pelagic fish stock size estimation (3 commercially -important species)
MONITORING THE DEMERSAL FISH COMMUNITY
(fish distribution and abundance/biomass indices)
Fish community
(11 commercially- important species)
MONITORING THE MARINE ENVIRONMENT
Hydrography
Pollution
Chemical pollution
Pollution from anthropogenic activities (floating and bottom garbage)
BESS tasks and activities
MONITORING OF BIODIVERSITY
Plankton biodiversity
Invertebrate biodiversity (about 400 species)
Fish biodiversity (about 120 non commercial species)
MARINE MAMMALS AND SEABIRD MONITORING (distribution and abundance about 15 species of mammals,
about 40 seabirds)
FISH HEALTH STATUS (fish deseases and parasite fauna)
DATA COLLECTION
Joint databases
COMMERCIAL INVERTEBRATE COMMUNITY
(distribution and abundance/biomass indices)
Northern shrimp
Red King crab
Snow crab
MONITORING OF INTERACTIONS THROUGH DIET STUDIES

Distribution of total zooplankton biomass in the Barents Sea in 2013-2014

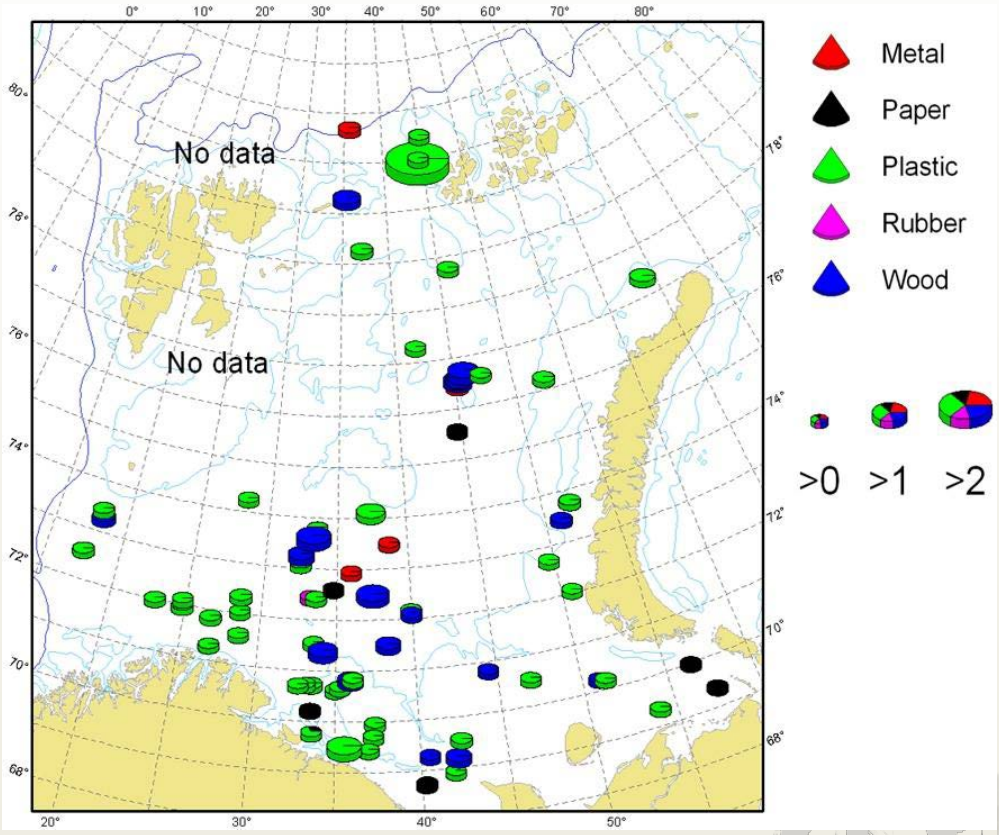


2013

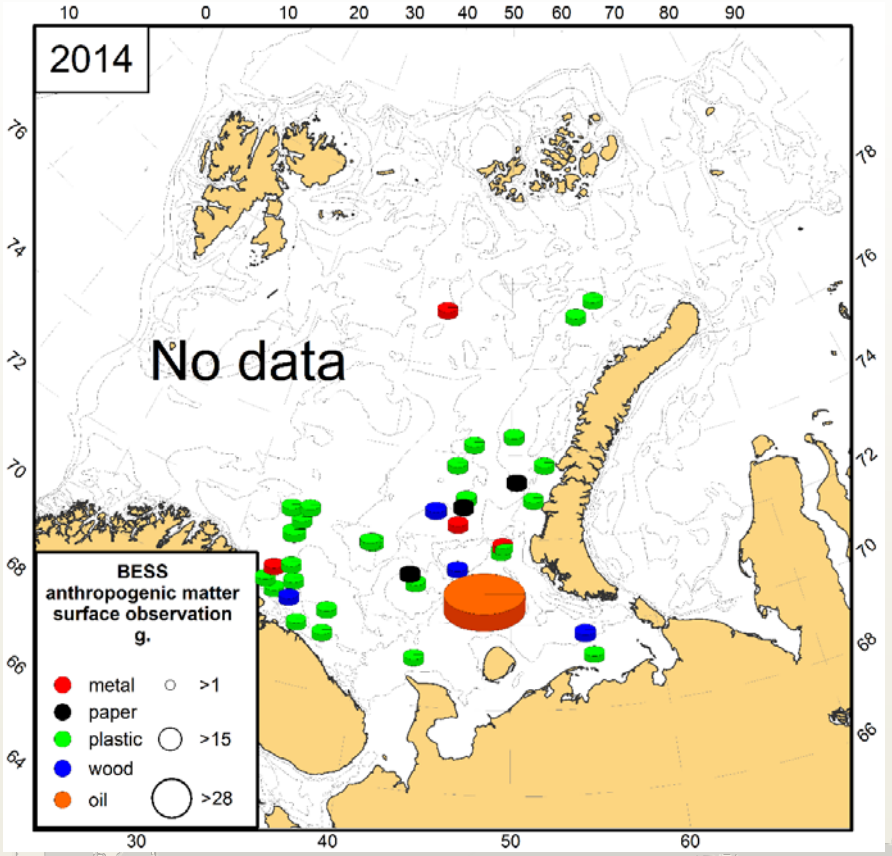


2014

Data on occurrence of garbage during BESS 2013 and 2014

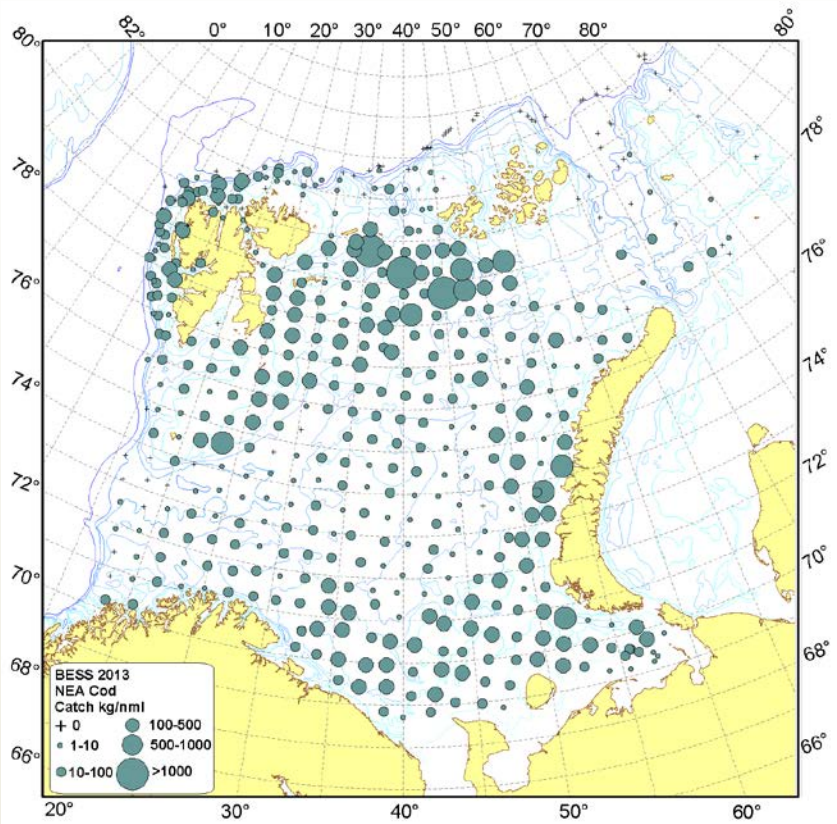


2013

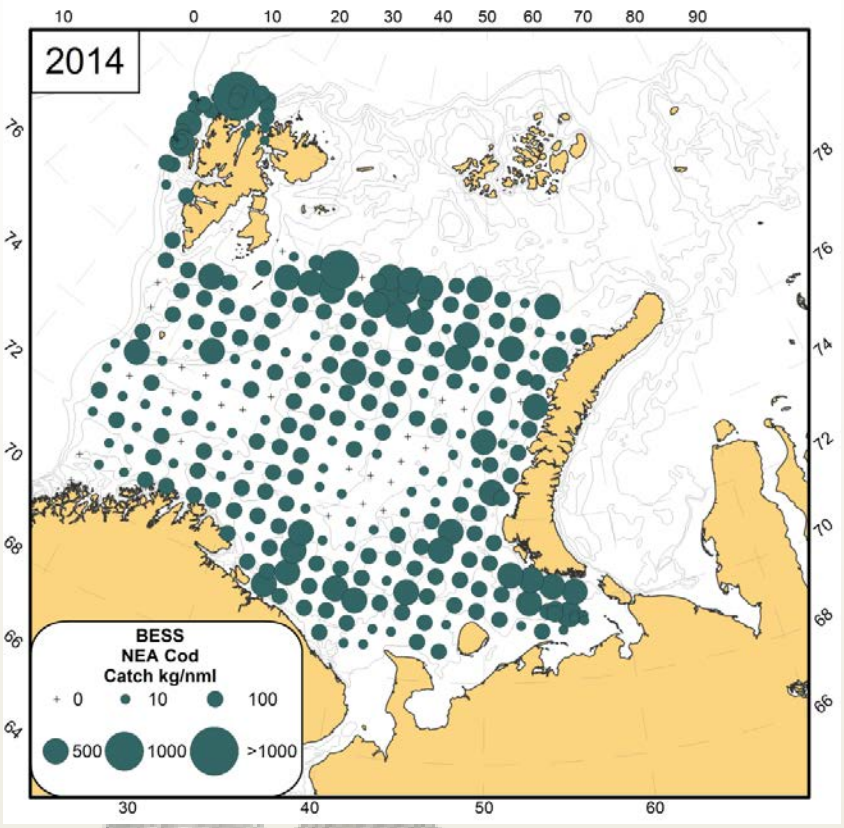


2014

NEA Cod (*Gadus morhua)*
distribution in August- September (BESS data)

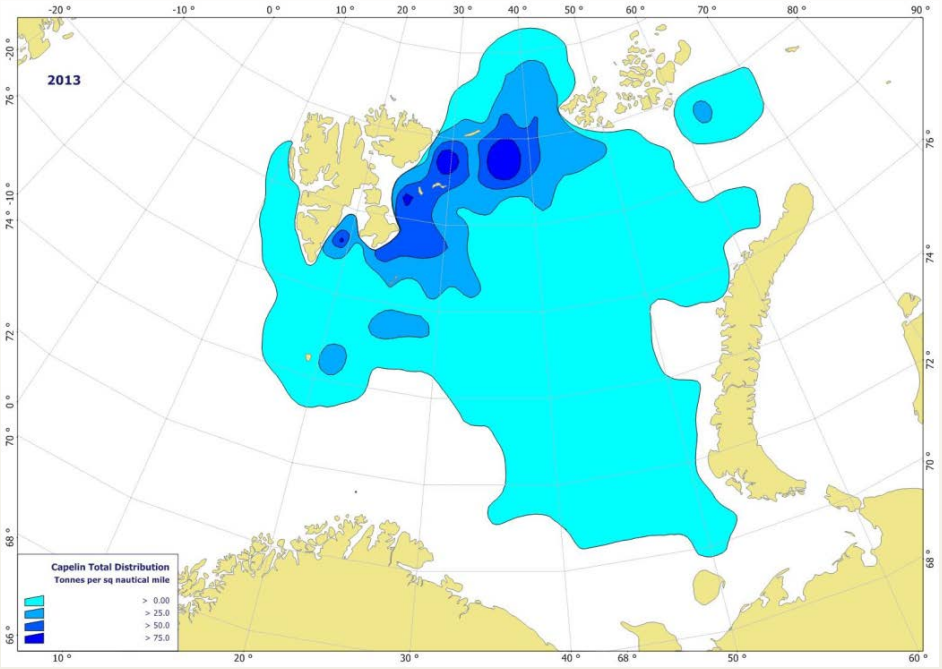


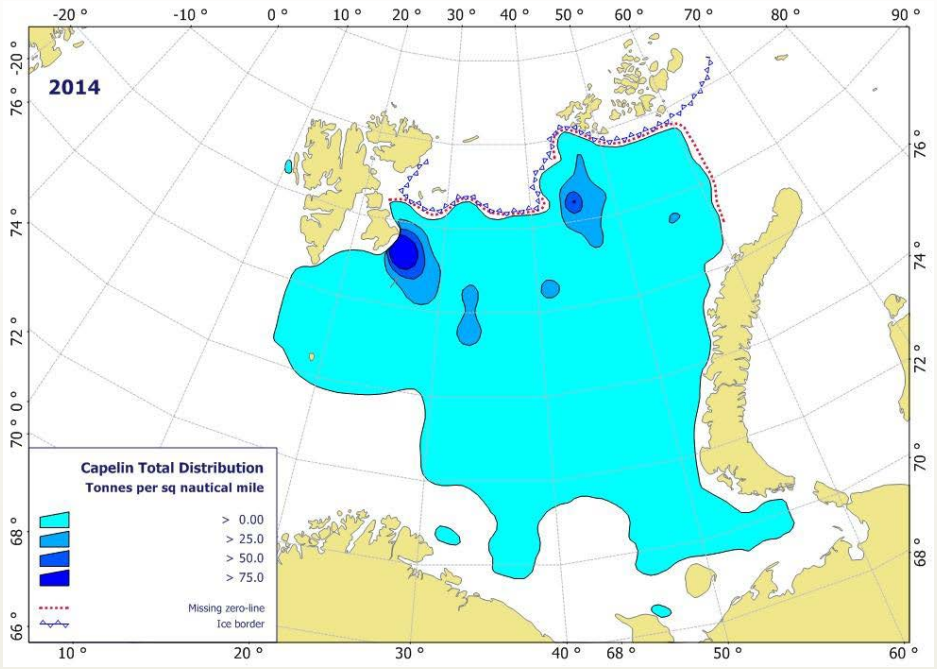
2013



2014

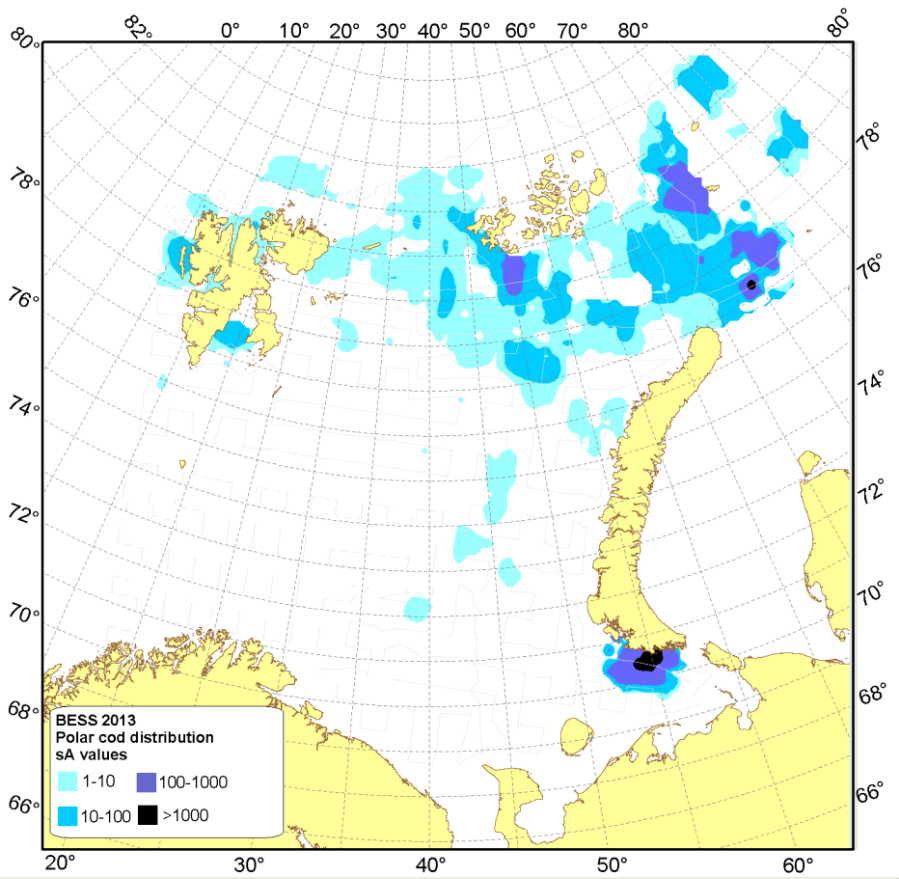
Capelin (*Mallotus villosus*) distribution in August-September (BESS data)



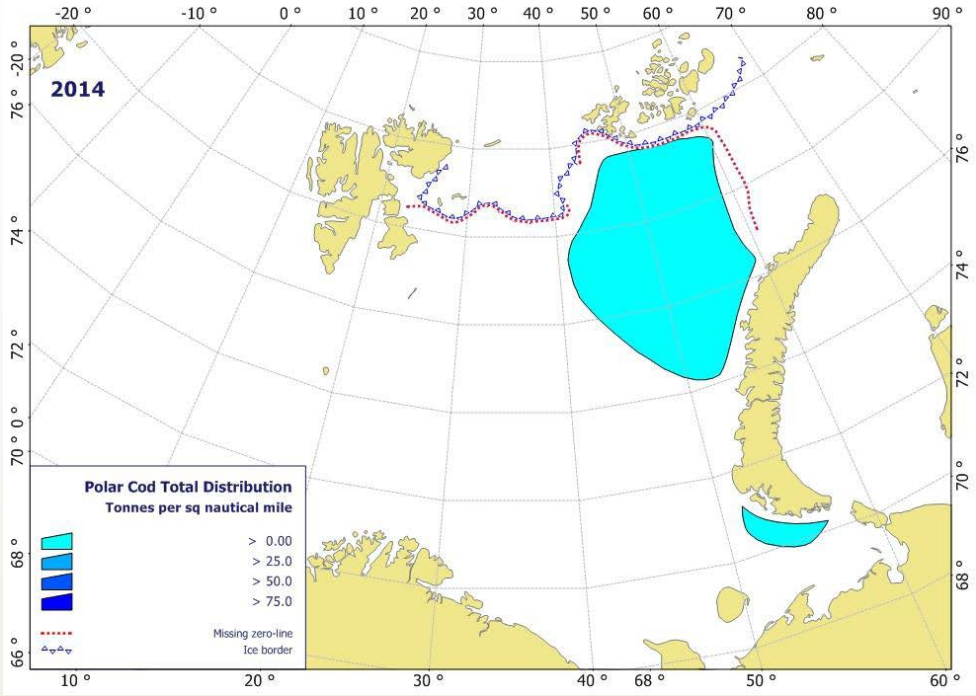


2013 **2014**

Polar cod (*Boreogadus saida*) distribution in August-September (BESS data) in 2013-2014

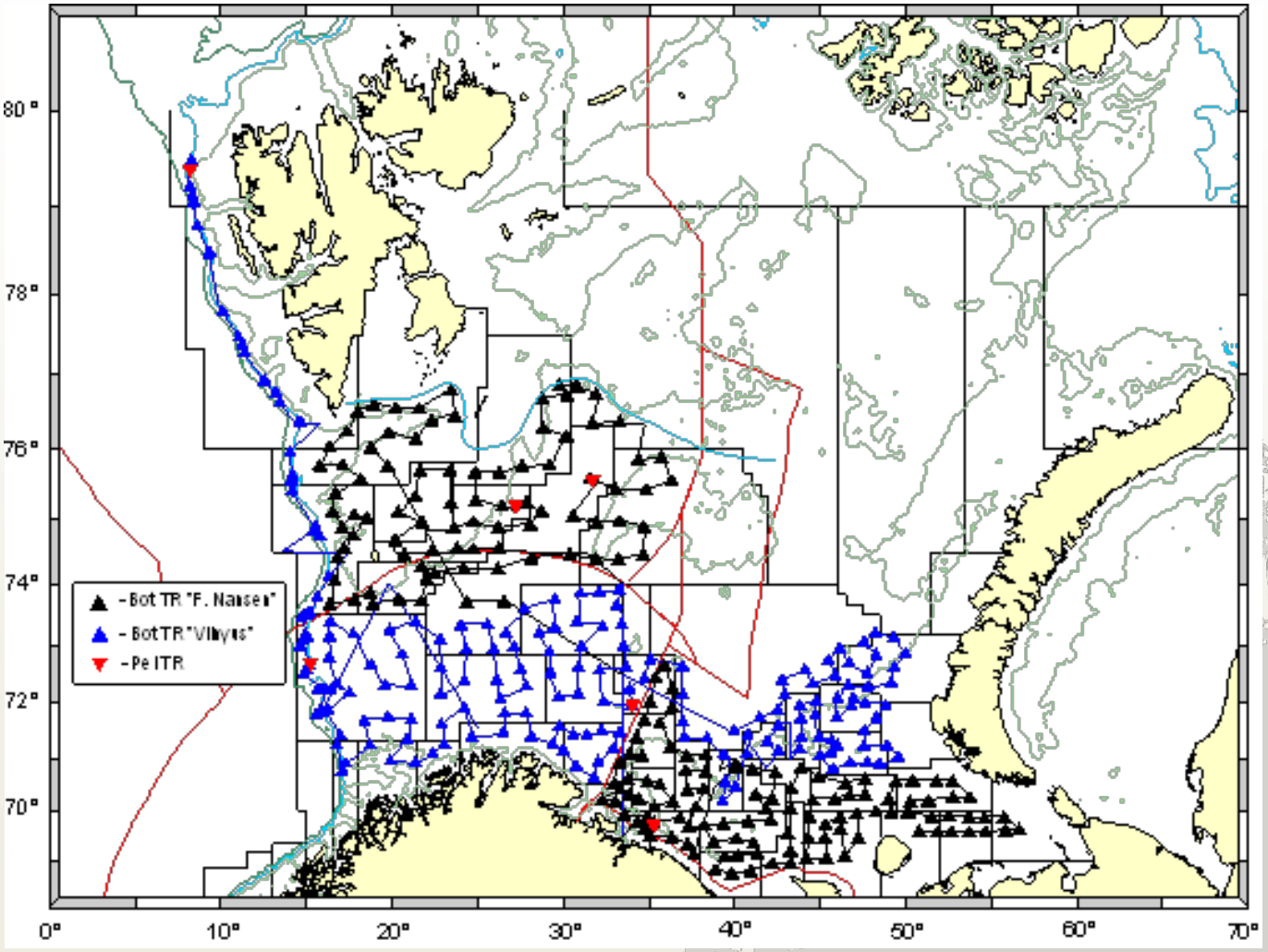


2013



2014

Russian Autumn-Winter Survey of demersal fishes (October-December)

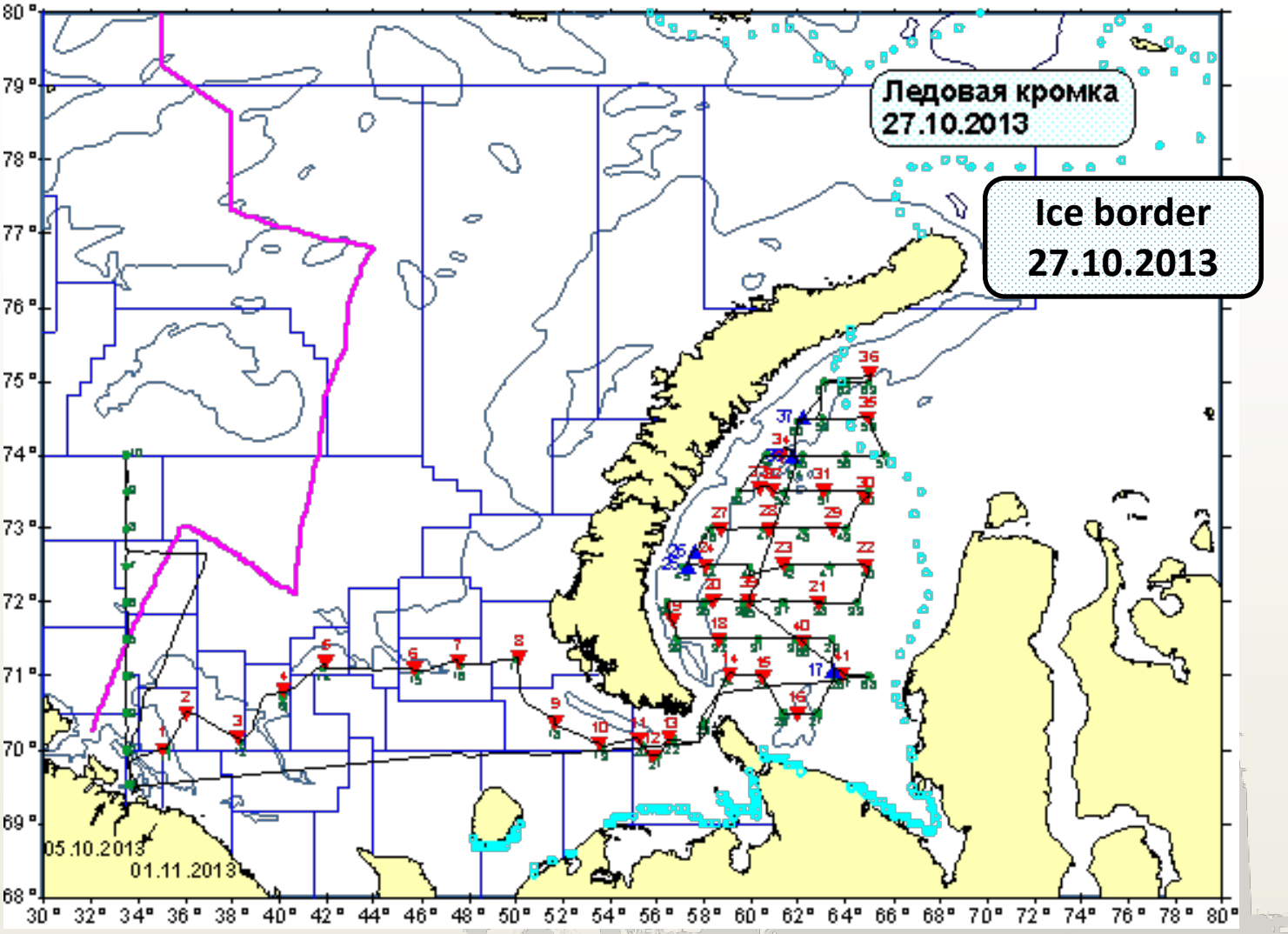


This survey is conducted by PINRO in October-December since 1982

Usually 400-450 demersal trawls and oceanographic stations are conducted by 2-3 research vessels.

2014

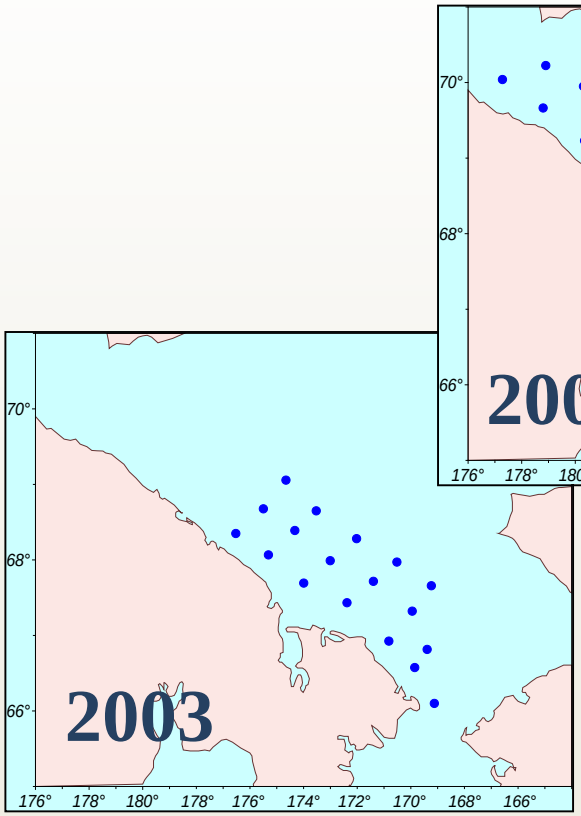
Survey in the Kara Sea – September 2013

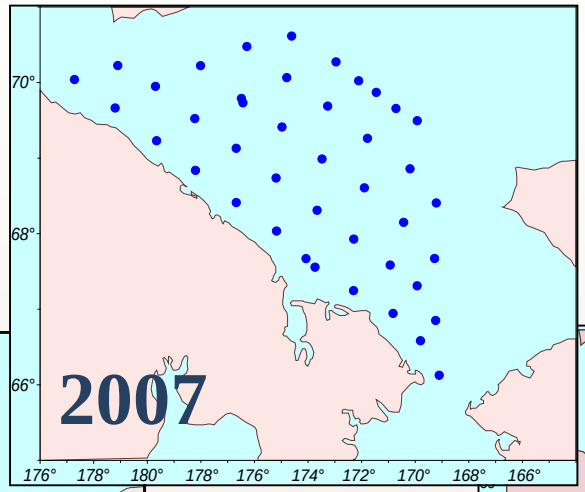


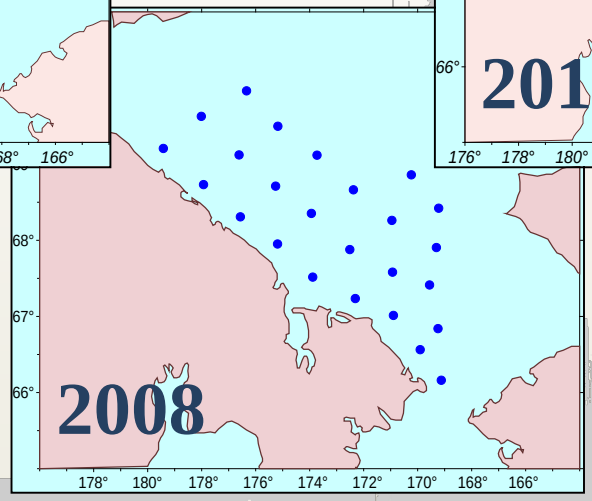
One vessel had conducted 38 trawling (23 – demersal and 5 – pelagic).
Previous surveys were in 2007-2008 only.

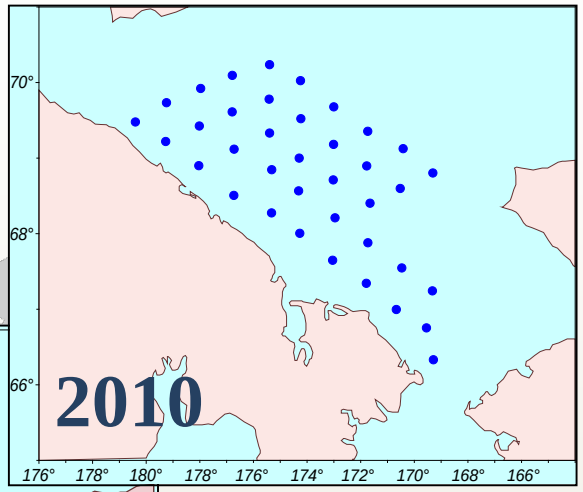
Investigations of TINRO-Center in the Laptev, East-Siberian and Chukchi Seas in 2013-2014

The periodic surveys in Chukchi sea



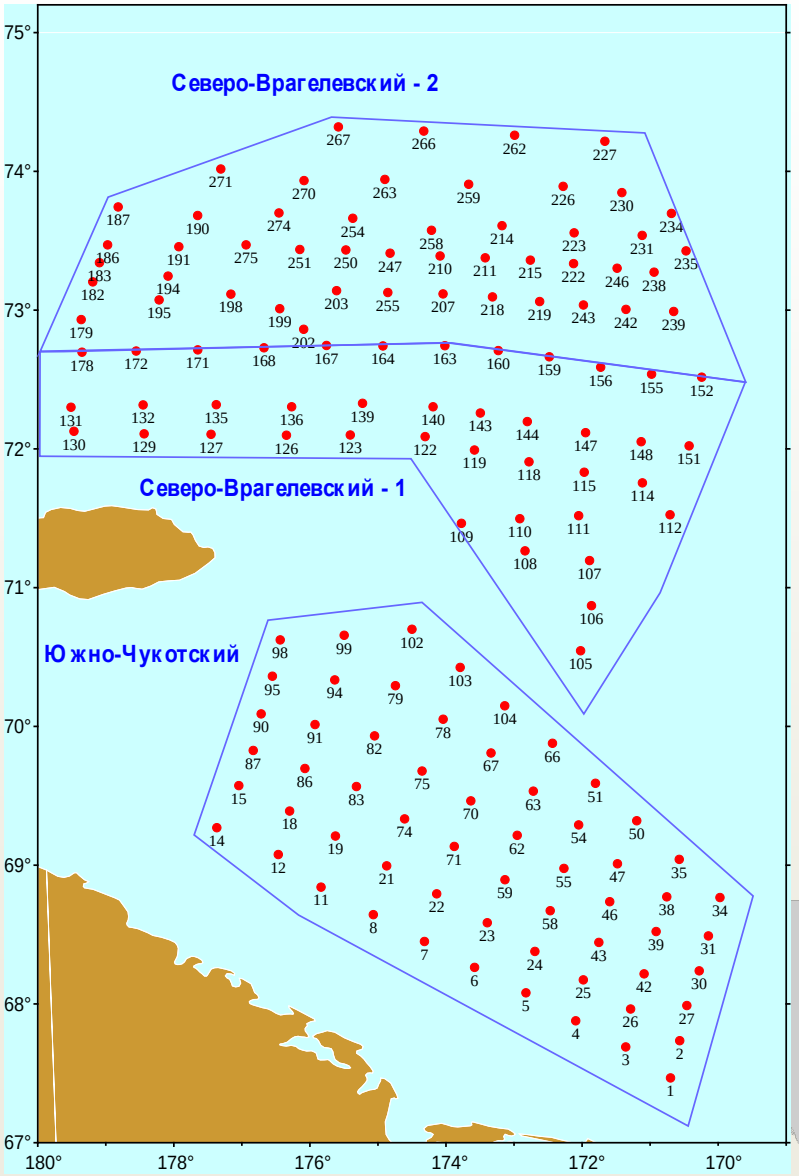


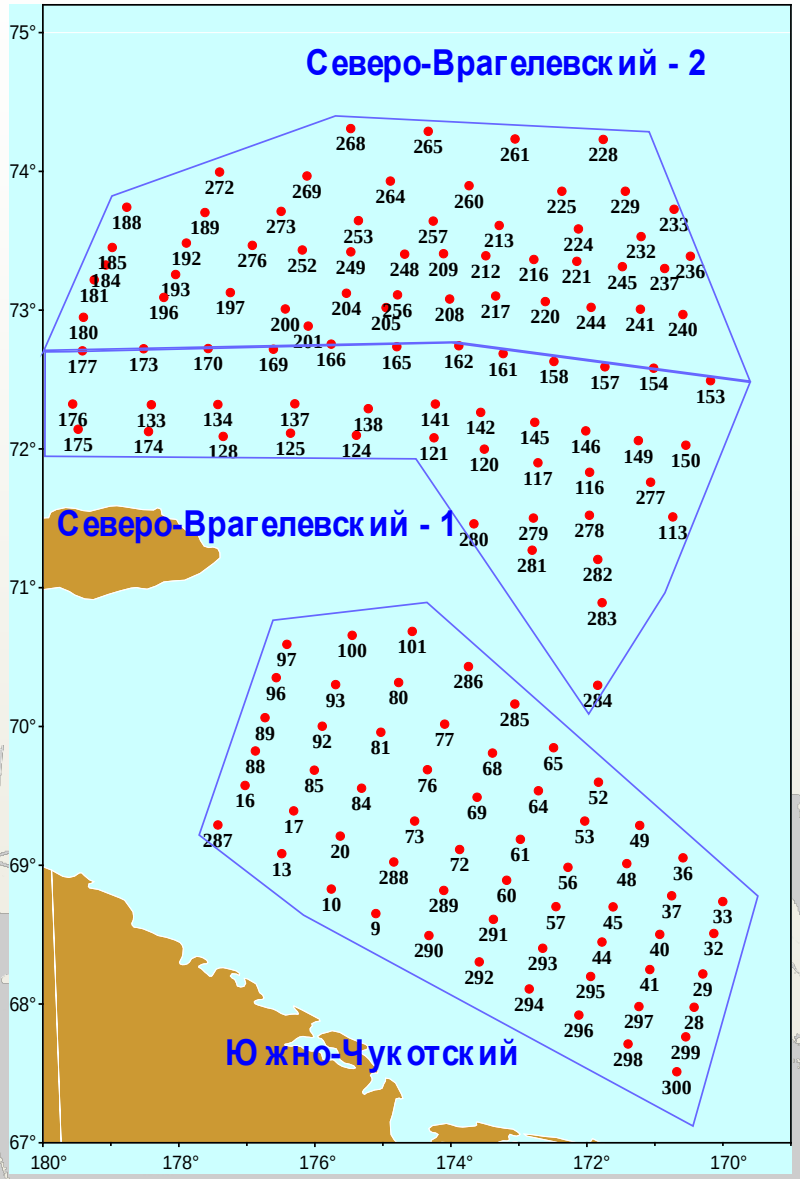




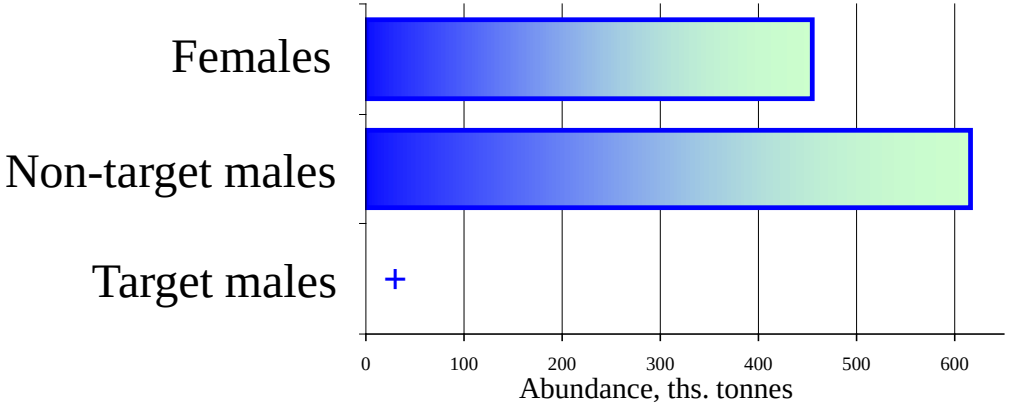
Type of survey	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Pelagic trawl							■				■	■						■
Bottom trawl	■													■				■
Oceanology	■						■				■	■		■				■
Plankton	■						■				■	■		■				■

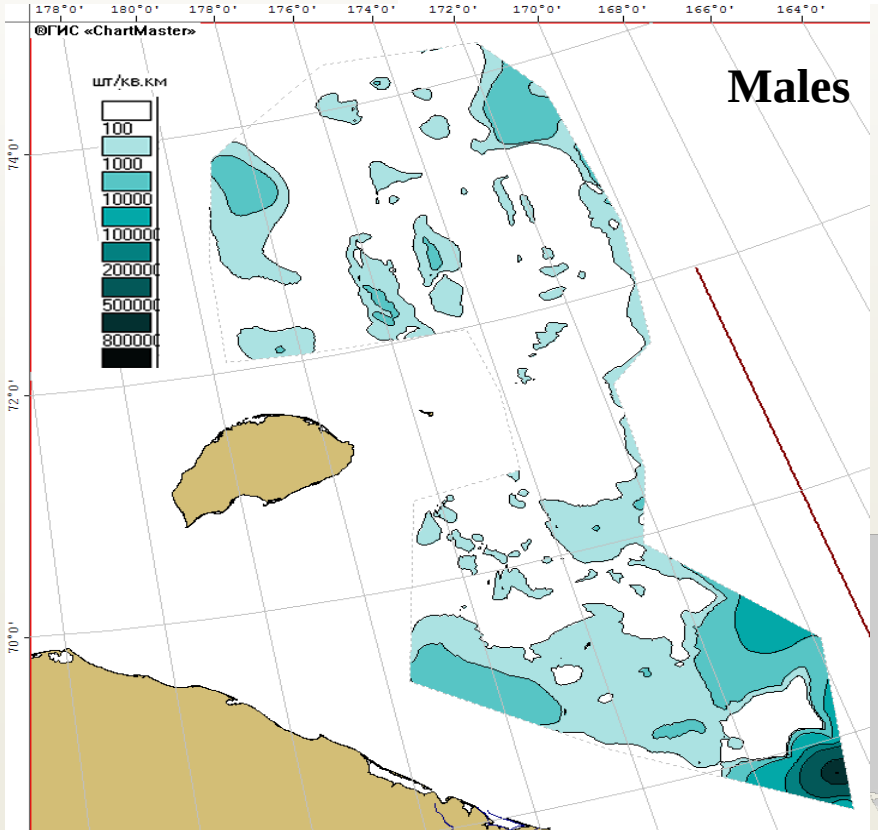
Bottom and pelagic trawl survey in the Eastern Chukchi Sea

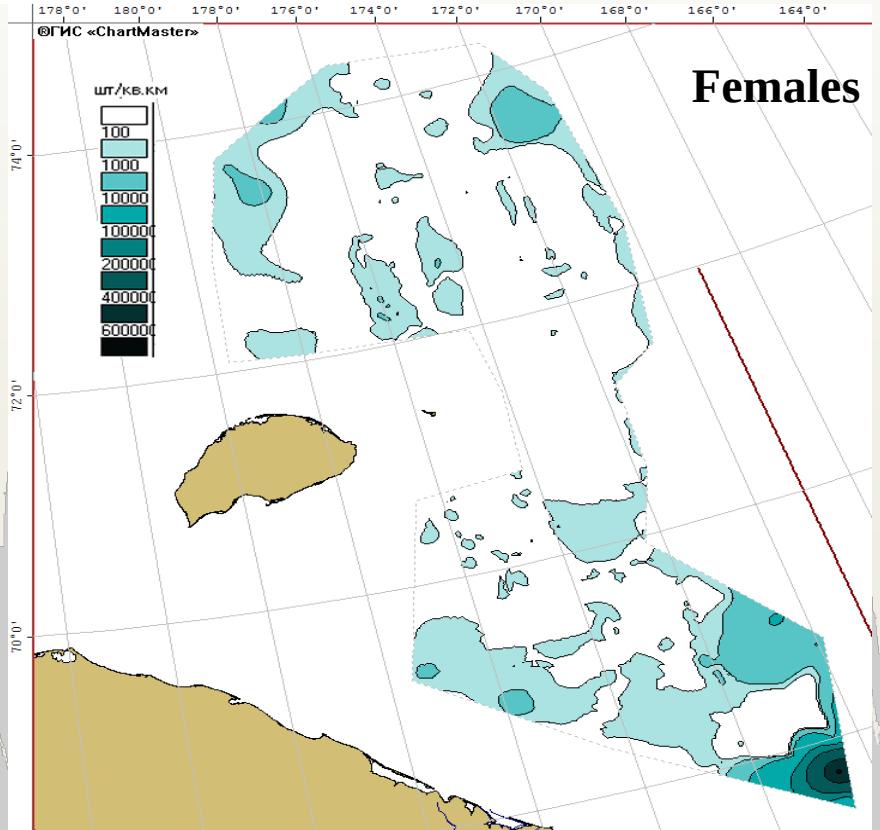




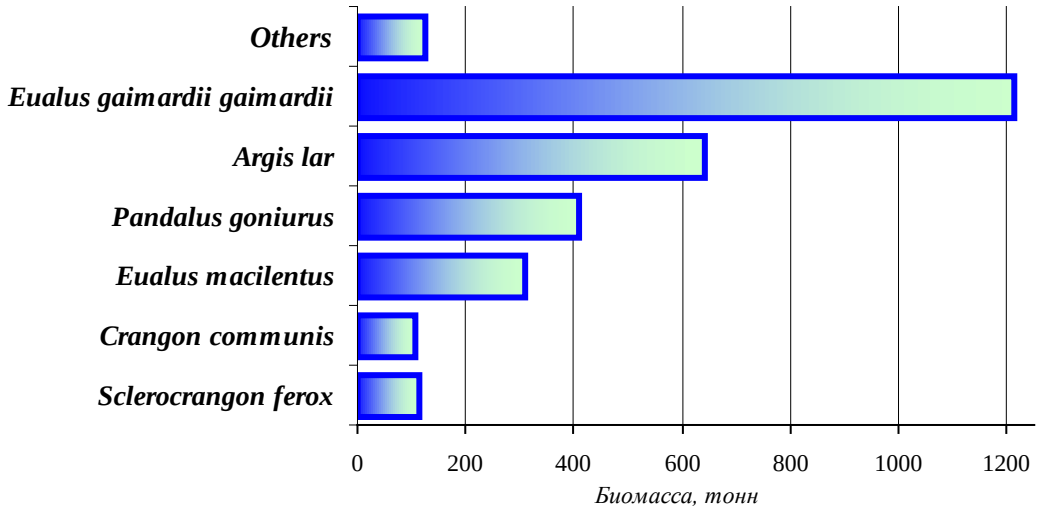
Abundance and distribution of Snow crab opilio (*Chionoecetes opilio*) in the Chukchi Sea in 2014



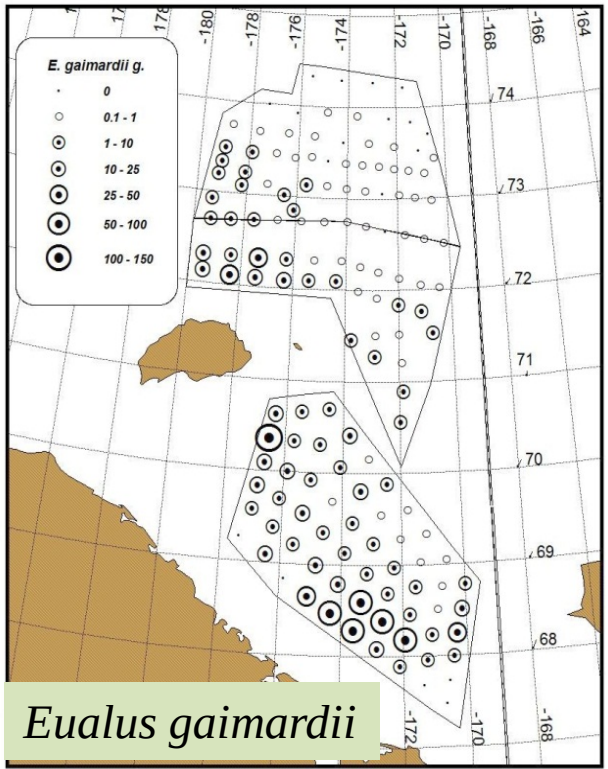




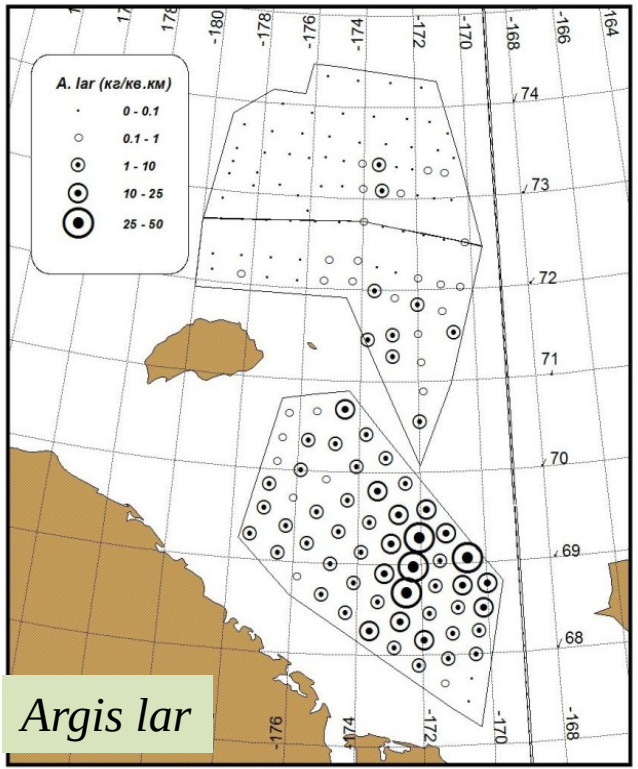
Biomass of most numerous shrimp species of the Chukchi Sea in 2014



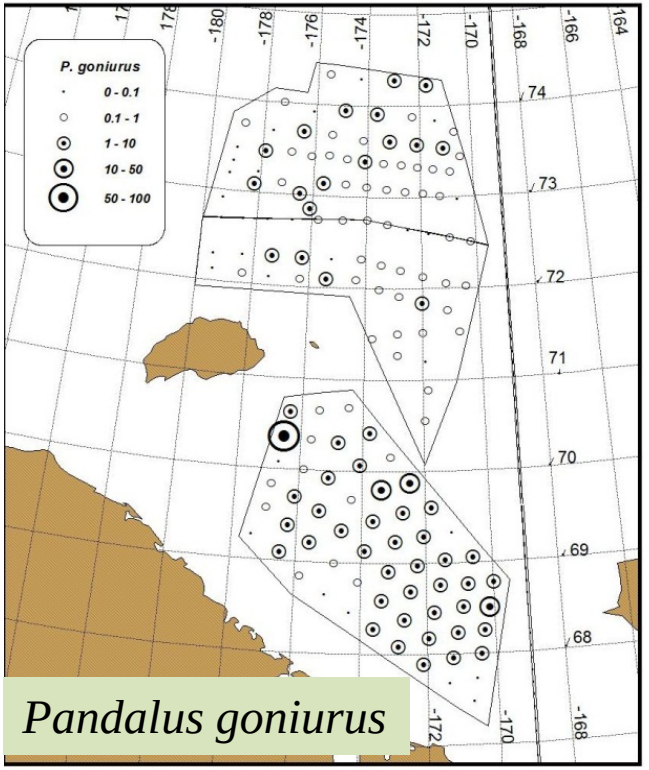
3.1 ths. tonnes in total



Eualus gaimardii



Argis lar

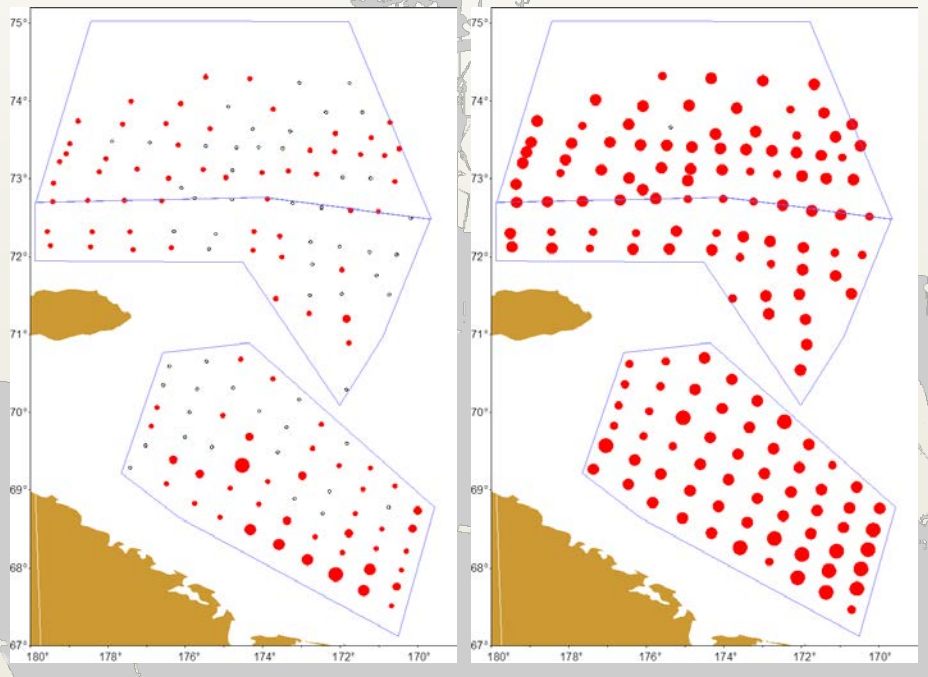


Pandalus goniurus

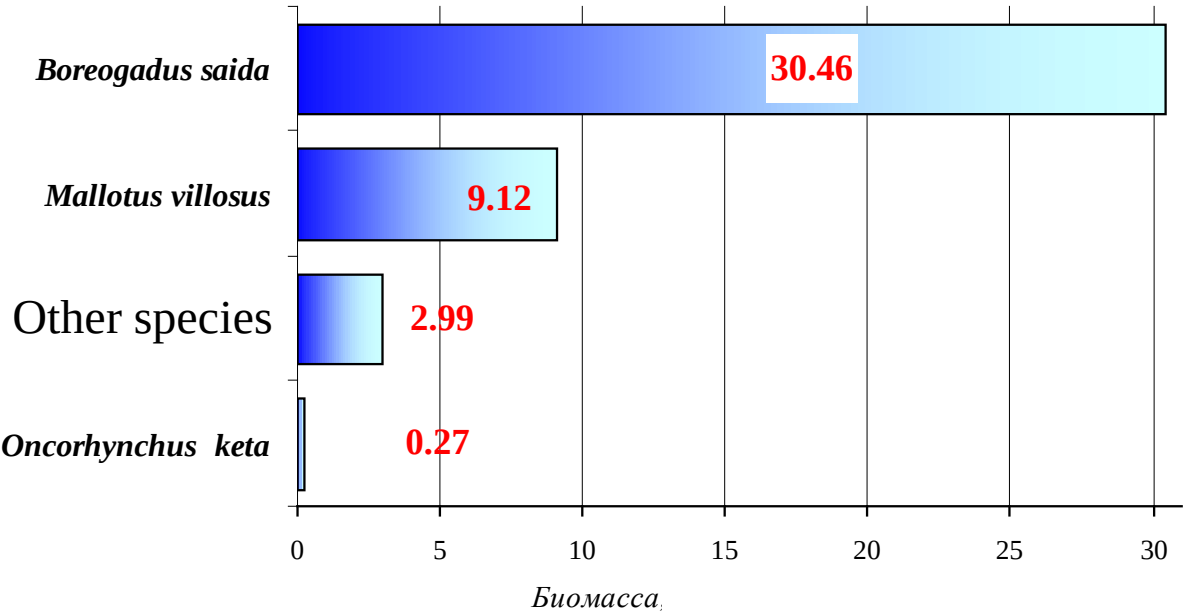
Abundance of main species and groups of nekton and macroplankton in pelagic zone of southwestern Chukchi Sea

Species	2003		2007		2008		2014	
	ths. t	ths./km^2	ths. t	ths./km^2	ths. t	ths./km^2	ths. t	ths./km^2
Polar cod	674.2	14.44	118.7	0.85	12.6	0.13	58.07	0.80
Capelin	5.9	0.13	0.6	+	4	0.04	15.43	0.21
Herring	+	+	0.2	+	0.1	+	0.02	+
Sandeel	0.1	+	0.6	+	0.3	+	1.54	0.02
Cottidae	0.0	+	1.9	0.01	0.9	0.01	0.21	+
Others	1.8	0.04	0.9	0.01	2.1	0.02	4.09	0.06
Fishes Total	**682.1**	**14.61**	**123.1**	**0.88**	**20.0**	**0.21**	**79.36**	**1.10**
Squids	+	+	**0.3**	+	+	+	**0.05**	+
Jellyfishes	**124**	**2.66**	**33**	**0.24**	**63.9**	**0.68**	**35.3**	**0.49**
Area, ths. km^2	46.7		140.4		93.8		72.3	

Distribution of polar cod adults kg/km^2 in the western Chukchi Sea (2014): on the left picture – pelagic zone, on the right picture – bottom zone.

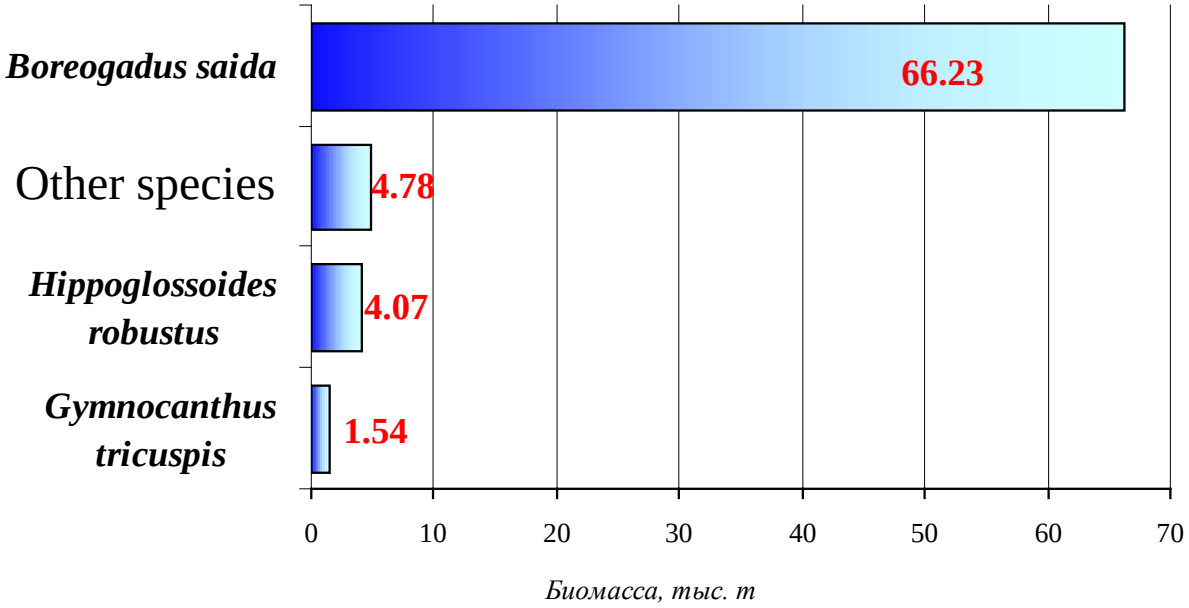


Biomass (ths. tonnes) of most numerous fish species from data of trawl survey in the Chukchi Sea at 2014

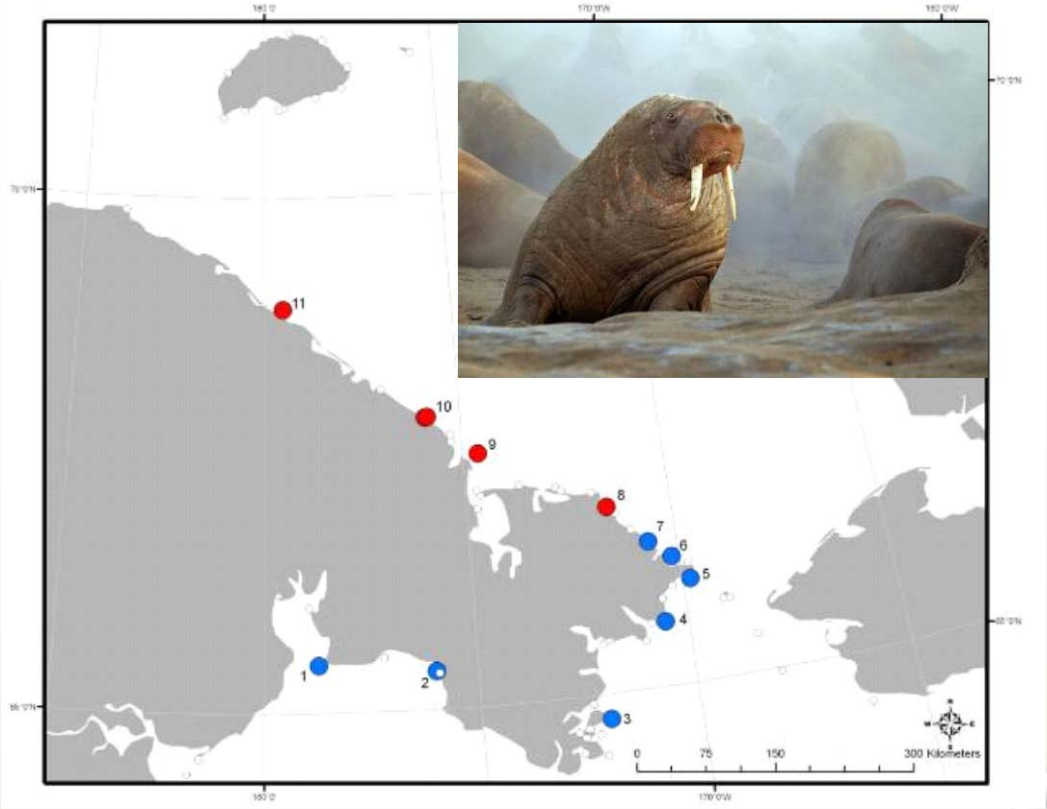


Pelagic zone
Total area: 29 fish species
42.8 ths. tonnes
2 species of squid

Bottom zone
Total area: 39 fish species
76.91 ths. tonnes
2 species of squid



Regular observations of marine mammals in the Chukchi Sea



Location of walrus rookeries on the coast of the Chukchi Peninsula

Particular attention is given to the polar bear and traditional aboriginal objects - walrus, gray whale, as well as specially protected species (Red Book species list).

Plans for 2015-2016

West Sector of the Russian Arctic

To conduct traditional surveys in the Barents Sea

- The joint Russian-Norwegian Winter Survey of demersal fishes (February)
- The joint Russian-Norwegian Ecosystem Survey (August-September)
- Russian Autumn-Winter Survey of demersal fishes (October-December)
- **No any other surveys in other Arctic Seas – Kara Sea and eastwards**

East Sector of the Russian Arctic

- The Program of complex research of biological resources in the seas of the East Sector of the Russian Arctic 2015-2020. (Laptev sea – 2015, East-Siberian sea 2017 and 2019, Chukchi sea 2016, 2018, 2020)

Thank You For Your Attention!