TINRO-CENTRE

DATA BASE ACTIVITY





HISTORY

1925 Established as the Pacific Research Fisheries Station (TONS).

1928 The station was reorganized into the Pacific Fisheries Institute (TIRKH)

1930 TIRKH' activity included fisheries oceanography research

1932 Sakhalin and Kamchatka Branches of TIRKH established

1933 Amur River Branch established

1934 The institute renamed into Pacific Research Institute of Fisheries and Oceanography (TINRO)

1959 Magadan Branch of TINRO established

1988 The Dolphin-pool and new Museum opened

1991 The Oceanarium opened

1994 The Chukotka Branch of TINRO established

1995 The Base of Research Fleet (BIF TINRO) branch established

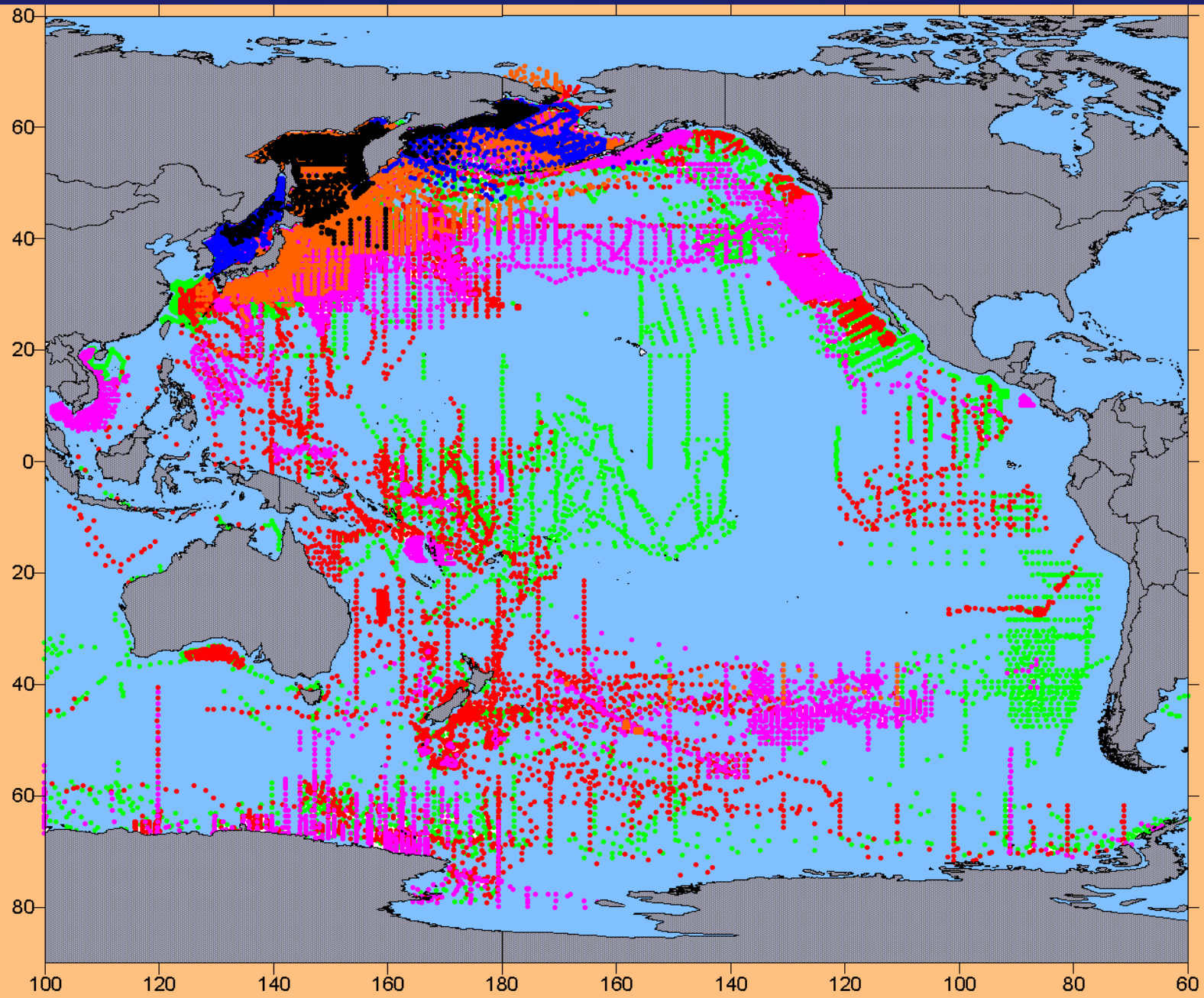
2000 TINRO Scientific and Technical Association founded as a united Far-eastern fisheries scientific structure, Including TINRO-Centre with its branches and the Base of Research Fleet, KamchatNIRO and SakhalinNIRO.

TINRO-CENTRE RESEARCH ACTIVITY

Investigations of TINRO-Centre include a wide spectrum of science disciplines and are supported by large volume of monitoring information about state and dynamics of marine ecosystems, climatic processes, anthropogenic impact on marine bioresources. Research integration has been carried out on the basis of complex bioresources research programs of Far-Eastern Seas and Pacific open-waters for many years. Programs purposefulness are keys for understanding of complicated physical and biological processes, which take place in marine ecosystems, for correct forecasting of their consequences, as well as the effect of these processes on resource stock dynamics and mariculture development.

RESEARCH FLEET

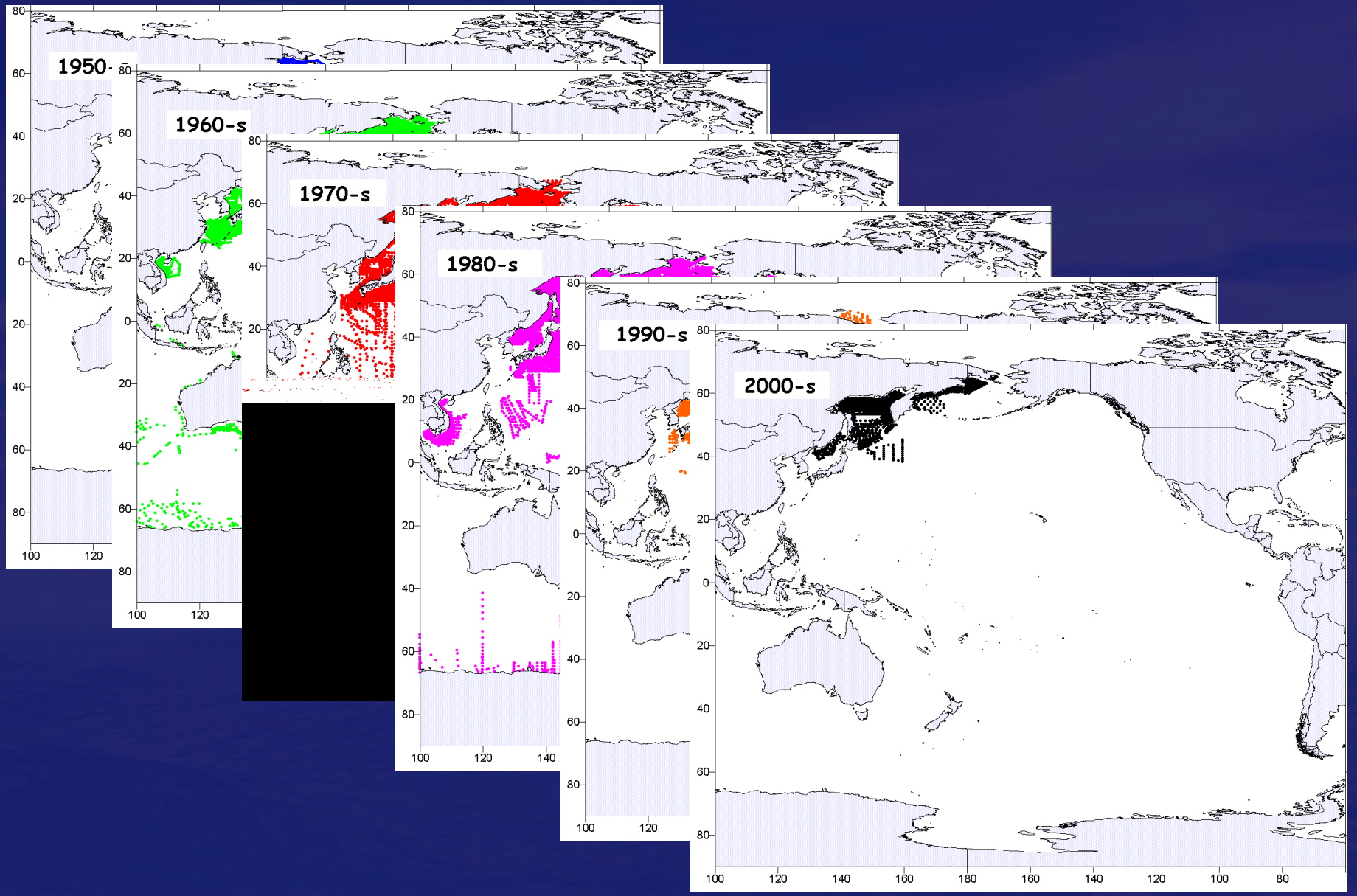
EXPEDITION RESEARCH



YEARS

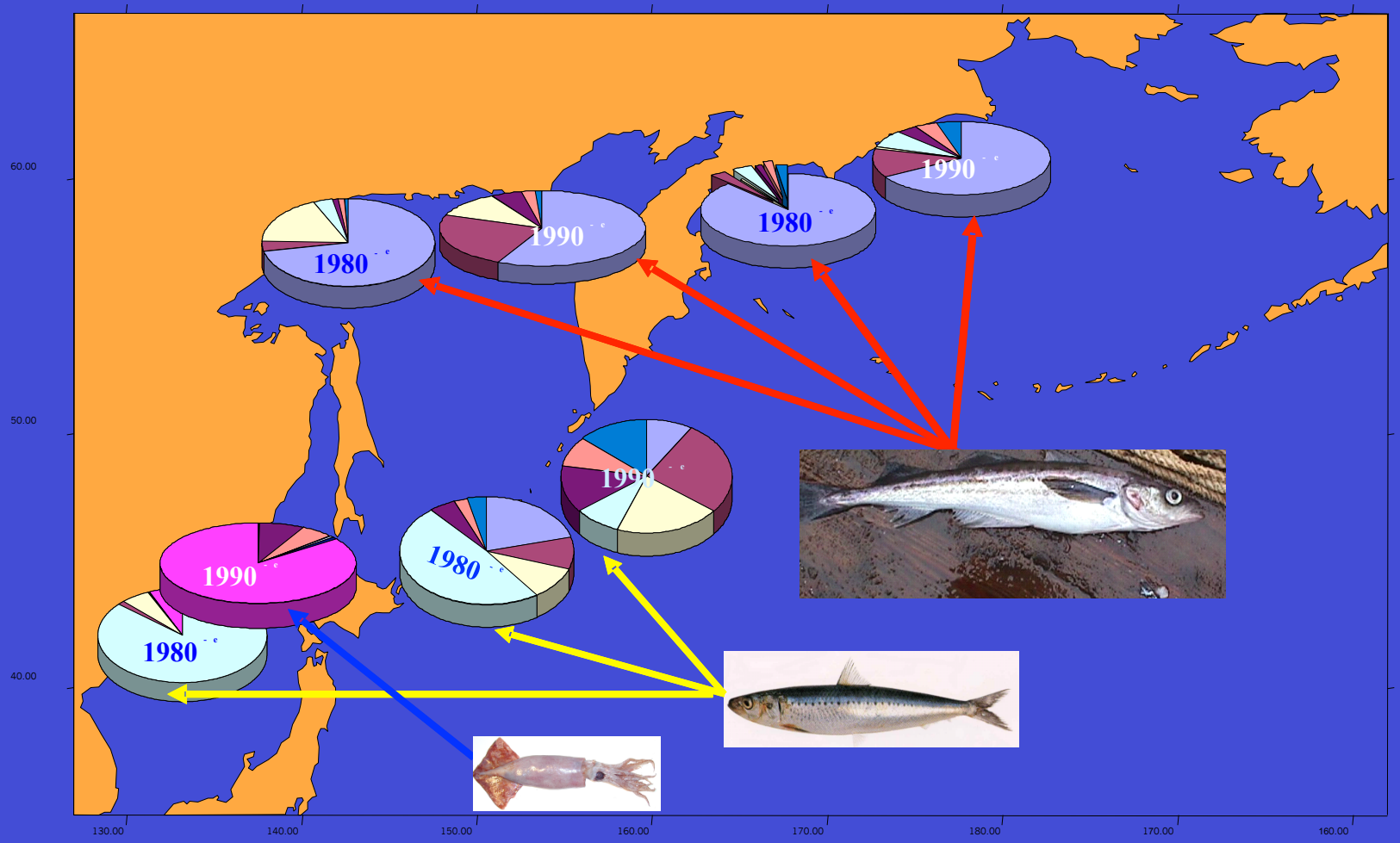
- 50
- 60
- 70
- 80
- 90
- 2000

EXPEDITION RESEARCH FOR THE DIFFERENT PERIODS

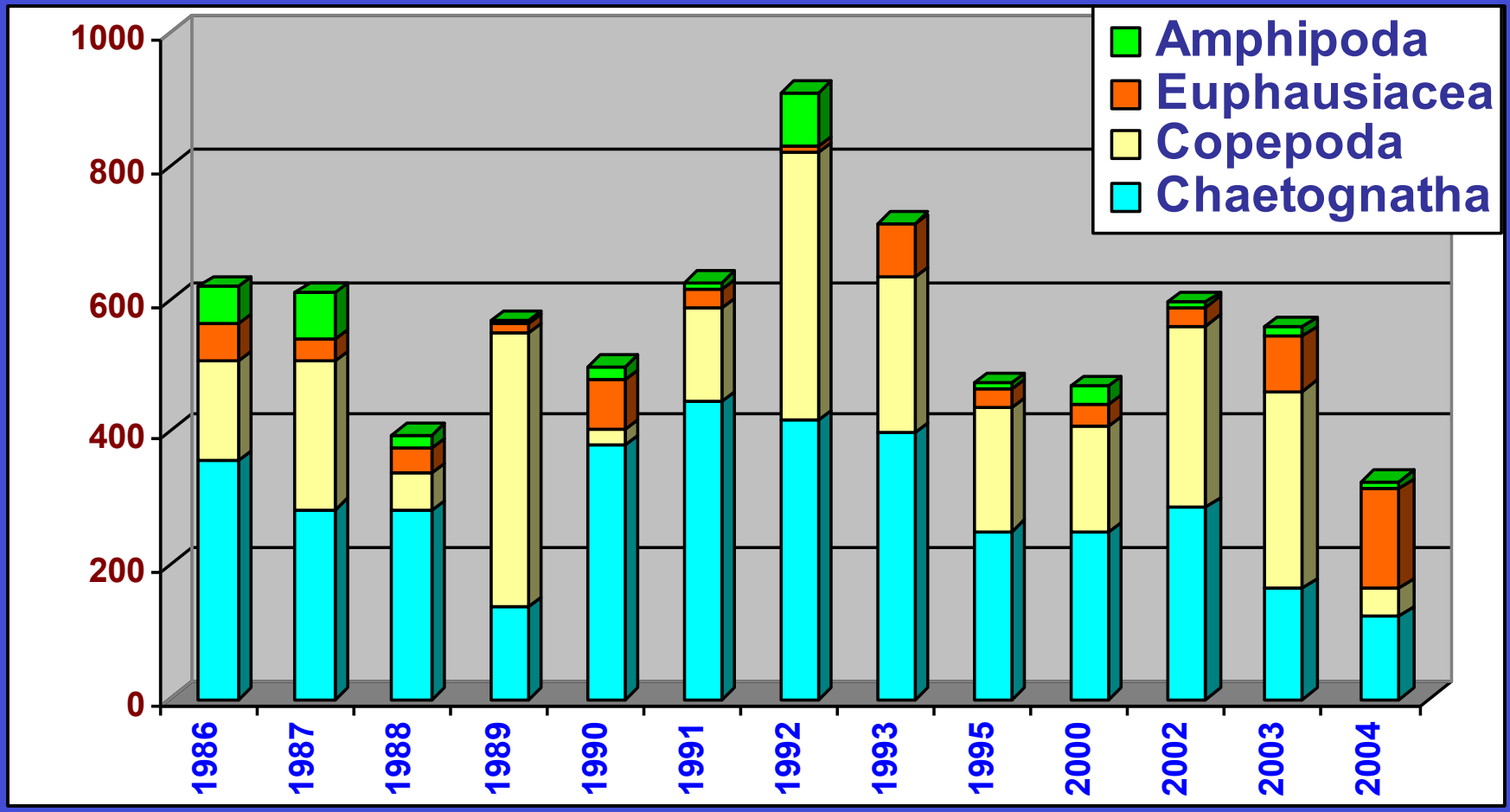


Large-scale monitoring of a Far East Seas (economic zone of Russia) in 1990th has confirmed this important assumption. In the course of 1990th by rough estimations a fish productivity the Far East Seas has decreased not less than for third that has coincided with occurring in this period in the Far East Seas ecosystem reorganizations.

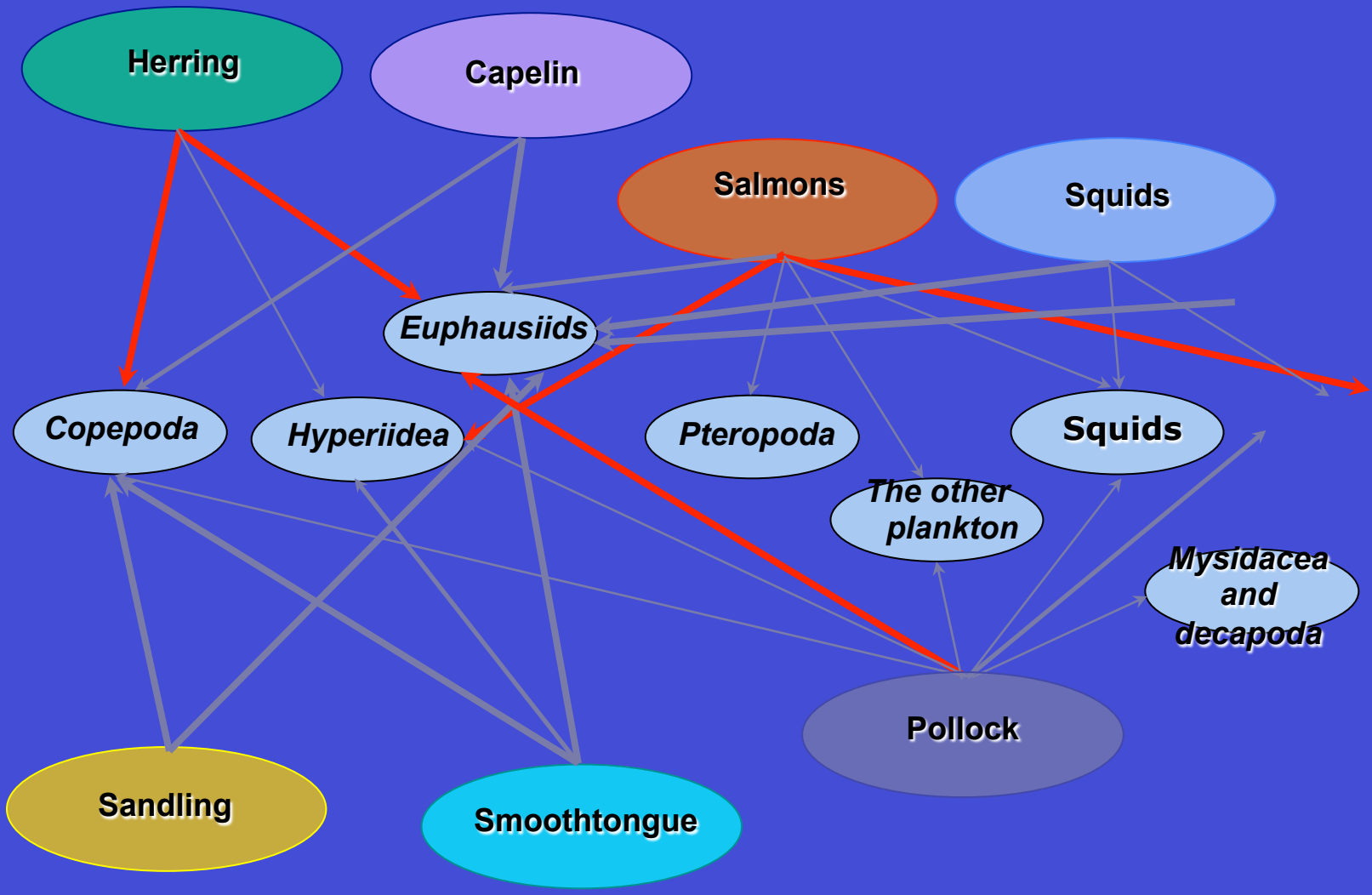
As a result of reorganizations have occurred not only quantitative changes in concentration of a nekton and nekto-benthos (frequently in side downturn), but also in the ratio and structure of a pelagic and demersal communities.



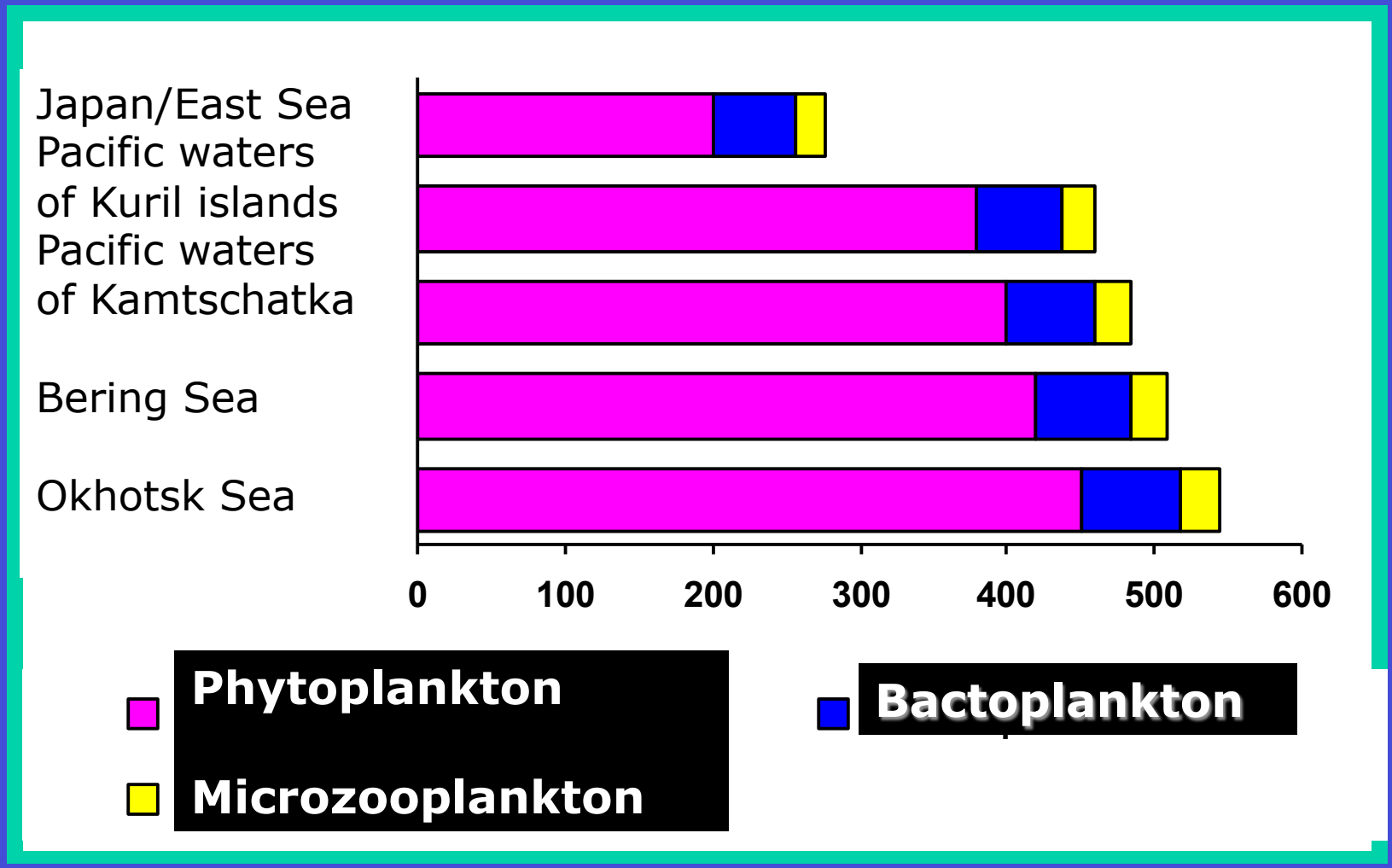
Regular standard supervision over a status of planktonic communities of the Far East Seas have enabled to oversee dynamics of their composition and structure during the long period.



As a result of processing and the analysis of huge data files on features of a feeding of fishes and invertebrates the basic trophic communications of components demersal and pelagic communities of ecosystems Okhotsk (scheme) and Bering Seas have been established.



- Long-term ecosystem researches have allowed to range the Far East Seas on a level of productivity macroecosystems and have revealed features of functioning Okhotsk and Bering Seas: most effectively in Okhotsk Sea transfer of energy on the lowest, and in Bering sea - at the maximum trophic levels is carried out.



Total estimation of abundance of the marine organisms in the Russian economic zone of the Far East Seas

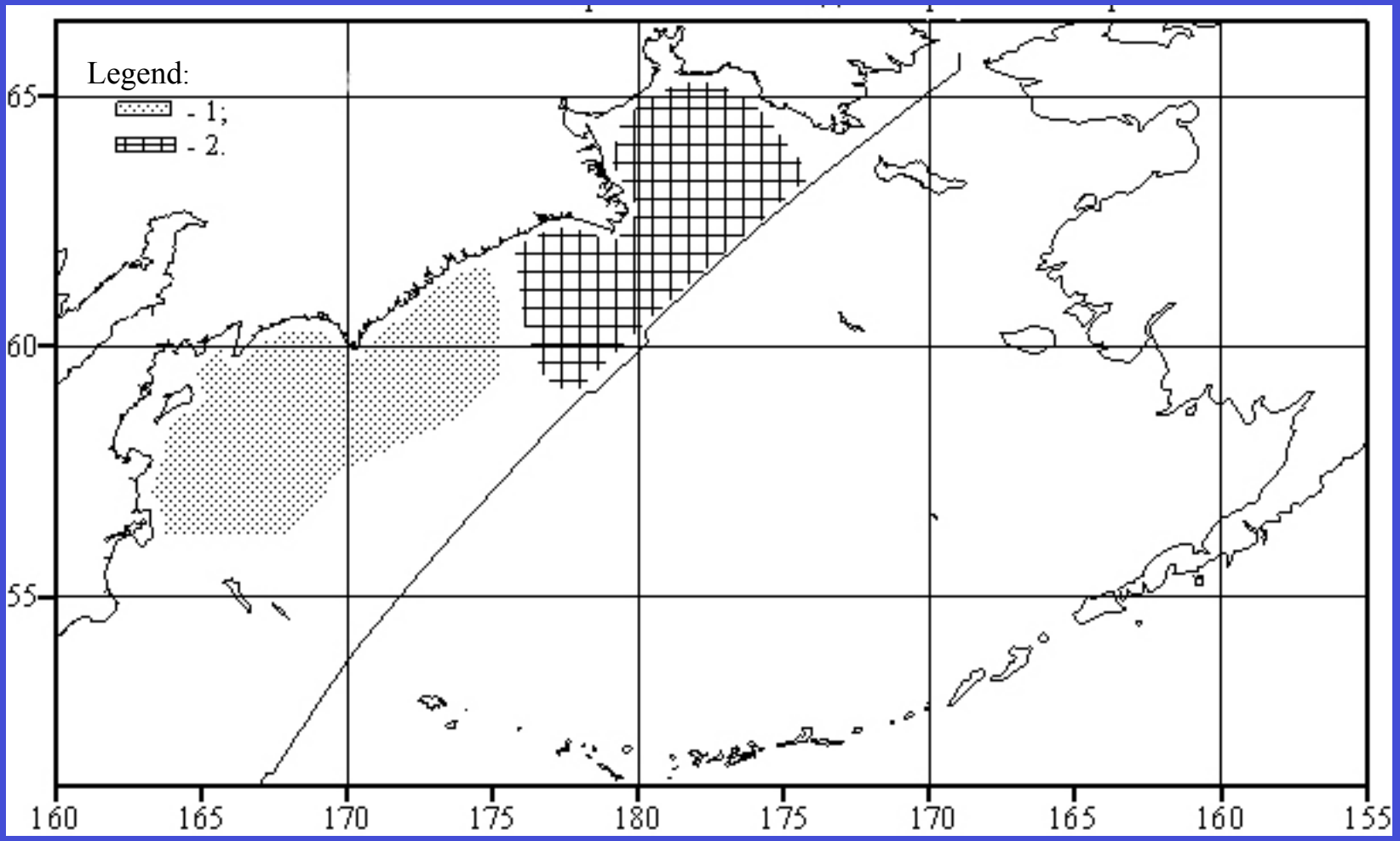
BIOMASS:

Fishes and large invertebrates - 90-100 million т
Macro benthos – 408 million т
Meso- and macro plankton -1206 million т

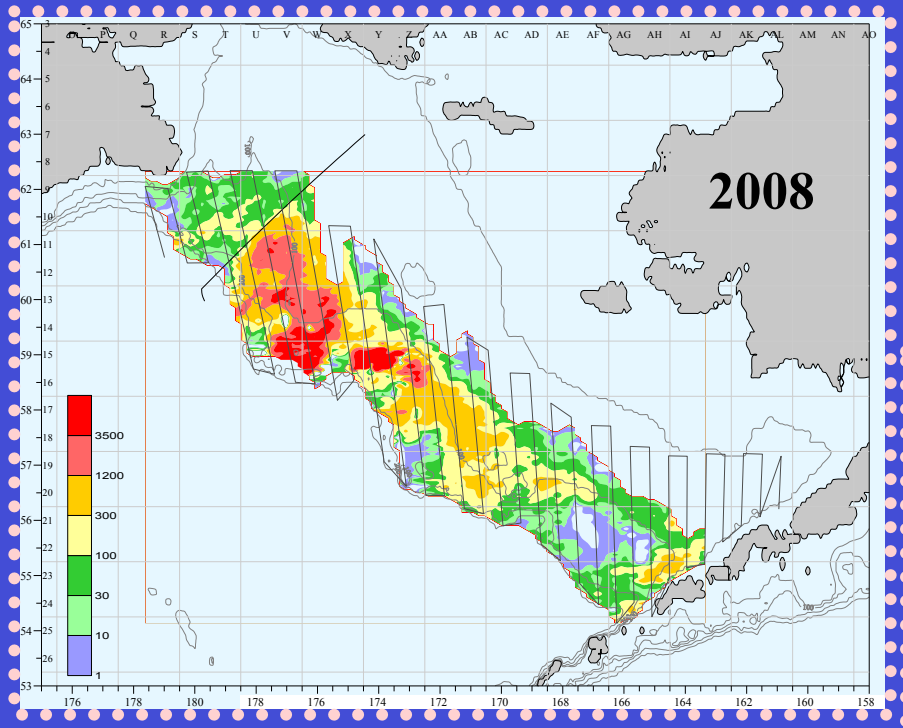
NUMBERS:

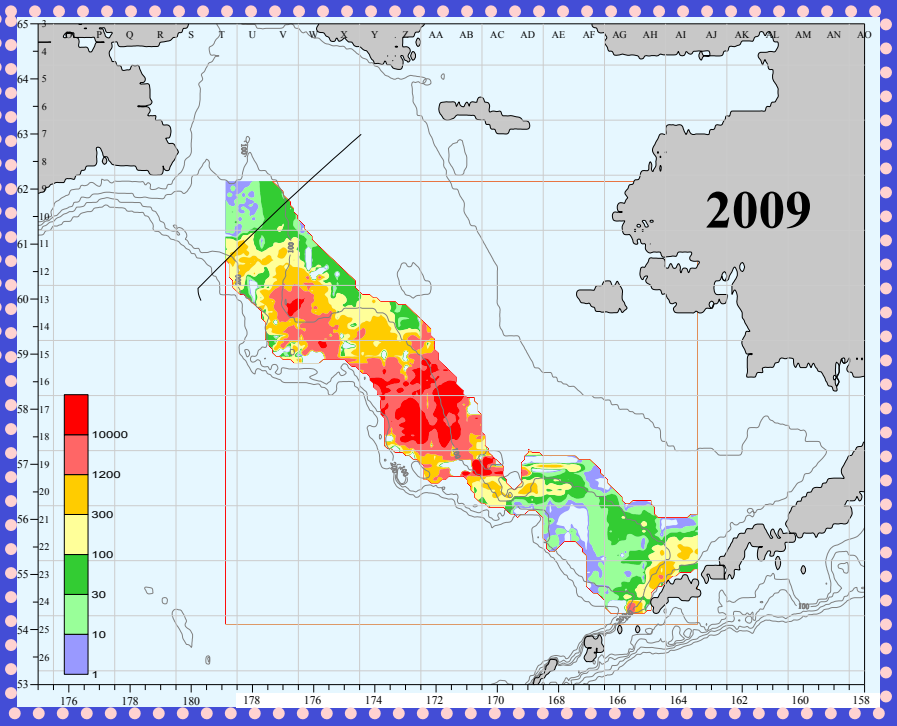
Whales -100-120 thousand specimens
Dolphins – 250 thousand specimens
Seabirds – 40-50 million specimens

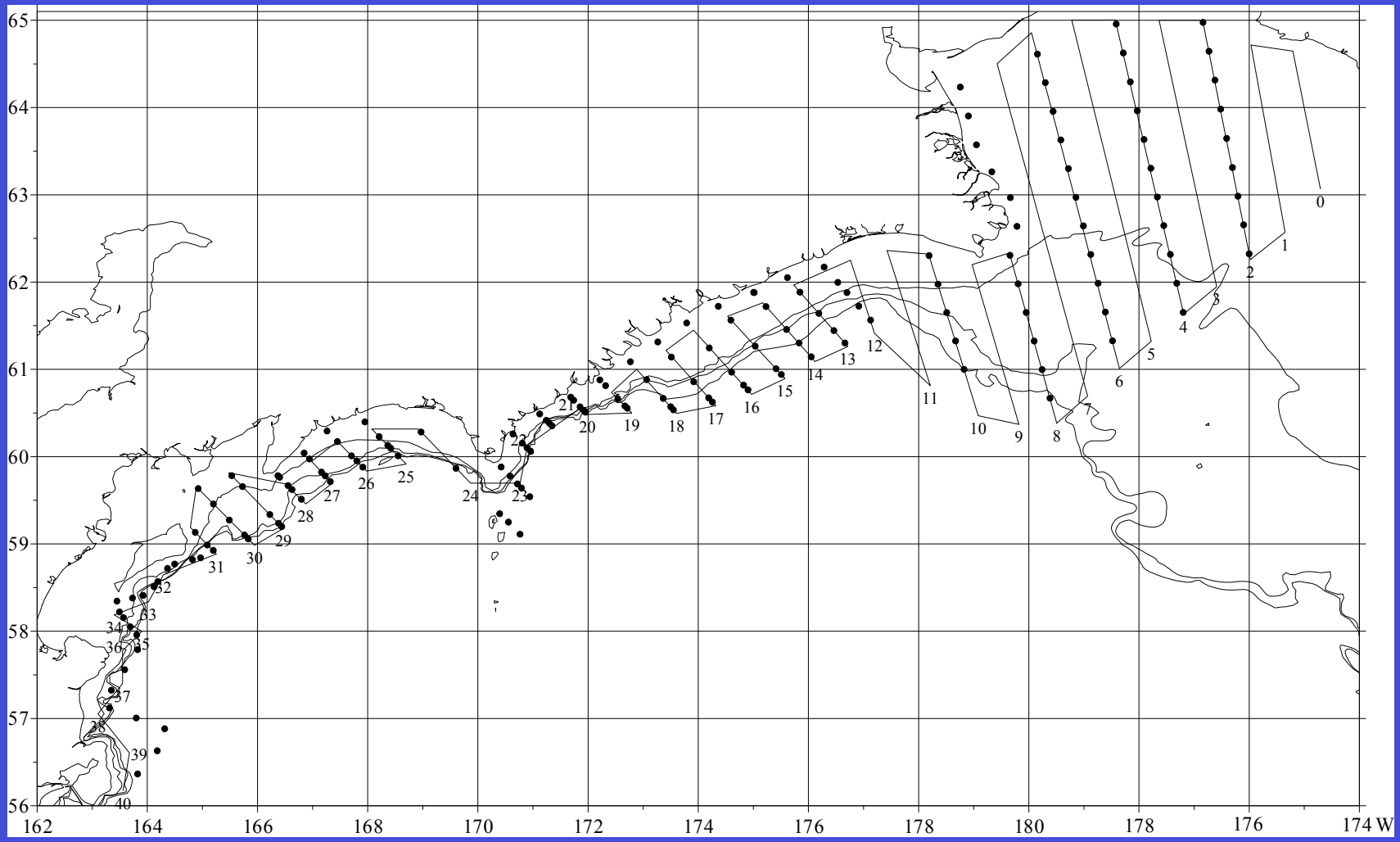
Spacial distribution
of the pollock stock exploited units
(the populations of western (1) and eastern (2) parts of the Bering Sea)
within Russian waters of the Bering Sea



Distribution of all the pollock size groups (ths. pcs) in the pelagial (surface – seafloor) of the Bering Sea shelf area from June through August of 2008-2009.







The scheme of the standard grid of acoustic survey tacks and seafloor trawl survey stations in the western part of the Bering Sea

Pollock biomass and number in in the Bering area according to the data from AFSC trawl-acoustic survey in the summers of 1996-2009

		Biomass, th.tonnes			***Number, mln. pcs***		
Estimate	Year	Surface – 3 m above the seafloor	Layer 3-0.5 m	Surface – 0.5 m above the seafloor	Surface – 3 m above the seafloor	Layer 3-0.5 m	Surface – 0.5 m above the seafloor
AFSC	***1996***	2370.7	681.0	**2991.7**	6525.3	1311.5	**7836.7**
AFSC	***1997***	2631.7	961.9	**3593.6**	18554.9	2016.4	**20571.3**
TINRO	***1999***	3202.2	842.3	**4044.4**	8833.7	2046.9	**10880.5**
TINRO	***2000***	3050.3	690.0	**3740.3**	7629.1	1311.4	**8940.6**
TINRO	***2002***	3707.2	930.4	**4637.6**	11877.8	1673.7	**13551.5**
TINRO	***2004****	4115.2	871.6	**4986.8**	8595.8	1313.7	**9909.5**
TINRO	***2004***	3846.0	814.6	**4660.6**	7521.7	1149.6	**8671.3**
TINRO	***2006***	1538.8	383.4	**1930.1**	3250.8	570.0	**3820.8**
TINRO	***2007****	1945.8	639.2	**2585.0**	10955.6	1036.1	**11991.7**
TINRO	***2007*** **	110.6	8.2	**118.8**	1084.9	12.7	**1097.6**
AFSC	***2008****	993.9	534.9	**1528.8**	4539.3	756.4	**5295.6**
TINRO	***2008*** **	28.5	5.8	**34.3**	44.8	9.1	**53.9**
AFSC	***2009****	815.2	367.2	**1182.4**	8049.3	1039.0	**9088.3**

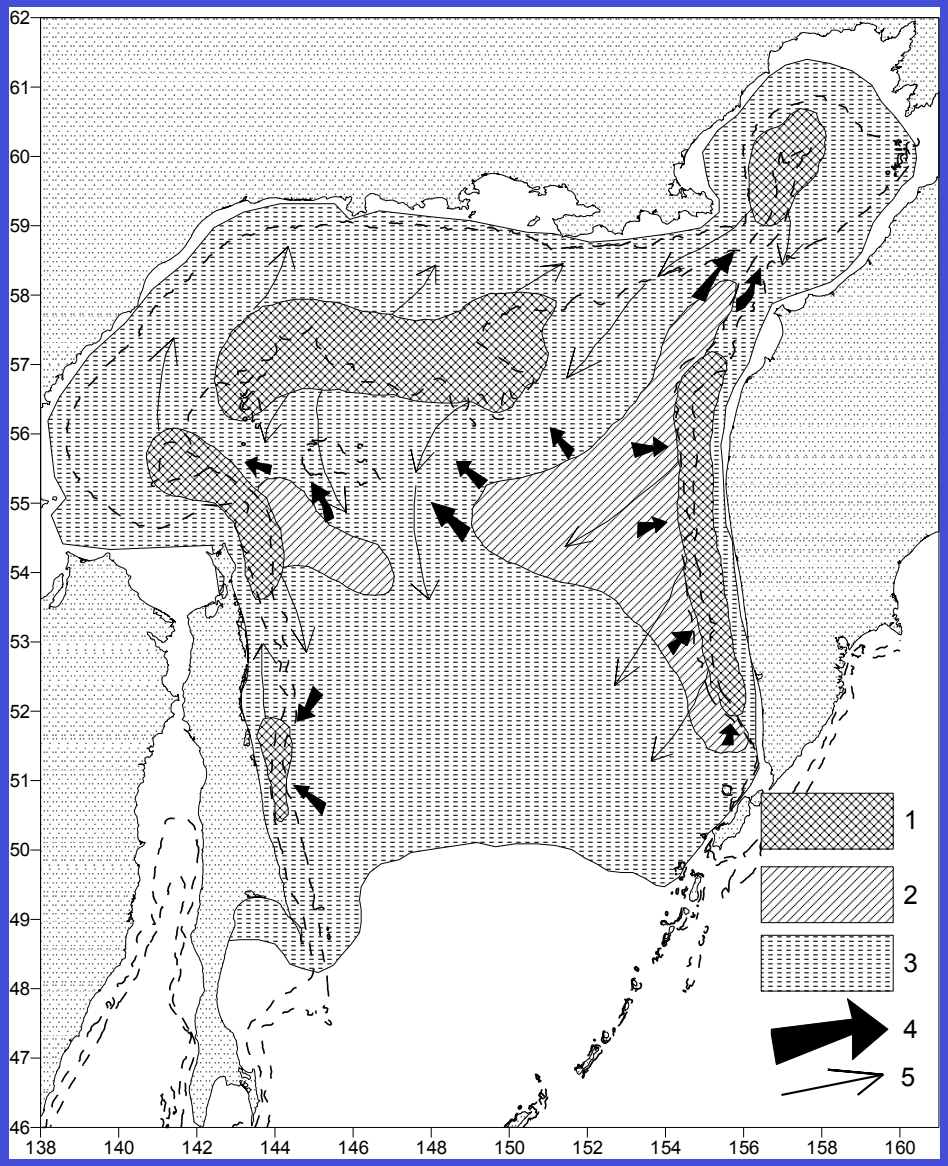
* - Estimate with the Russian zone taken into account

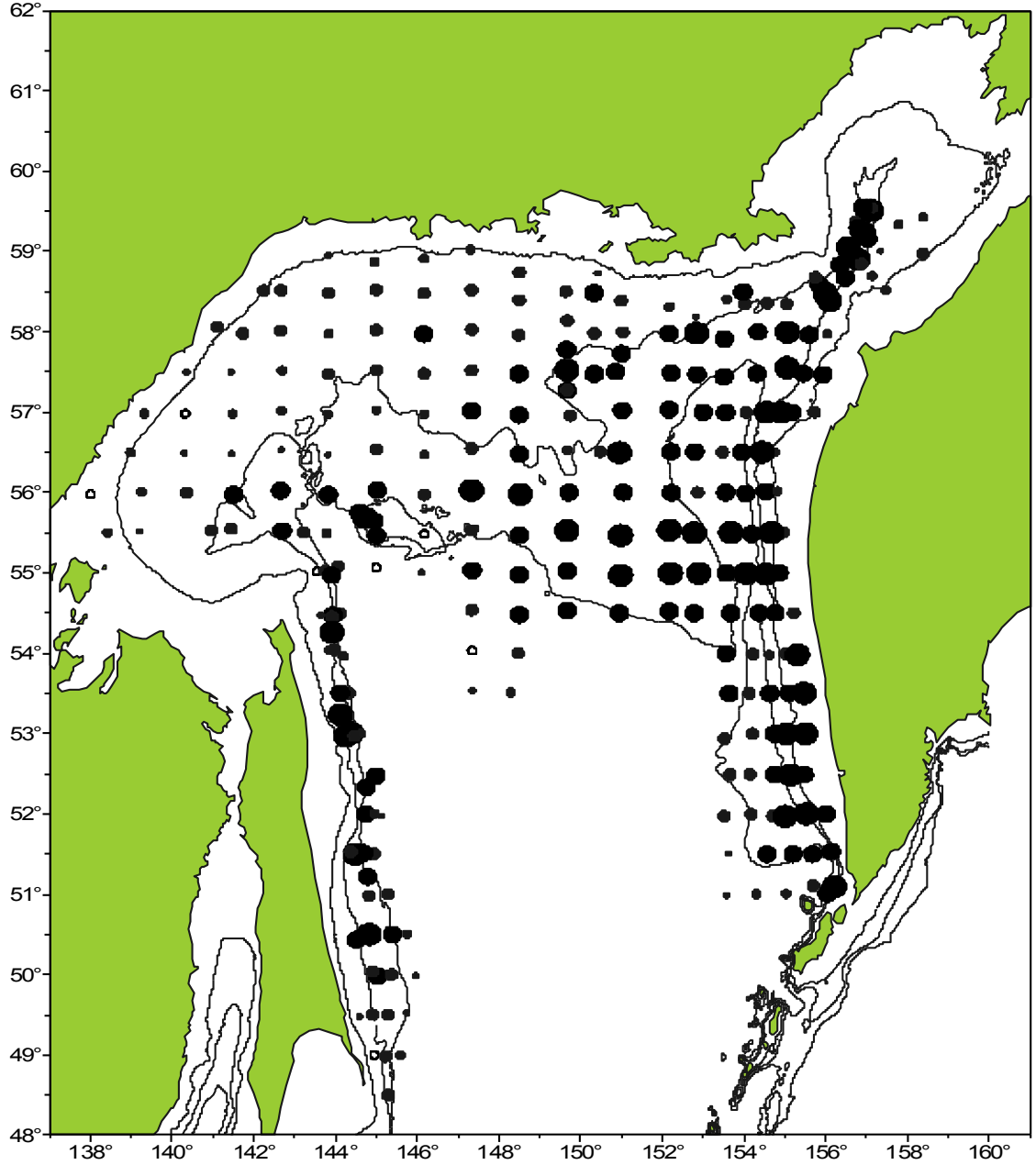
**- Estimate in the Russian zone

The volume of pollock total allowable catches and yield in the western part of the Bering Sea in 2003-2009, th.tonnes (Buslov, Ilyin, 2009)

			Years					
Zone, subzone		2003	2004	2005	2006	2007	2008	2009
The Karaginsky fishing subzone	Total allowable catches	5.0	7.25	5.25	5.25	70.6	67.9	30.0
	Yield	6.7	4.3	4.3	4.1	63.5	51.3	26.1
Western Bering Sea zone, westward of 174°E	Total allowable catches	5.0	3.75	4.75	4.75	77.0	70.1	38.0
	Yield	3.1	4.4	4.3	17.3	98.4	44.1	74.4

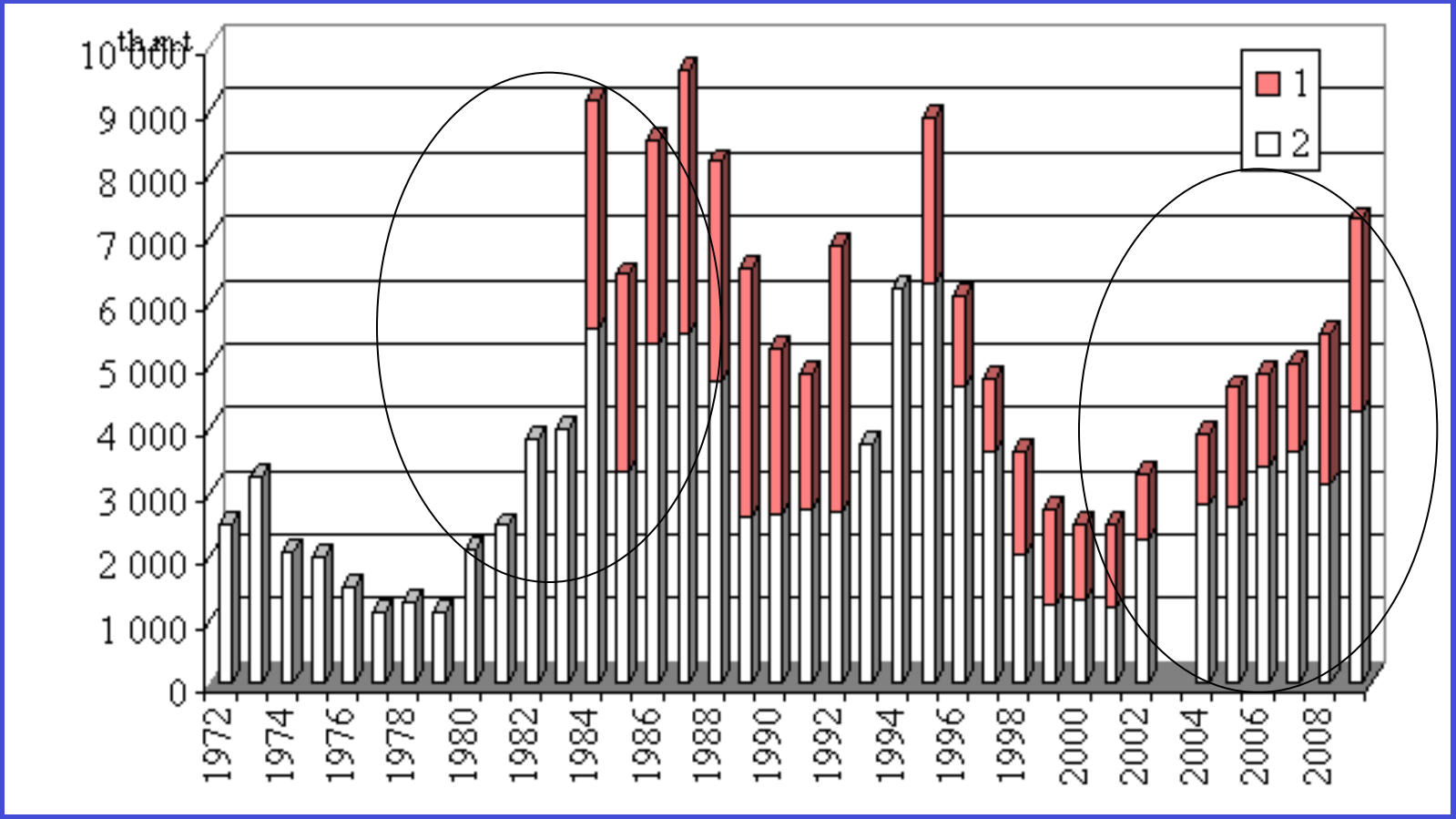
General pattern of pollock functional range and main reproduction areas in the Sea of Okhotsk (Fadeev, Smirnov, 1993, amended and revised). Legend: 1- spawning grounds; 2- wintering clusters; 3- feeding area ; 4- spawning migration; 5- feeding migration; I – Western Kamchatka spawning grounds, II – Shelikhov Bay spawning grounds, III – spawning grounds of the north central part of the sea (Swan's shoal), IY – spawning grounds of Iony Bank and Iony Island, Y – East Sakhalin spawning grounds .





Pollock distribution (pcs per sq.m) in the Sea of Okhotsk according to the data from verification trawl survey from April 2 through May 30, 2009

Dinamics of pollock spawning stock in the northern part of the Sea of Okhotsk in 1972-2009 according to the data of ichthyoplankton survey . 1- the subzone of the northern part of the Sea of Okhotsk, 2 – the western Kamchatka waters. Sample takes in the north-west of the sea were not carried out in 1972 - 1984. (1972 -1983 - data by KoTINRO)



Total pollock eliminated biomass and yield on the western Kamchatka shelf in 2007 (Dulepova, Ovsyannikov, 2008)