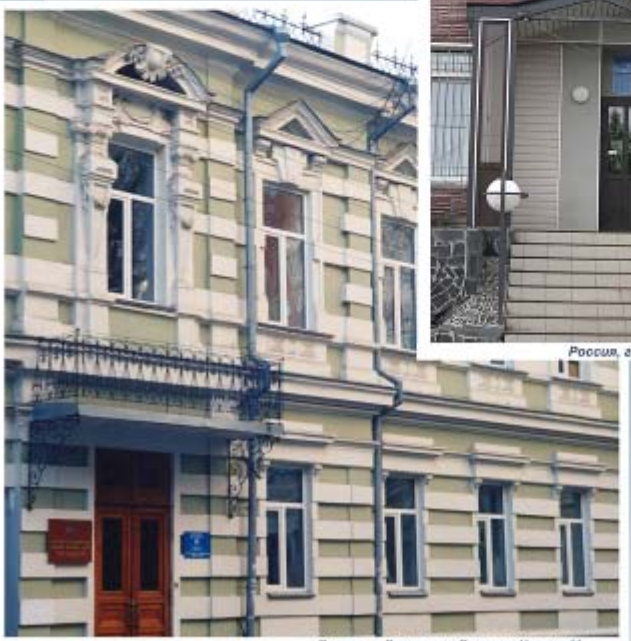
РОССИЙСКАЯ АКАДЕМИЯ НАУК
Южный научный центр
Кольский научный центр
Мурманский морской биологический институт

Gennady G. Matishov
Academician, Russian Academy of Sciences
Director, Murmansk Marine Biological Institute
Chairperson, Southern Scientific Centre RAS

Россия, г. Мурманск, ул. Владимирская 17



Россия, г. Ростов-на-Дону, пр. Чехова 41

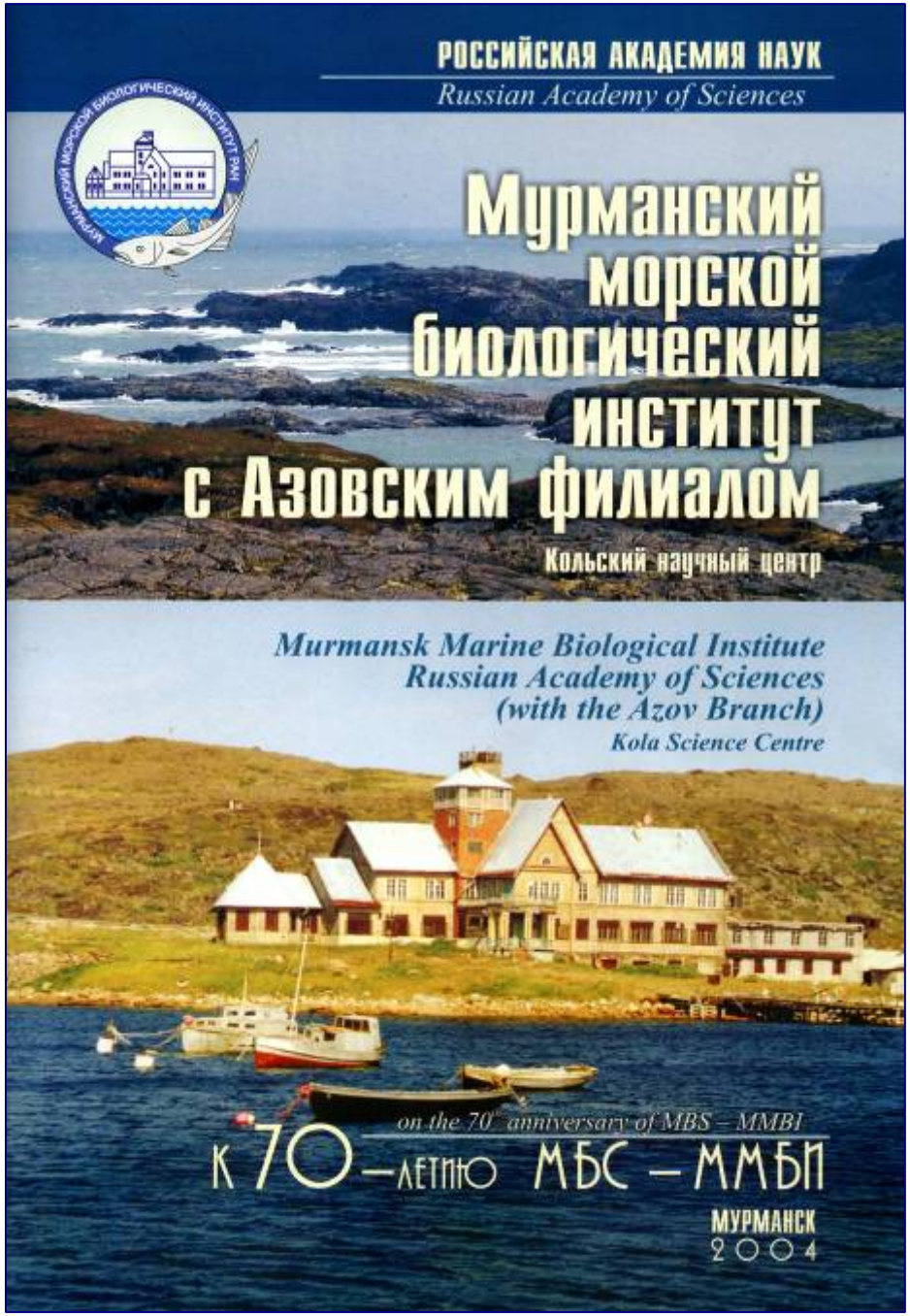
«Large Marine Ecosystems of the Artic Regional Seas»

Gennady G. Matishov

IOC/UNESCO

Paris, France

03-04 July 2006



SCIENCE

VOL. 85 FRIDAY, JUNE 4, 1937 No. 2214

SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. MCKEEN CATTELL and published every Friday by

THE SCIENCE PRESS

New York City: Grand Central Terminal
Lancaster, Pa. Garrison, N. Y.

Annual Subscription, $6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

SCIENTIFIC EVENTS

THE BIOLOGICAL STATION AT BARENTS SEA

It is stated in *Nature* that a new biological station is being built by the Academy of Sciences of the U.S.S.R. at Murmansk on the Barents Sea. It is intended for extensive research in morphology, anatomy, embryology, physiology, biochemistry and ecology of sea organisms.

Owing to the penetration of the warm waters of the Atlantic into the Barents Sea, the fauna of the latter is extremely rich and diverse. Of importance is the fact that at Dalnye-Zelenets Bay the water is transparent to a depth of 10 meters and that large stretches of the sea bottom are visible from the surface. The scientific workers at the station will make a detailed study of the problems of evolutionary physiology, embryology and the relationship of the fauna with changed hydrological conditions effected by the Gulf Stream.

The Murmansk biological station will supply biological material to the various research institutes and higher educational institutions of the U.S.S.R. Superintending the building is a special commission consisting of S. A. Zernov (director of the station), L. A. Orbeli, V. I. Vernadsky and N. M. Knipovich, Professor K. M. Deryugin, of the University of Leningrad, Professor L. N. Fedorov, director of the All Union Institute of Experimental Medicine, and Professor I. M. Kreps.

The cost of building the Murmansk Station is estimated at 3½ million roubles, excluding equipment. A scientific library, the zoological, botanical, microbiological and hydrochemical laboratories and the libraries of other departments will be housed in the main building of the station. An aquarium designed for scientific work will be installed on the first floor of this building, while several other aquaria, open to the public, will be erected in the basement of the building. Premises containing students' laboratories will be situated near the central building and will also be equipped with large aquaria. Special interest is attached to an open-air concrete reservoir intended to accommodate large sea animals, including seals.

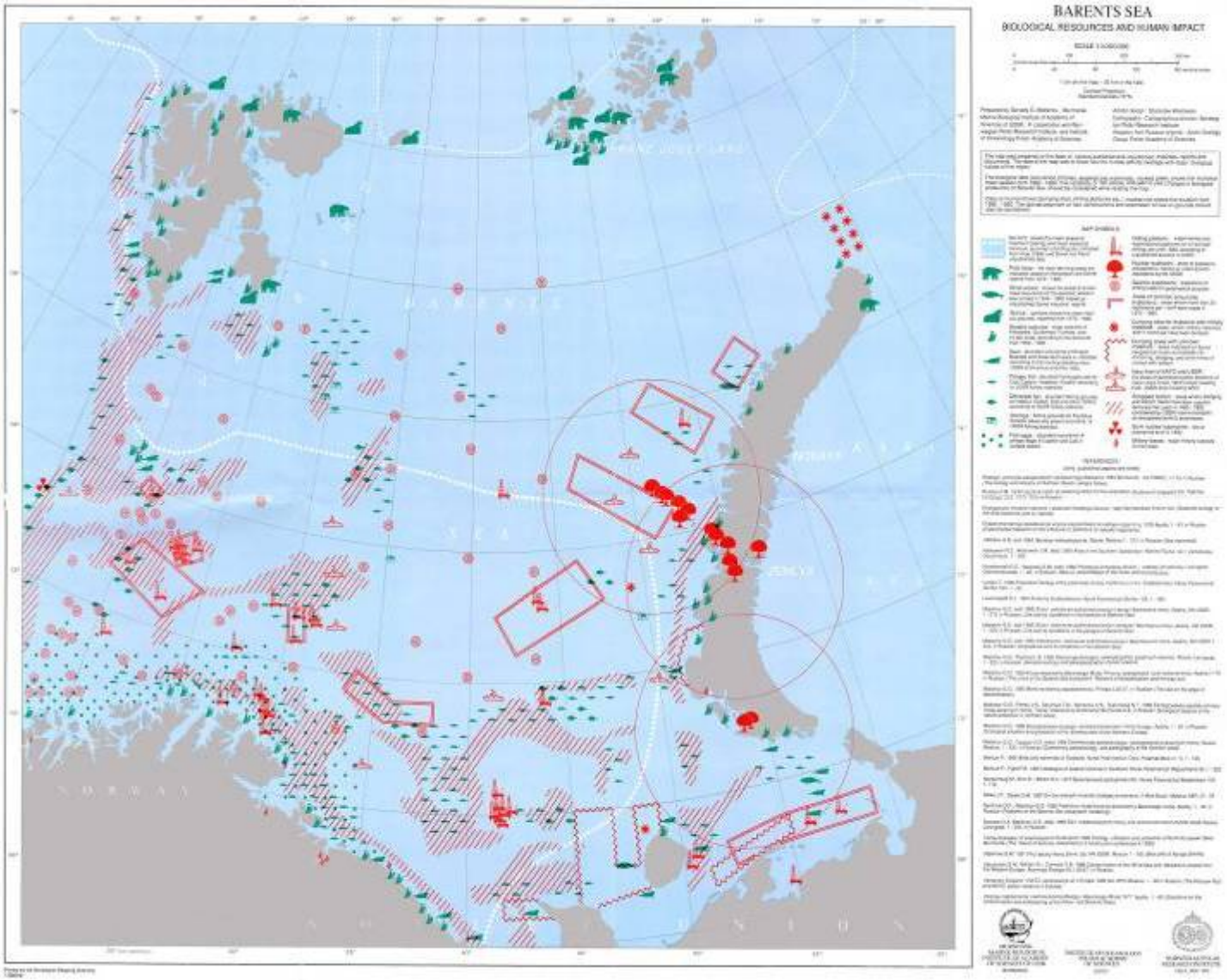
The spawn of crabs will be brought from the Far East for acclimatization and breeding in the Barents Sea. A special vessel, 30 meters long, built for scientific work in the open sea, will maintain uninterrupted communications between the station and the city of Murmansk.

At the beginning of this year, the Academy of Sciences of the U.S.S.R. commenced extensive work in the Dalnye-Zelenets Bay, east of the Kola Bay (Teriberka district, situated in the Northern Province) for the construction of this biological station, which will be the finest in the Soviet Union. The Soviet architect N. V. Ryumin and his assistants have designed all the buildings.

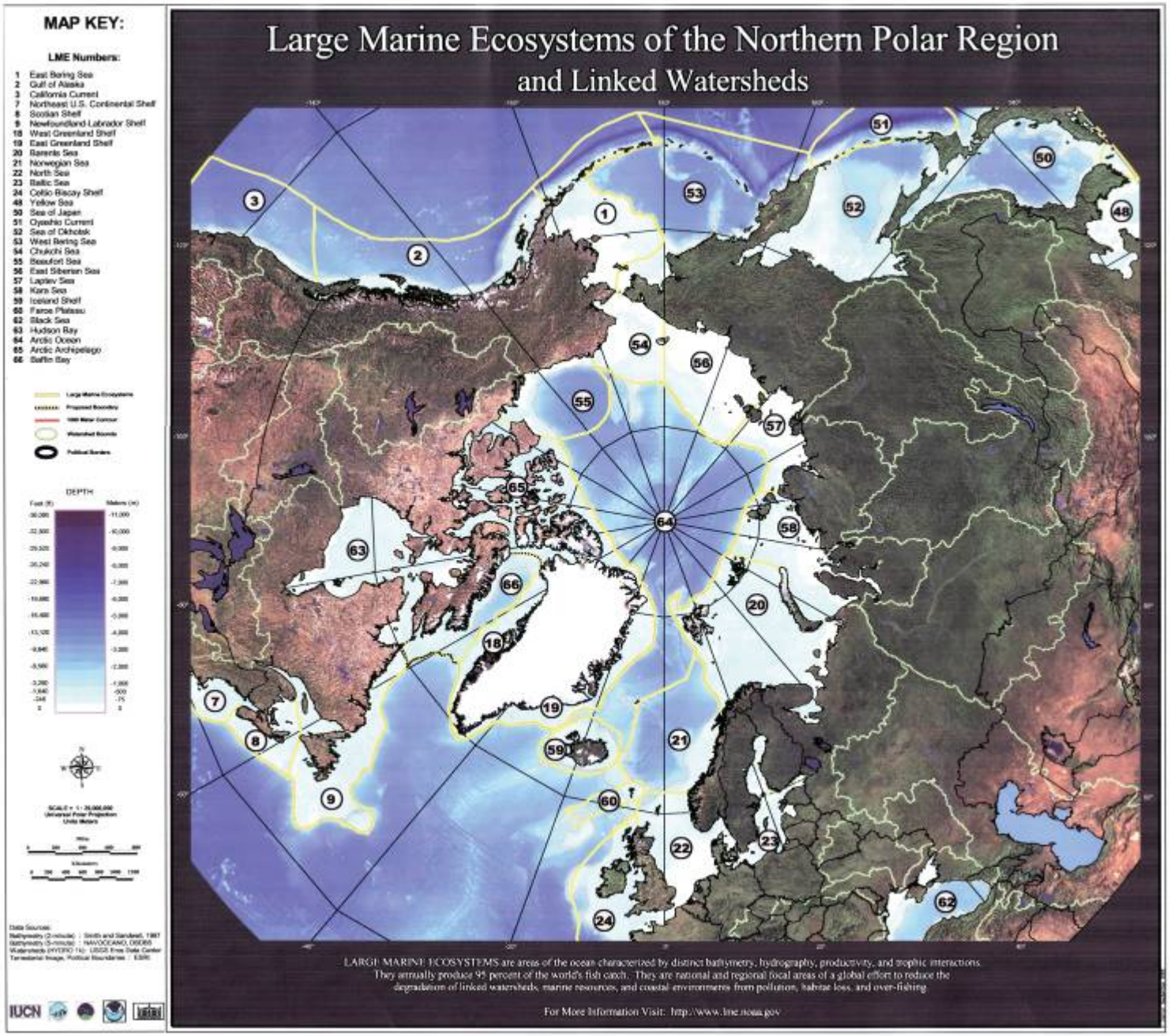
THE FIRST EXPERIENCE OF THE BARENTS SEA ECOSYSTEM RESEARCH (1985 – 1986)

BARENTS SEA. BIOLOGICAL RESOURCES AND ANTROPOGENIC IMPACT MAP

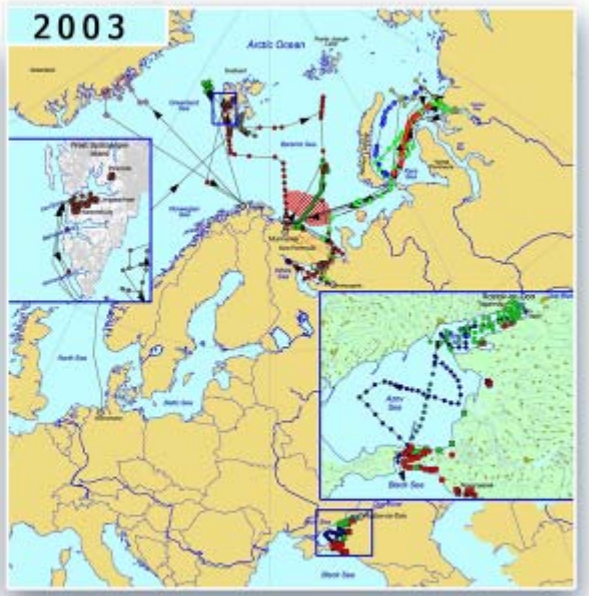
(Barents Sea Biological Resources and Human Impact. Map Scale: 1:3 000 000/ Matishov G., Weslawski S. MMBI, Institute Oceanology Polish Academy of Sciences, Norwegian Polar Inst. Oslo, 1991)

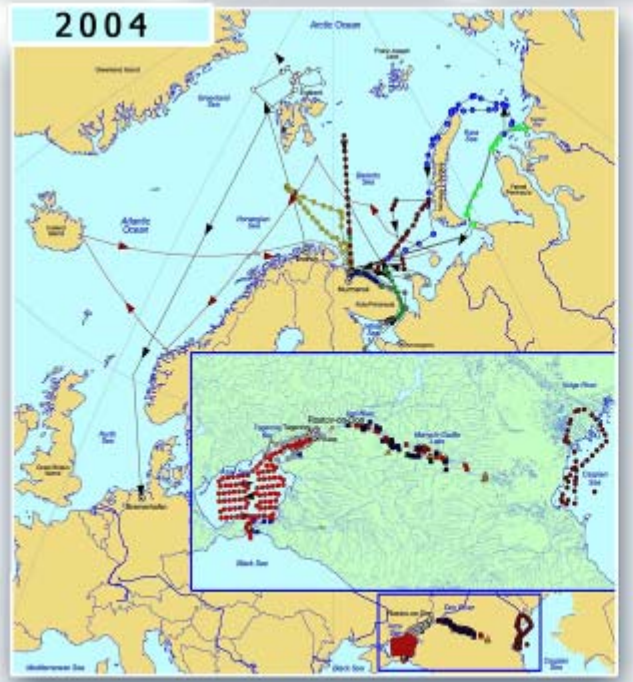


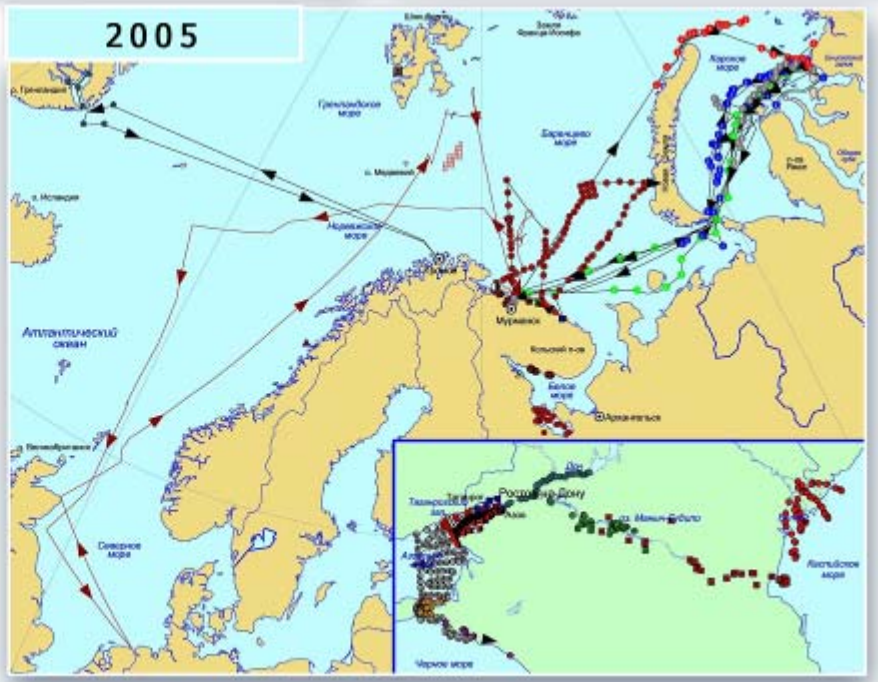
Large Marine Ecosystems of the Arctic

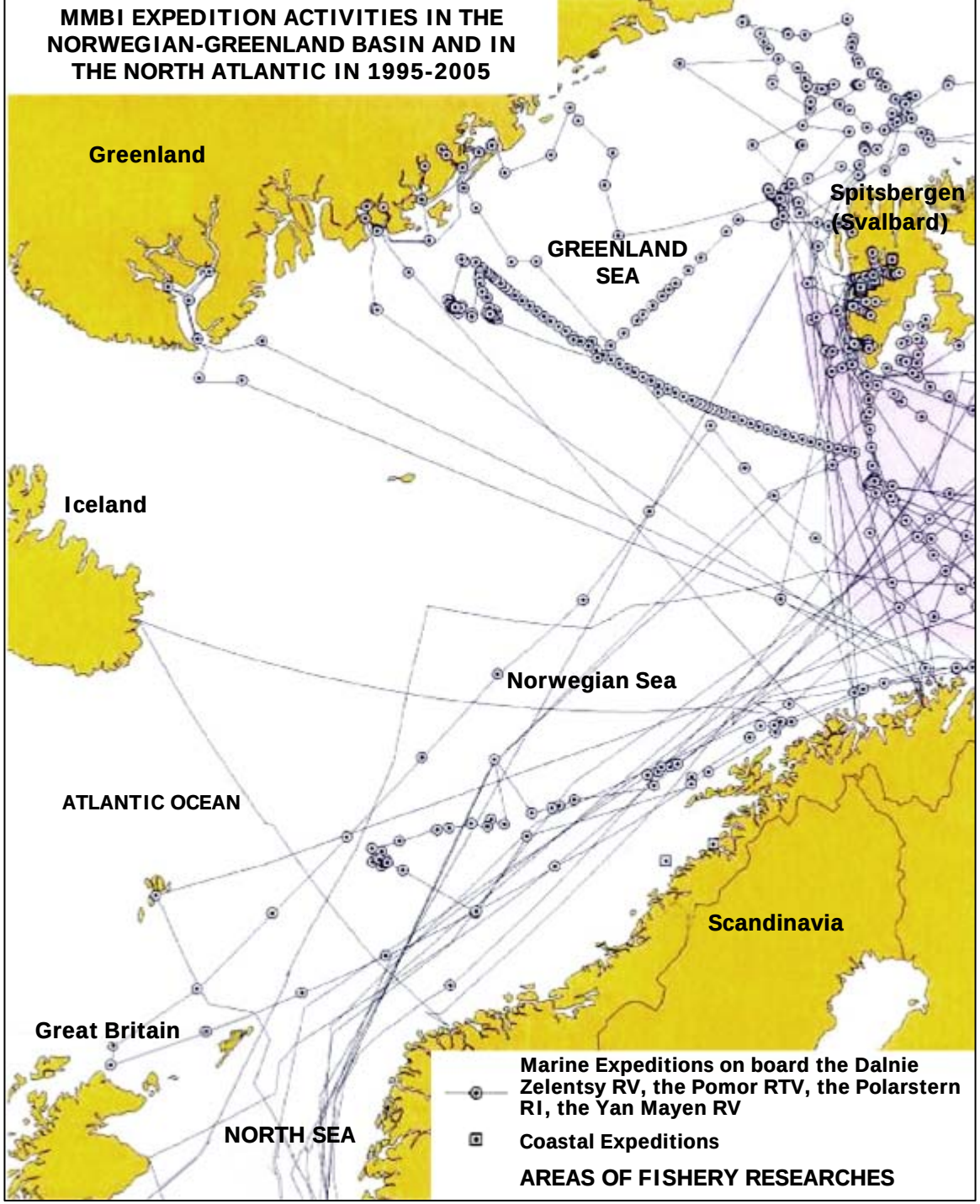


MMBI KSC RAS and SSC RAS Expeditions, 2000 - 2005



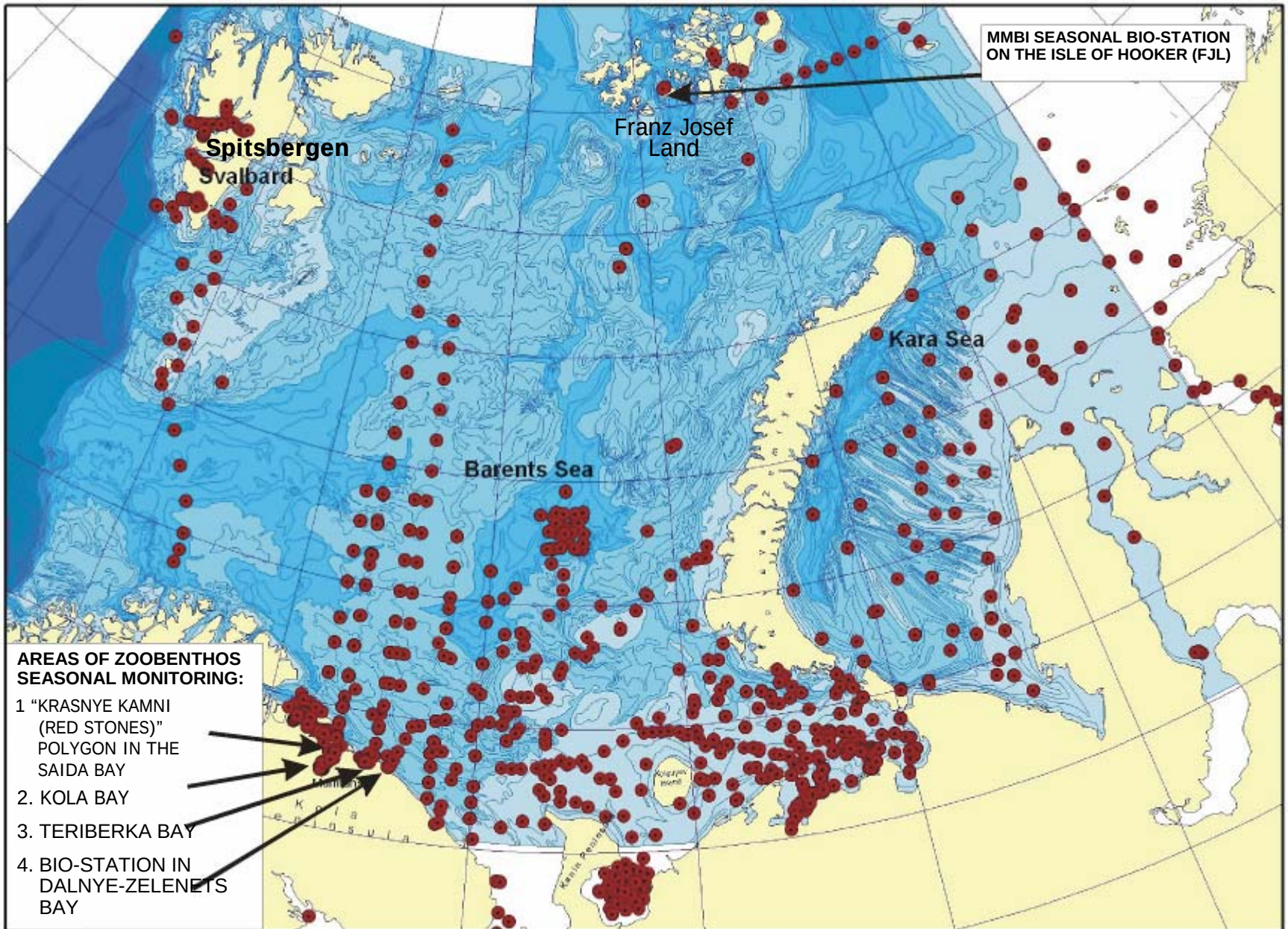




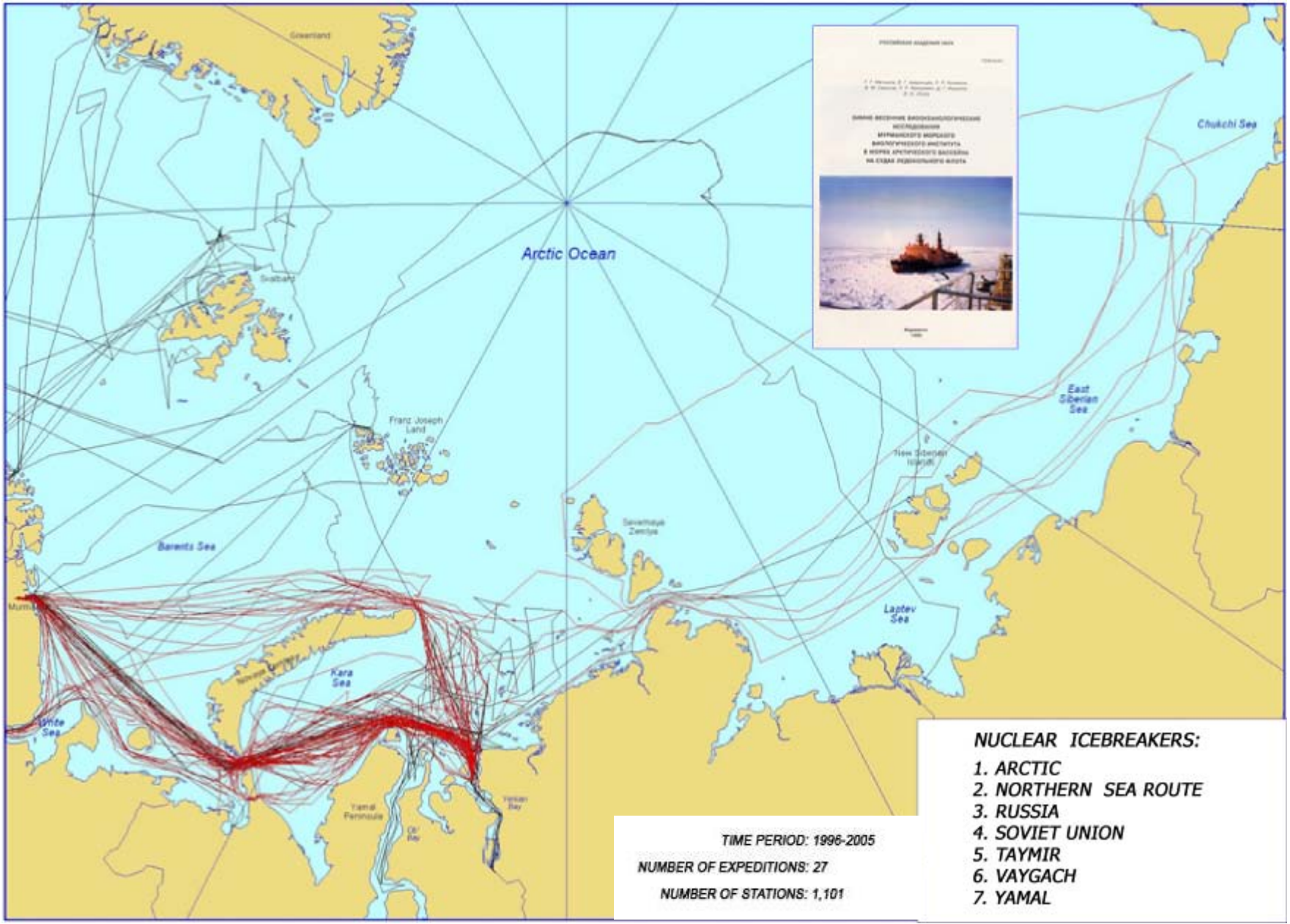

MMBI EXPEDITION ACTIVITIES IN THE NORWEGIAN-GREENLAND BASIN AND IN THE NORTH ATLANTIC IN 1995-2005
Greenland
Spitsbergen (Svalbard)
GREENLAND SEA
Iceland
Norwegian Sea
ATLANTIC OCEAN
Scandinavia
Great Britain
NORTH SEA
Marine Expeditions on board the Dalnie Zelentsy RV, the Pomor RTV, the Polarstern RI, the Yan Mayen RV
Coastal Expeditions
AREAS OF FISHERY RESEARCHES

MONITORING OF ZOOBENTHOS – CLIMATE AND POLLUTION INDICATOR IN THE BARENTS AND KARA SEAS. 1992-2005

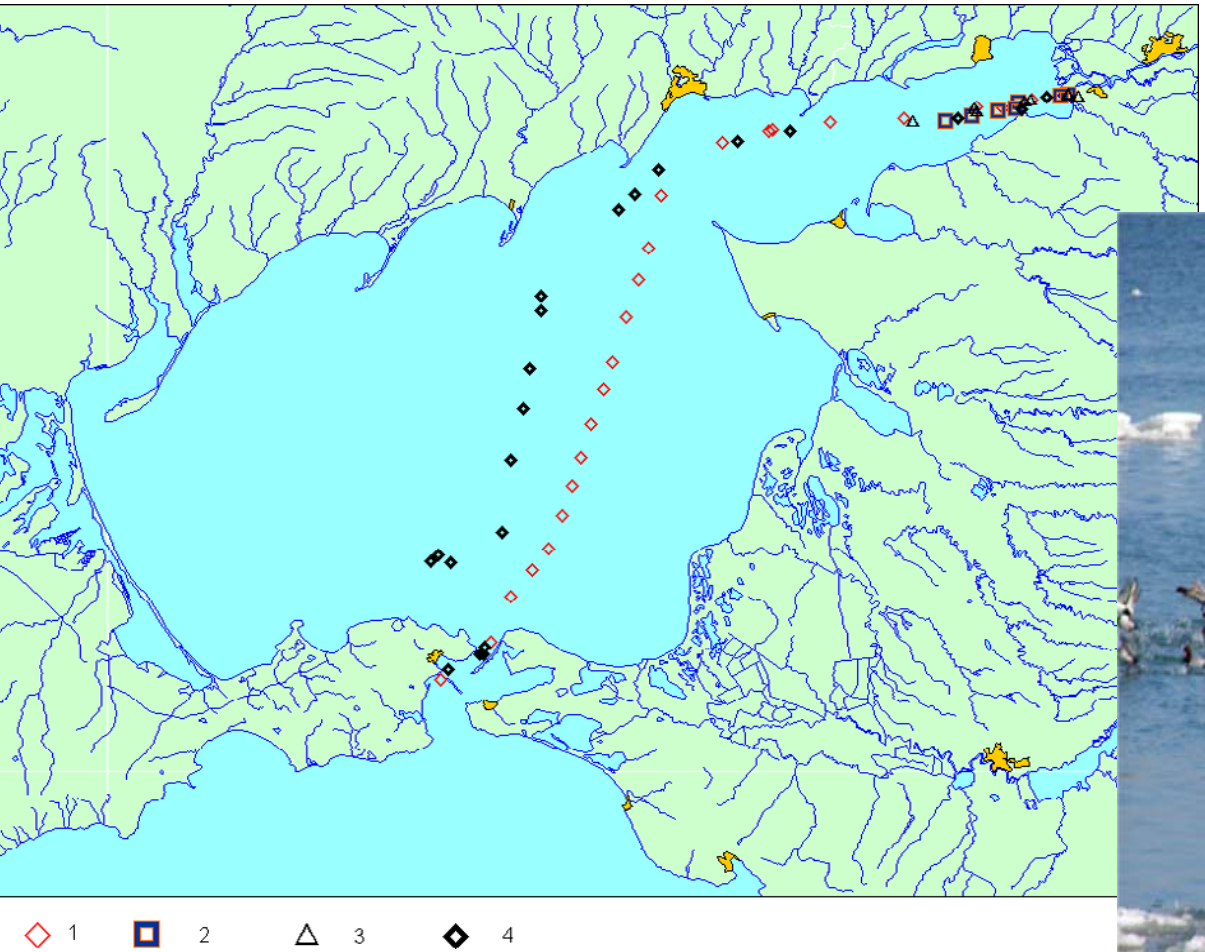
MMBI HAS GOT ITS OWN BOTTOM FAUNA COLLECTIONS BEING FORMED SINCE 1935



A YEAR-ROUND ECOSYSTEM MONITORING ON BOARD THE ATOMIC ICEBREAKERS IN DIFFICULT TO ACCESS



REGULAR WINTER ICEBREAKER EXPEDITIONS IN THE SEA OF AZOV



Map-scheme of sampling sites and ornithological observations in the winter period on board the Captain Demidov Icebreaker and the Professor Panov Research Vessel

Legend:

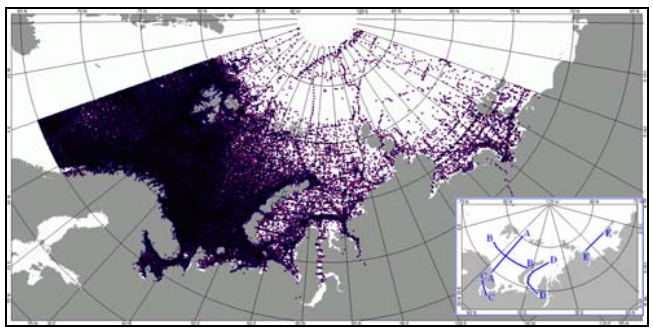
1 – 25.02-5.03.2003, 2 – 21-22.01.2004
3 – 28.02-3.03.2005, 4 – 24.01-19.02.2006

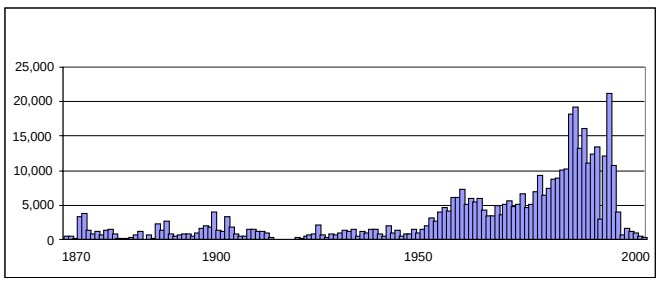
The Kerch Strait – waterfowls concentration site in the winter period

«CLIMATIC ATLAS OF ARCTIC SEAS 2004: PART 1. DATABASE ON BARENTS, CARA, LAPTEV AND WHITE SEAS – OCEANOLOGY AND MARINE BIOLOGY»

Totals the 10 years work of the institute in the field of applied marine informatics and, at the same time, is the base for further development of integrated hydrobiological research in oceans and seas

METEOROLOGICAL, OCEANOGRAPHICAL AND HYDROBIOLOGICAL PRIMARY DATA ON ARCTIC SEAS ARE PRESENTED ON DVD INCLUDING 478 THOUSANDS OF OCEANOGRAPHICAL STATIONS IN 1810-2001 PERIOD.



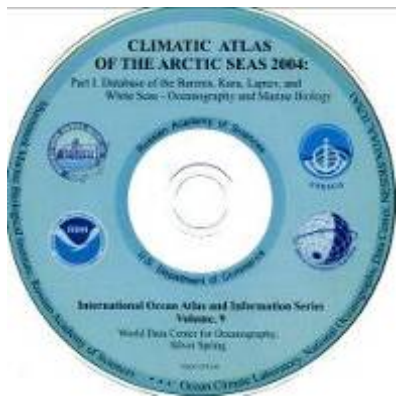


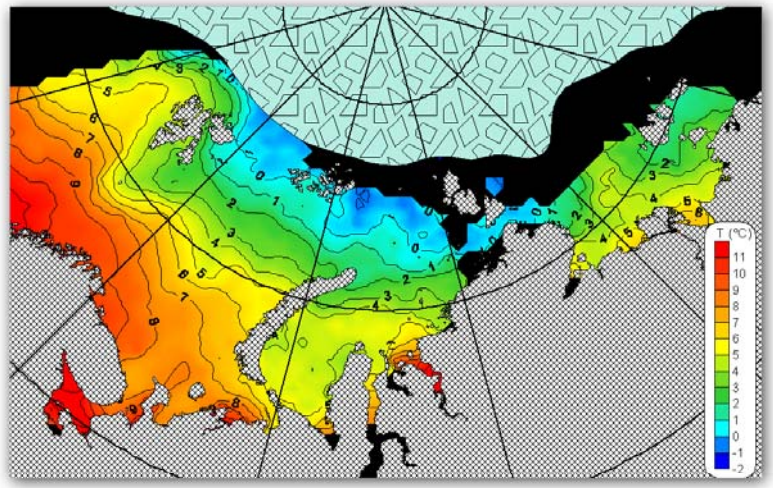

КЛИМАТИЧЕСКИЙ АТЛАС МОРЕЙ АРКТИКИ 2004 :

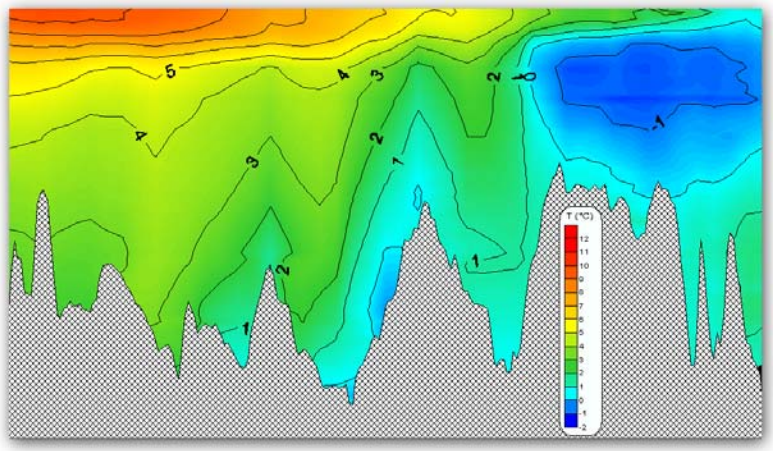
РОССИЙСКАЯ АКАДЕМИЯ НАУК

U.S. DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration







World Data Center for Oceanography, Silver Spring
International Ocean Atlas and Information Series, Volume 10
NOAA Atlas NESDIS 58

Climatic Atlas of the Sea of Azov 2006 (preliminary version)

DATABASE

Period: 1913 – 2004

Number of Cruises: 328 Number of Stations:14145

CLIMATIC ATLAS OF THE SEA OF AZOV 2006

G. Matishov, D. Matishov, Yu. Gargopa, L. Dashkevich, S. Berdnikov

(Southern Scientific Centre, Murmansk Marine Biological Institute, Russian Academy of Sciences, Russia)

O. Baranova, S. Levitus, I. Smolyar
(Ocean Climate Laboratory, NOAA, USA)

RUSSIAN ACADEMY OF SCIENCES

Academician Yu. Osipov, President

Southern Scientific Centre
Academician G. Matishov, Chairperson

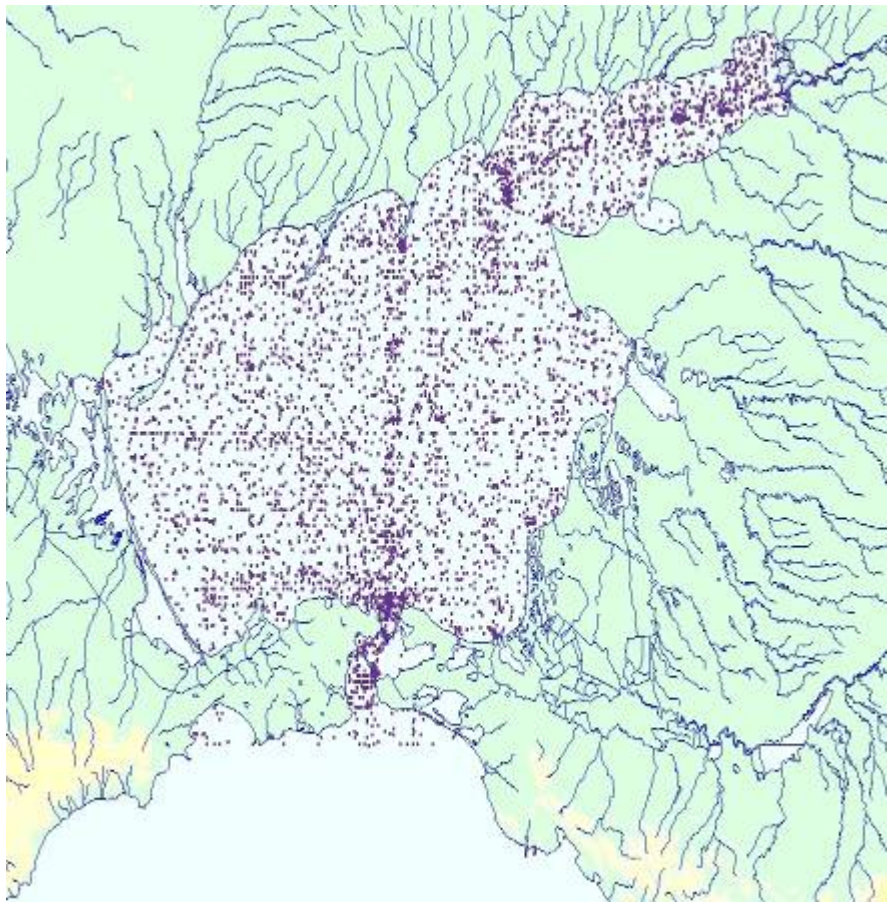
Kola Scientific Centre
Academician V. Kalinnikov, Chairperson

Murmansk Marine Biological Institute
Academician G. Matishov, Director

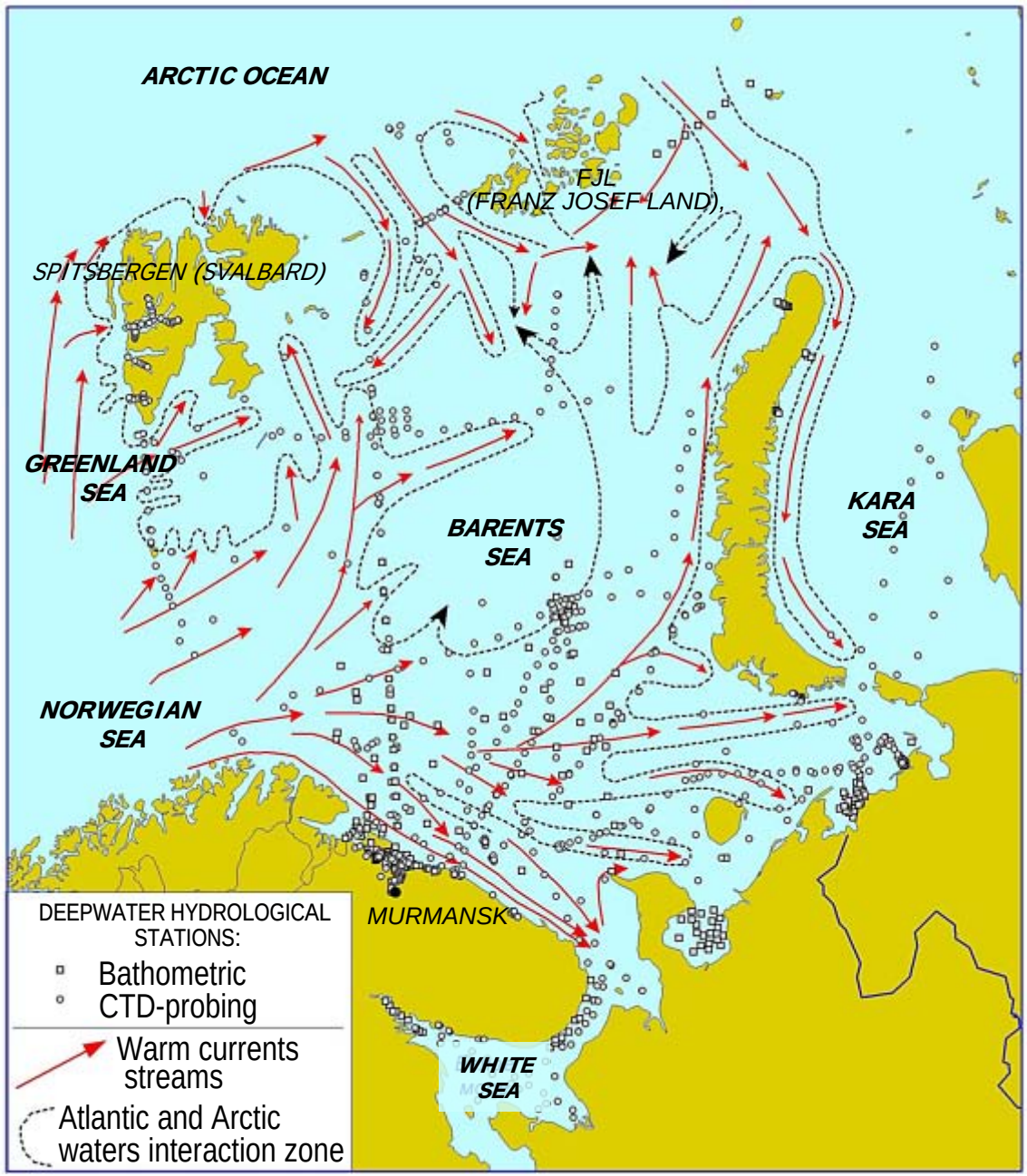
U.S. DEPARTMENT OF COMMERCE
Donald L. Evans, Secretary

National Oceanic and Atmospheric Administration
Vice Admiral Conrad C. Lautenbacher, Jr., USN (Ret)
Under Secretary of Commerce for Oceans and Atmospheres

National Environmental Satellite, Data, and Information Service
Gregory W. Withee, Assistant Administrator



ATLANTIC WATERS ADVECTION ALONG THE BARENTS SEA GLACIAL TROUGHS (ACCORDING TO THE MMBI OCEANOGRAPHIC SURVEYS DATA OF 1995-2005)

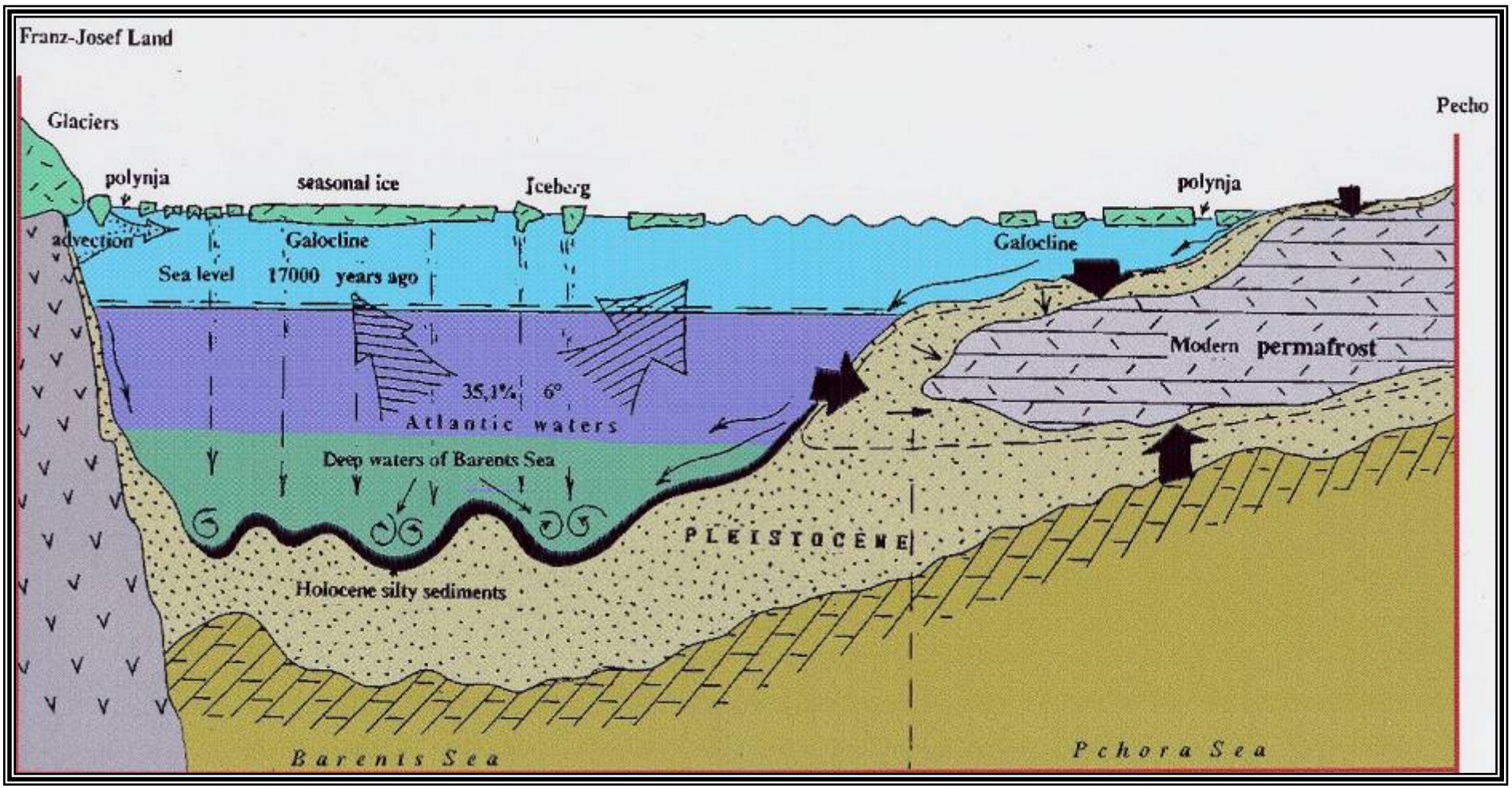


ICE IN «THE NON-FREEZING» KOLA BAY

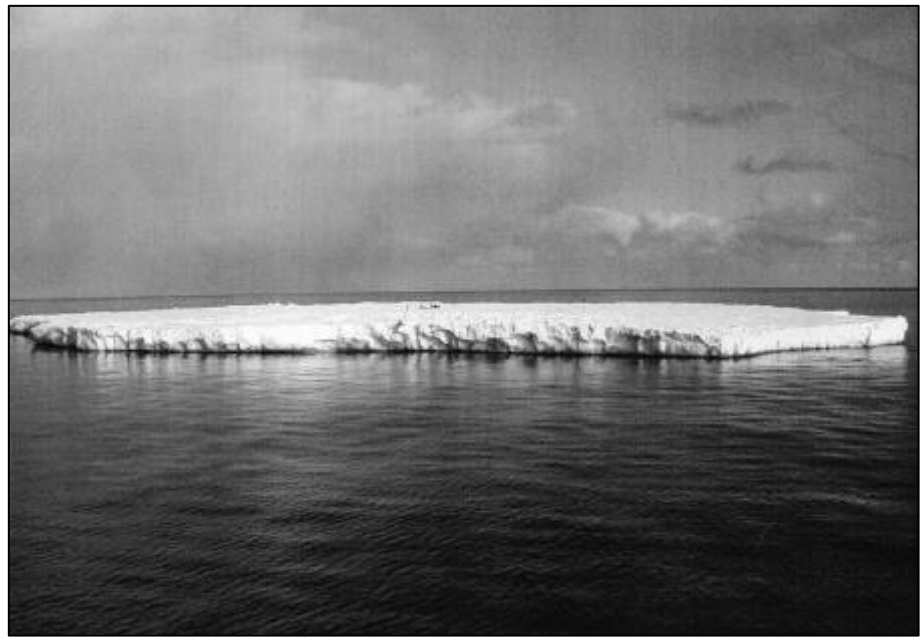
(February-March 1998, ice thickness – 40 sm)

Extreme Winter of the years 2005-2006 in the Sea of Azov

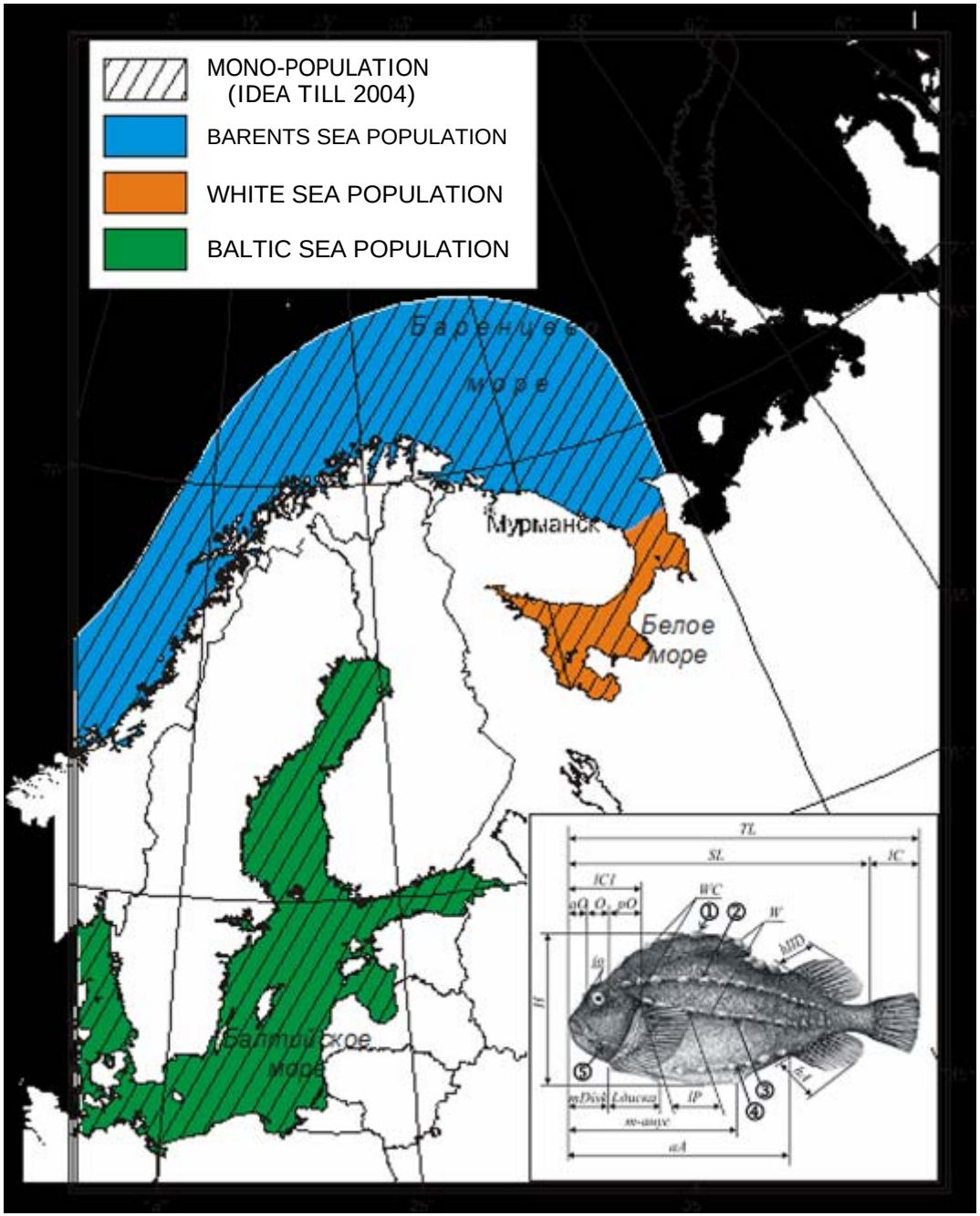
MARINE PERIGLACIAL CONTEMPORARY PHENOMENA IN THE BARENTS SEA



The Barents Sea Present Icebergs in the Water Area of the Stockman GCD (photo by G.K. Zubakin, 2003)



HABITATS OF THREE INDEPENDENT LUMPFISH POPULATIONS



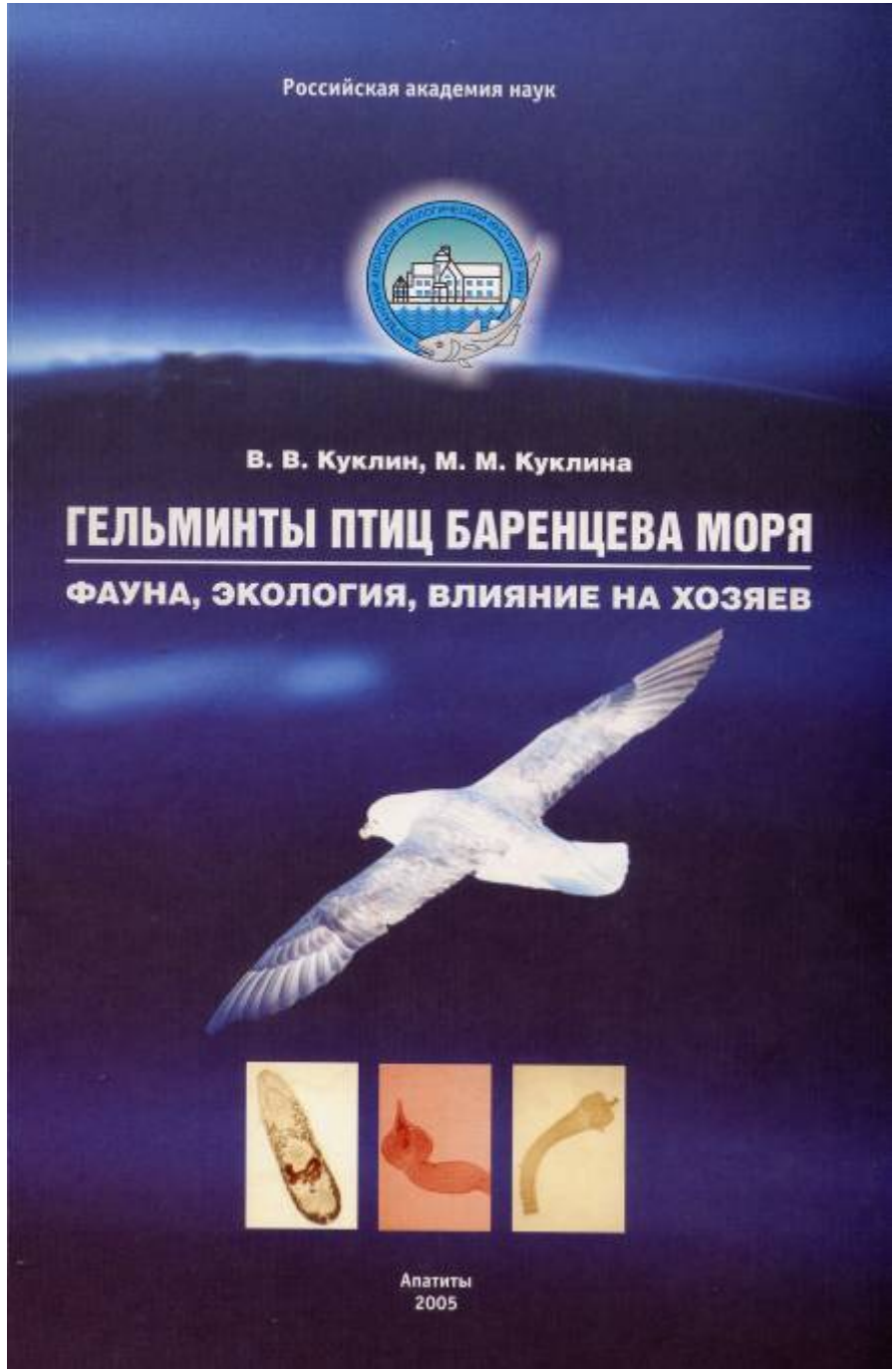
IT HAS BEEN ASCERTAINED, ON THE BASIS OF MORPHOMETRIC ANALYSIS, THAT THERE ARE, AT LEAST, THREE INDEPENDENT POPULATIONS OF EAST ATLANTIC LUMPFISH IN THE BARENTS, WHITE AND BALTIC SEAS, AND NOT JUST ONE, AS CONSIDERED BEFORE.

MONOGRAPH

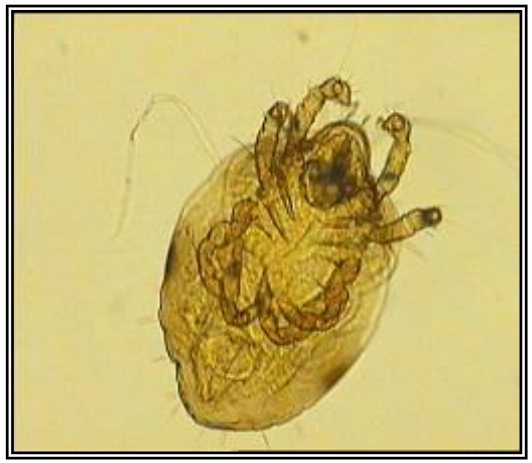
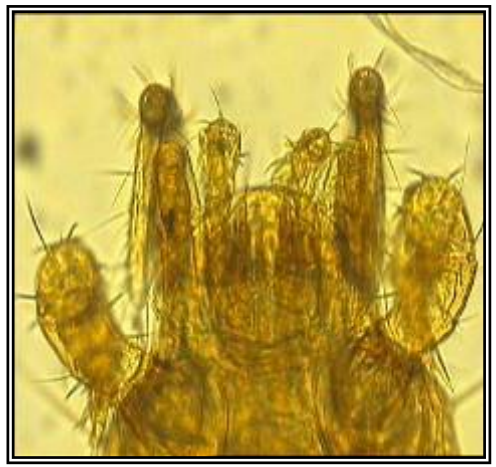
V.V. KUKLIN AND M.M. KUKLINA

«HELMINTHES OF THE BARENTS SEA BIRDS: FAUNA, ECOLOGY, IMPACT ON THE HOSTS»

(APATITY, 2005)



MIGRATORY BIRDS AND BIRDS' FLU
SOIL MITES TRANSFER IN THE BIRDS FEATHERING

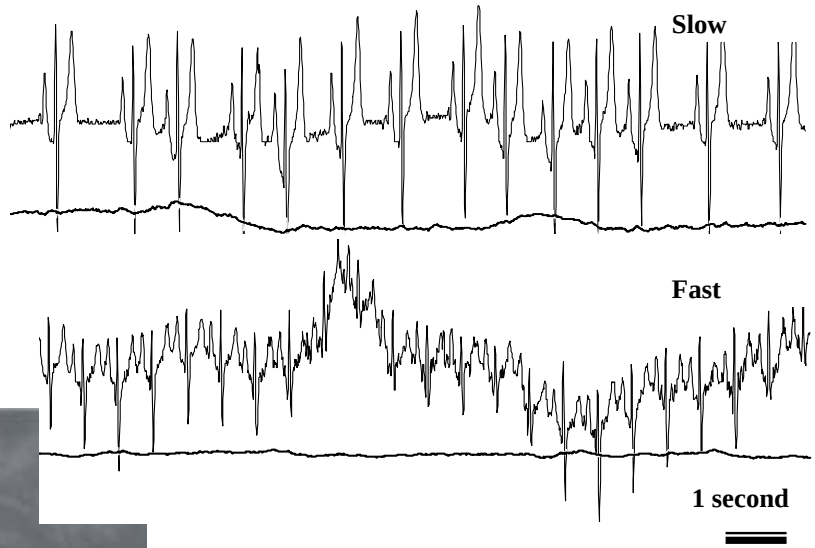




Non-parasitic micro-arthropods were registered in the birds feathering: a rather diverse fauna of collembolans *Collembola,* prostigmatic mites, usually *Scutacaridae* and *Pyemotidae* families and free-living gamasid mites *Gamasida*, especially typical of soils and birds nests *Rhodacaridae*.

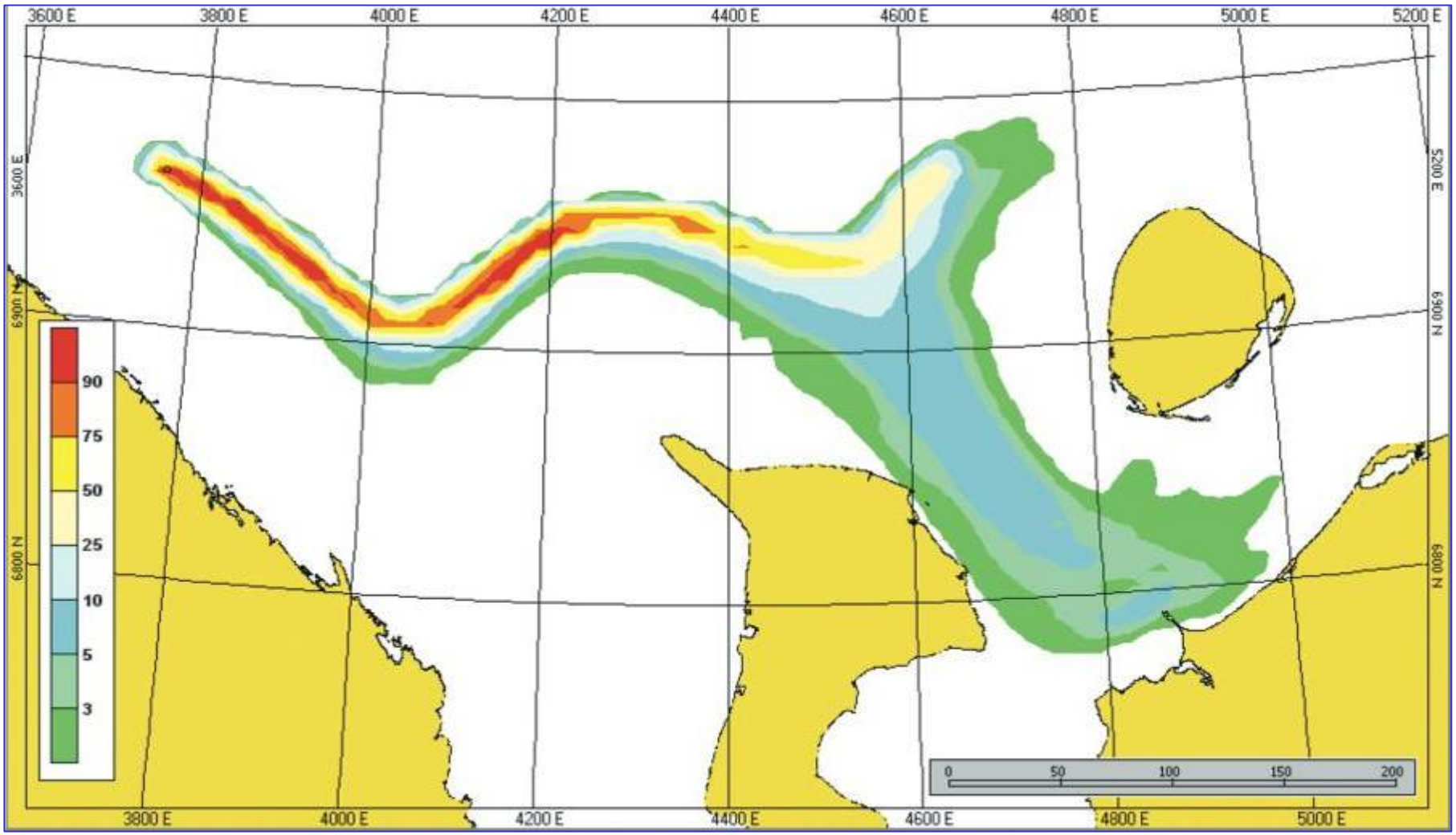
RARE AND PROTECTED MARINE BIOTA SPECIES

STUDYING OF GRAY SEAL ON THE AINOV ISLES (DECEMBER 2005)

Approaches to the monitoring of parameters of freely swimming seals. Non provocative aperiodic intervals of bradycardia and tachycardia are registered in the Greenland seals, being qualified as various conditions of the heart-vascular system.



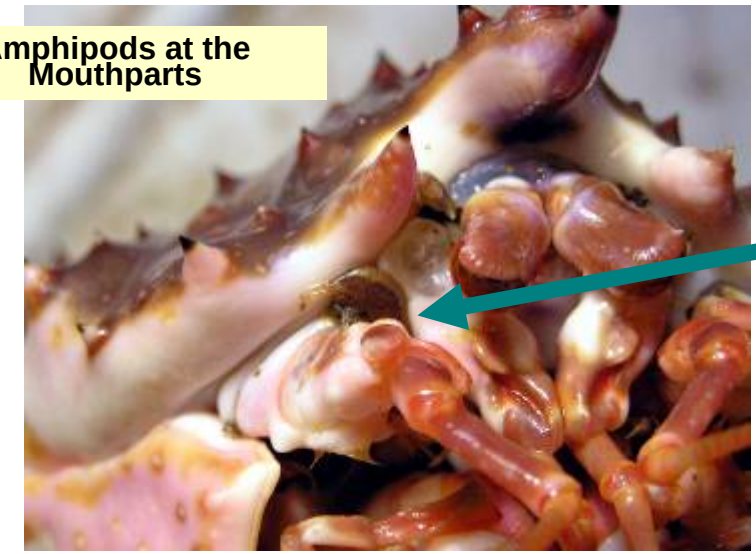
Probability (%) of pollution of bottom level in case of an accidental split of 50 м^3 radioactive substances in the area of the Kursk NS destruction



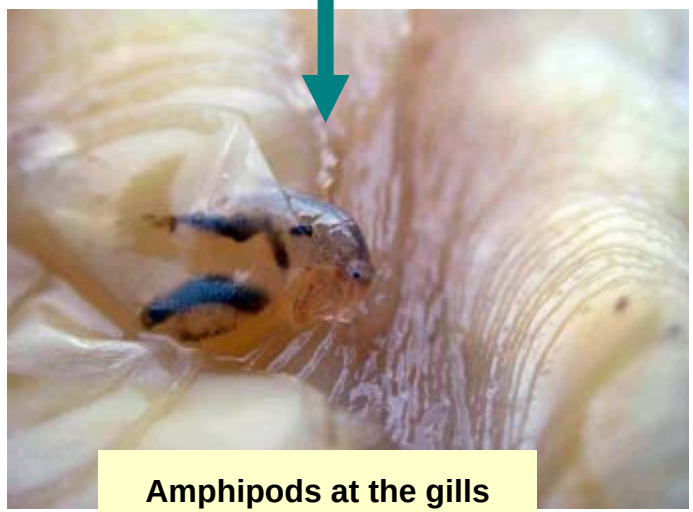
AQUACULTURE BIOTECHNOLOGIES AND REPRODUCTION ISSUES

Symbionts population ecology peculiarities and their relationships with host – Red King Crab have been determined for the Barents Sea for the first time following the example of amphipods Ischyrocerus commensalis. It has been shown that Red King Crab introduction and acclimatization influenced the spread of indicated amphipods.

Amphipods at the Mouthparts

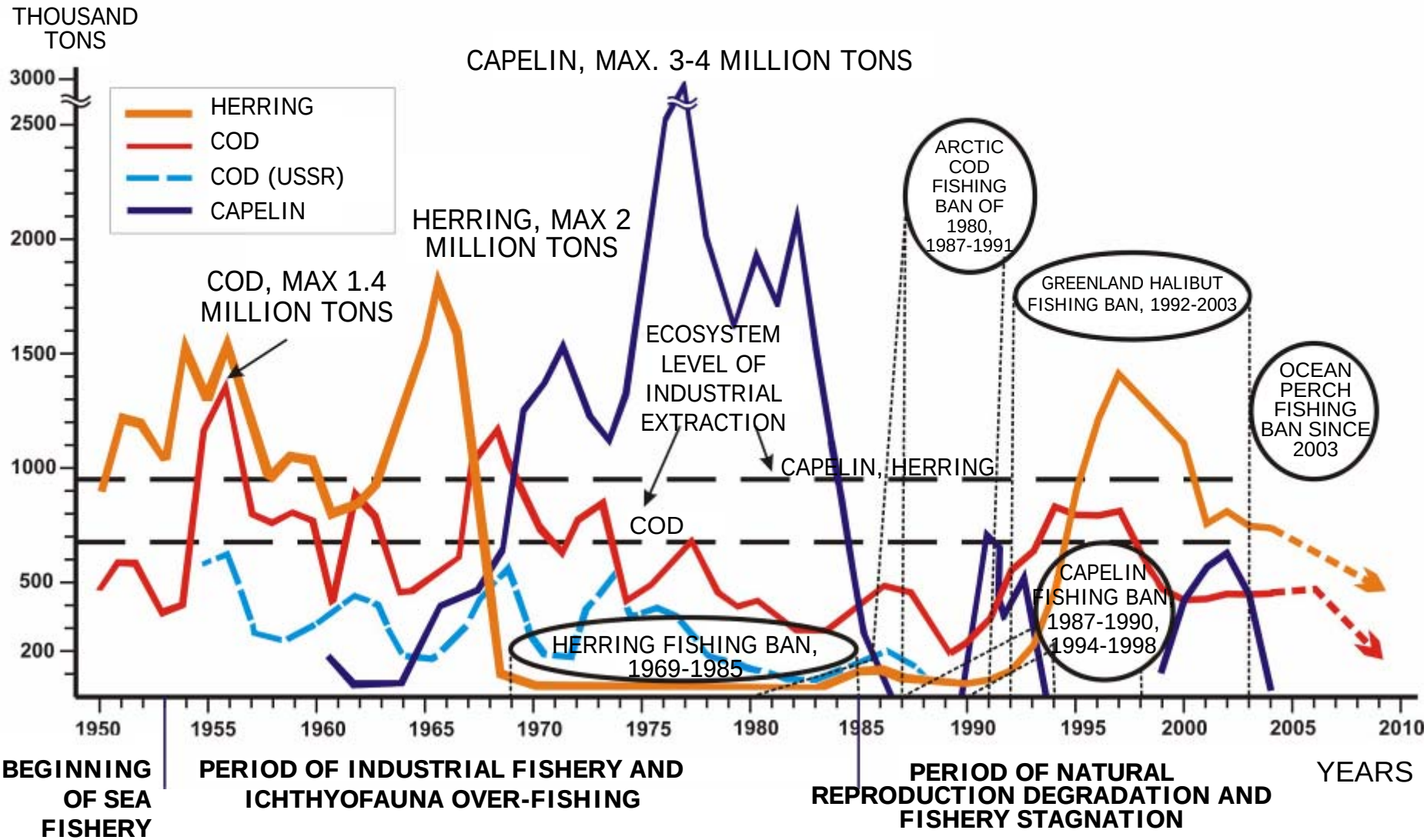


Amphipods *ISCHYROCERUS COMMENSALIS*

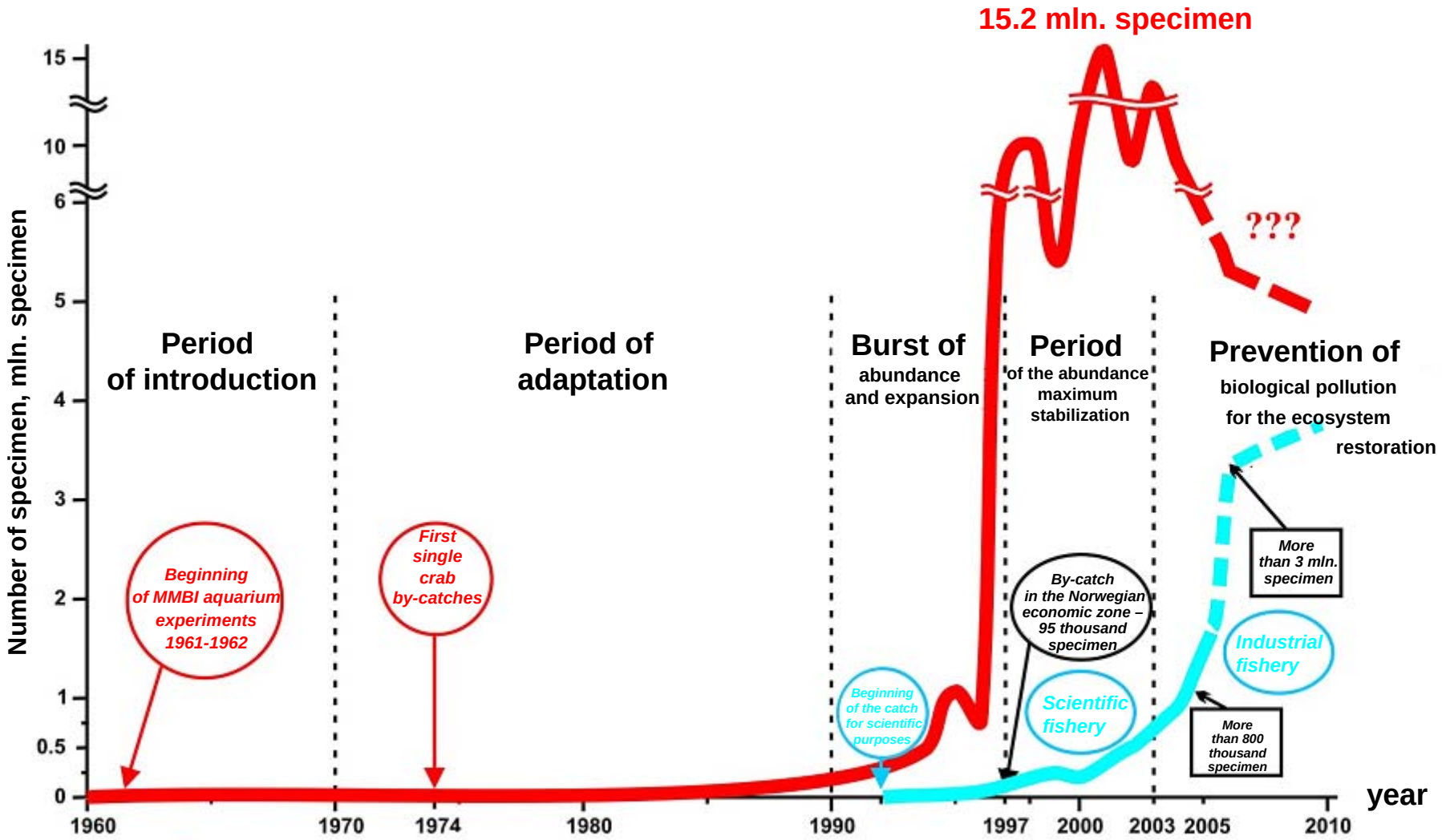


Amphipods at the gills

COMMERCIAL FISH SPECIES STOCKS DEGRADATION STAGES IN THE BARENTS AND NORWEGIAN SEAS (ACCORDING TO THE ICES AND PINRO DATA)



RED KING CRAB ACCLIMATIZATION STAGES (BIOLOGICAL INVASION) IN THE BARENTS SEA (1960-2005)



Total abundance of crab specimen (according to MMBI and published data);

The volume of extraction by scientific fishery (according to Kuzmin, Gudimova; Orlova, Berenboim etc)

DRAFT PROJECT ON THE ENVIRONMENTAL IMPACT ASSESSMENT

“Oil transfer roadstead terminal in the area of Belokamenka of the Kola Bay water area”

РОССИЙСКАЯ АКАДЕМИЯ НАУК
Мурманский морской биологический институт
ООО “ЭКО-ЭКСПРЕСС-СЕРВИС”

РАБОЧИЙ ПРОЕКТ

РЕЙДОВЫЙ КОМПЛЕКС ПЕРЕГРУЗКИ НЕФТИ В РАЙОНЕ ПОСЕЛКА БЕЛОКАМЕНКА НА АКВАТОРИИ КОЛЬСКОГО ЗАЛИВА

Объект: ЗАО “Дальневосточная морская компания”
Шифр: СР - 8/1
Инв. № 0813

ОЦЕНКА ВОЗДЕЙСТВИЯ НА ОКРУЖАЮЩУЮ СРЕДУ

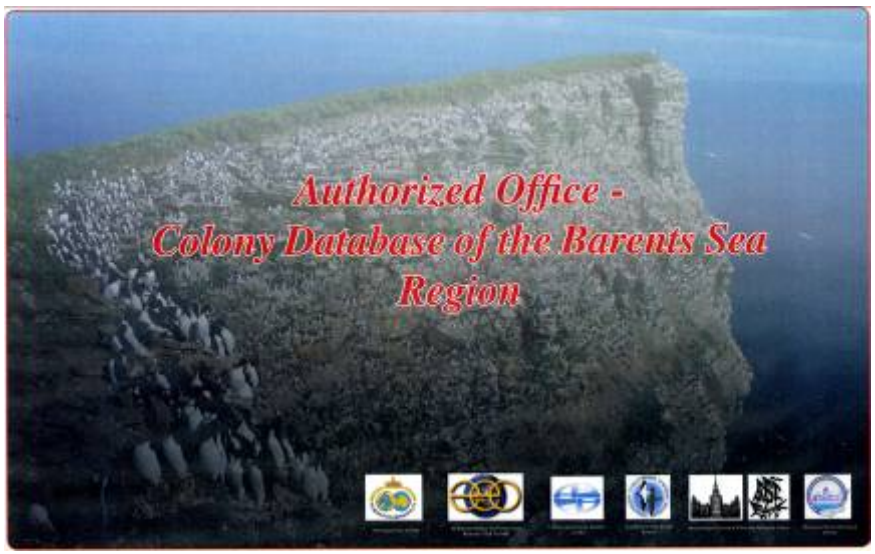
Мурманск
Санкт-Петербург
2003 г.

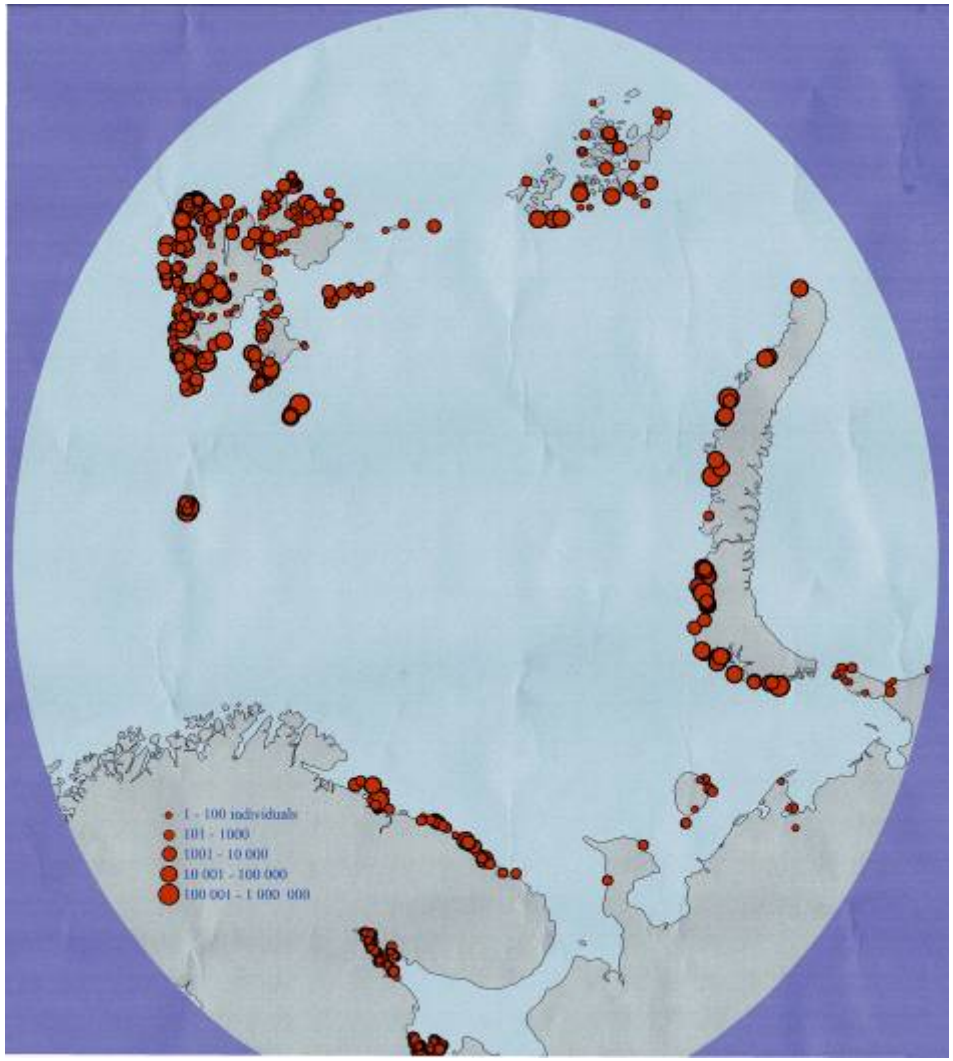
Concentrations of white-tailed eagles in the Kerch Strait

White-tailed eagles registration sites during the icebreaker cruise (January-February 2006)

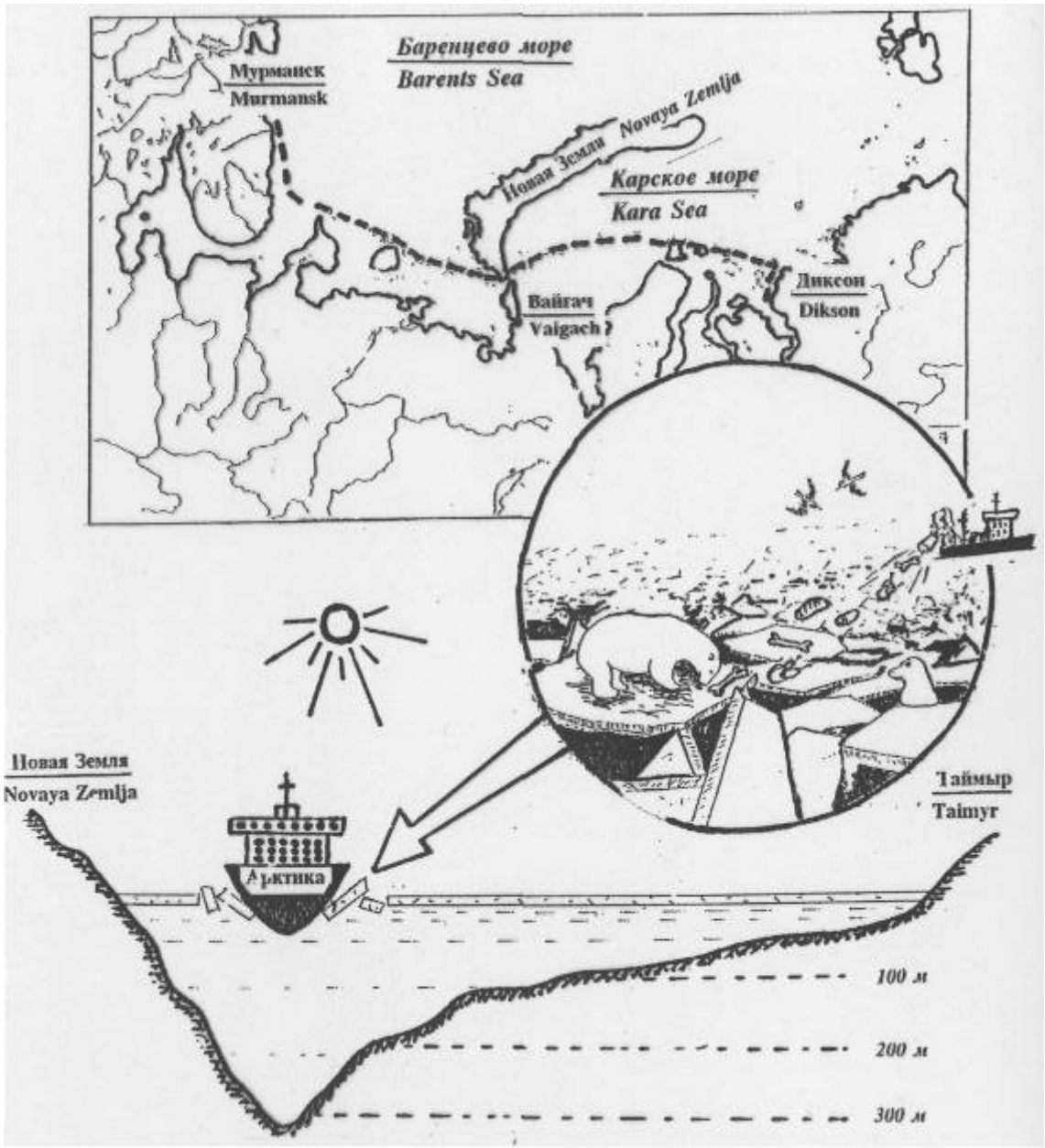
Development of unique by composition and volume ornithological database, including data on 1547 colonies of the Barents, Kara and White Seas 25 marine colonial nestling species, is completed jointly with Norwegian and Russian colleagues

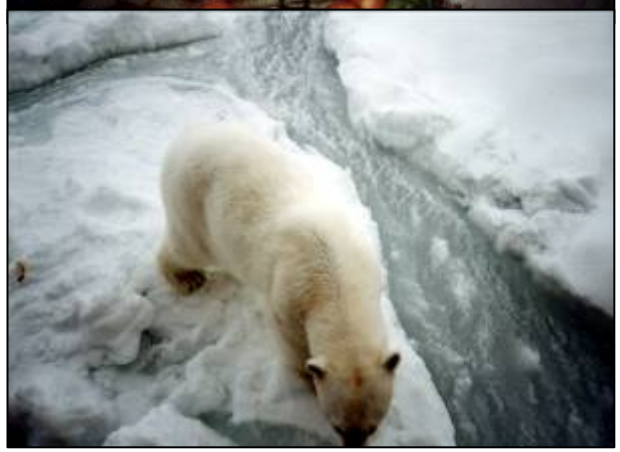
Developed base lets conduct comparative analysis of the areas in relation to biodiversity and density habitat of marine birds, rare species habitats determination, assess the population size, abundance changes tendencies, gives new possibilities to determine environmentally vulnerable shelf areas of the Arctic seas and in case of accidents (for example, oil spills) lets take urgent measures promptly to safe rare birds species



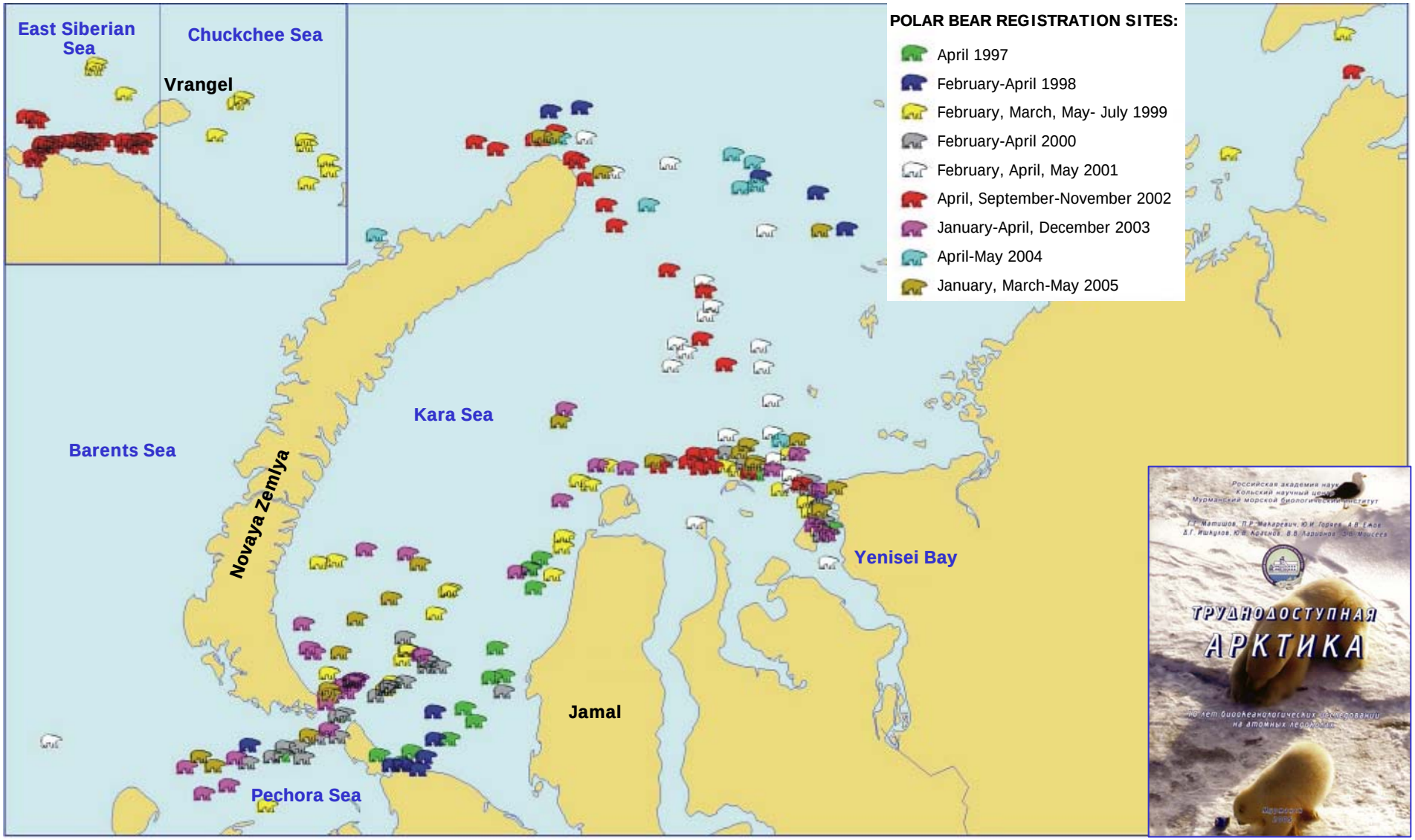


POLAR BEAR ANTHROPOGENIC FOOD LINKS WITH NORTHERN SEA ROUTE





POLAR BEAR REGISTRATION SITES IN THE BARENTS AND KARA SEAS DURING THE PERIOD OF 1997-2005



The Barents Sea Stockman Gas-Condensate Deposit Environmental Impact Assessment

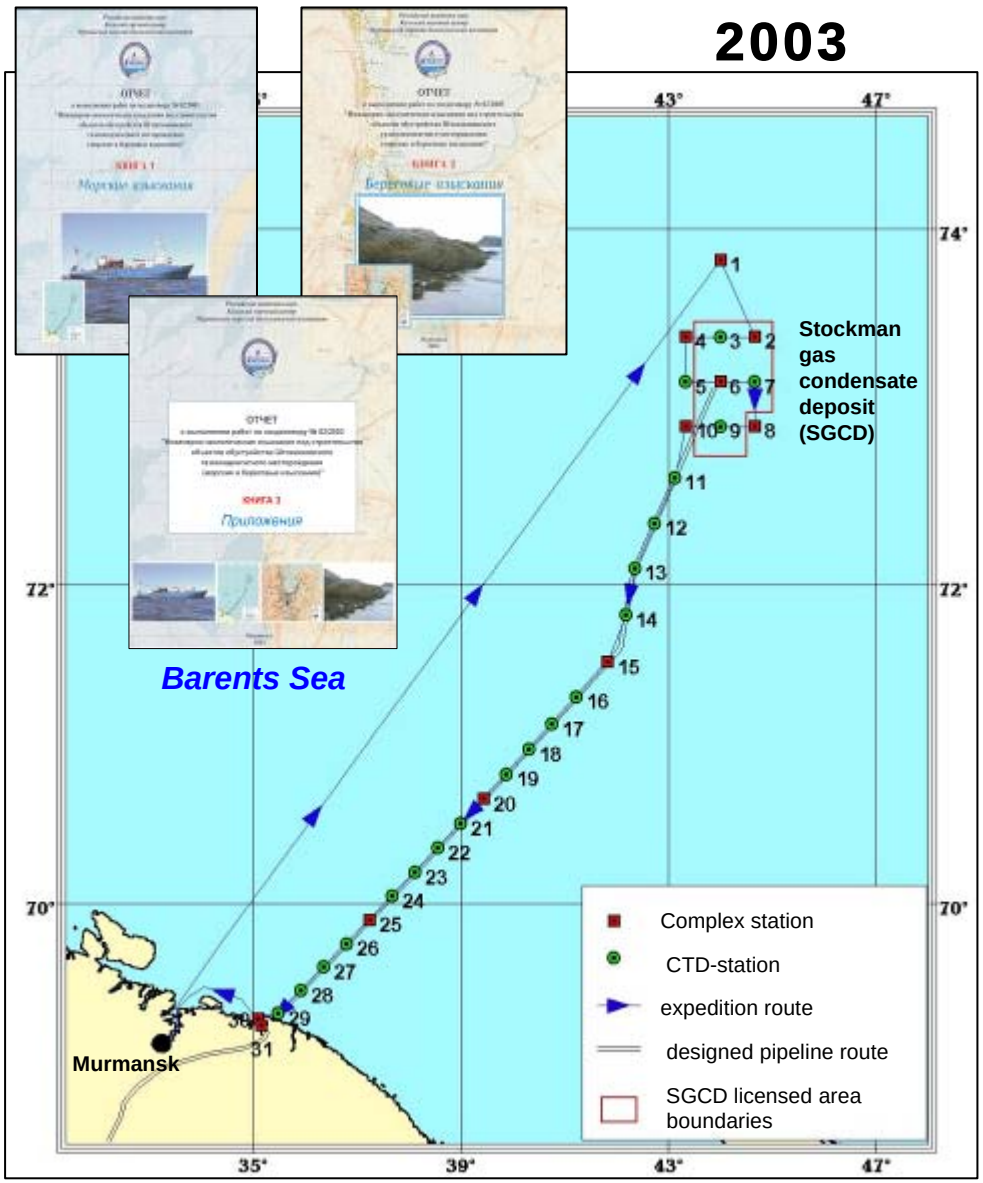
RUSSIAN ACADEMY OF SCIENCES
KOLA SCIENCE CENTRE
MURMANSK MARINE BIOLOGICAL INSTITUTE
AO "ROSSHELF"

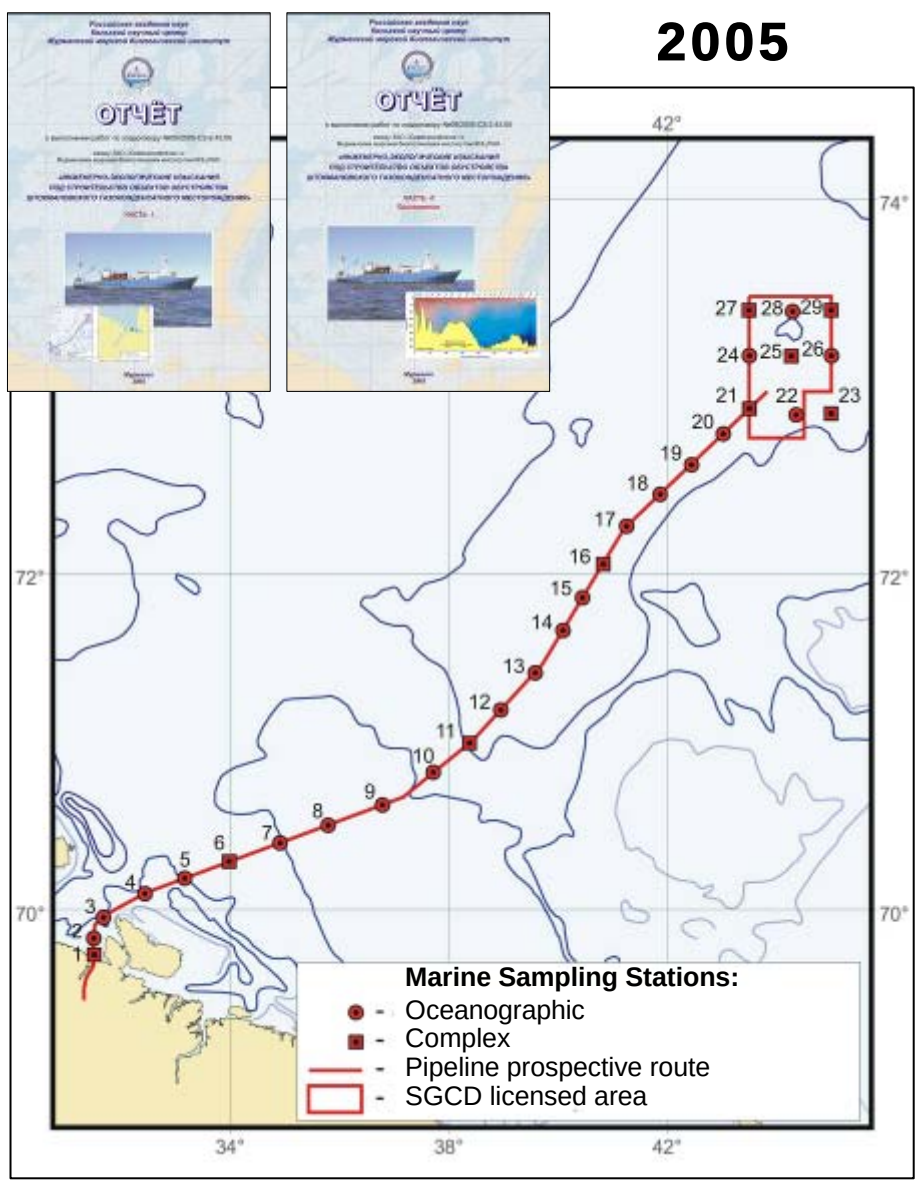
SCIENTIFIC AND METHODOLOGICAL APPROACHES TO THE ESTIMATION OF THE GAS CONDENSATE EXTRACTION IMPACT ON THE ARCTIC SEAS ECOSYSTEMS
(ON THE EXAMPLE OF THE SHTOCKMAN GAS-CONDENSATE DEPOSIT)

Editors-in-Chief
G.G. Matishov and B.A. Nikitin

Apatity
1997

«ENGINEERING-ECOLOGICAL SURVEYS UNDER CONSTRUCTION OF THE STOCKMAN GAS CONDENSATE DEPOSIT PROVISION OBJECTS (MARINE AND COASTAL SURVEYS)»





GEOPOLITICS IN THE BARENTS REGION: CLASH OF INTERESTS

1980s – The World Community Concern for the Danger of the Arctic Radioactive Contamination

Control over ecosystems state at the Soviet nuclear bases and underwater storage areas of the Novaya Zemlya

Sellafield Plants, Great Britain

Greenpeace and other ecological organizations

RUSSIA

РЫБОЛОВСТВО

NORWAY

Early 1990s – Consortium «The Arctic Star» –

1st joined (Scandinavia – the USSR) Stockman EIA

1994 – Stockman EIA for «Rosshelf»

2003-2005 – Stockman EIA for «Sevmorheftegaz»

1990s – 2000s – Norway is the leading marine oil country

2004 – Hydrocarbons extraction beginning in the Barents Sea – «The Snow-white»

?

2000s **– Concern of the European community for the oil spills possibility in the polar seas**

2000s – Concern of the institutes of the KSC RAS for the possible oil pollution of the Russian Arctic

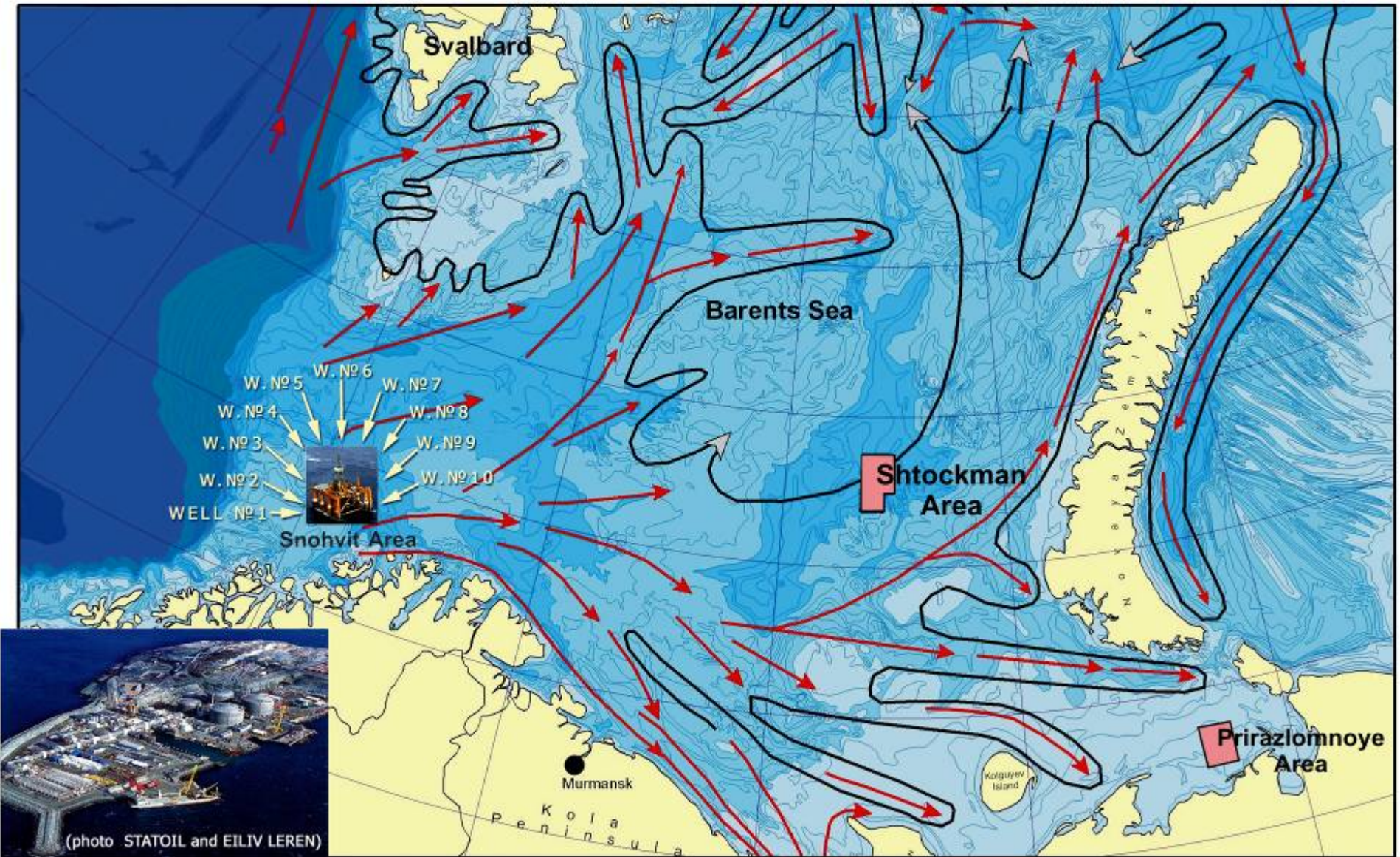
The Electron Trawler Incident, October 2005

NORWAY CATCHES THE MINKE'S WHALES UNDER THE CONDITIONS OF THE INTERNATIONAL BAN

Little piked whale is taken on board the fishing vessel in the North Sea, while the Norwegian Coastguard vessel is nearby (the photo is made by the opponents of whaling). At one time the Vikings used to hunt the little piked whales with the help of poisoned spears, nowadays the whalers use harpoons with grenades at the tips, which kill the whales quickly. Small vessels are in whaling in the territorial waters of Norway, despite the whaling moratorium, granted 15 years ago (according to: D.H. Chadweek, 2001; photo by S. Morgan)

Norwegian Oil and Gas Complex «Snow-white» (Snøhvit) in the Barents Sea

NORWEGIAN OIL AND GAS COMPLEX “SNOW-WHITE” (SNØHVIT). POSSIBLE TRANSFER ROUTES OF OIL AND GAS POLLUTANTS TO THE RUSSIAN BARENTS SEA



Environmental Priorities and Limitations of Maritime Activity in the Arctic

1. Forecast of Secular Climate Fluctuations
2. Development of Marine Areas and Coast Ecosystem Monitoring State System
3. Academic Expertise of Bio-resources Exploitation Plans and Nature Modification
4. Restoration of Artificial and Natural Reproduction of Valuable Fish Species Due to the Genetic Fund Loss Threat
5. Industrial and Poaching Fishery and Hunting Reduction Measures (Common Tax for the Coastal Population)
6. Alien Fauna Introduction Control (Ballast Waters, Introduction)
7. Development of the Industrial Rearing of the Sea-products at Farms
8. Accidental Oil Spills and Gas-Condensate Discharges Combating Aqua-technologies
9. Control over Chemical and Radioactive Contamination
10. Optimization of the Water Resources Quality and Exploitation
11. Anti-terrorist Bio-technical Systems for the Naval Bases Protection