Idea380

Investigation of species composition, distribution and biological diversity of animals and plants (benthos, algae- macrophytes, marine mammals) in conditions of global climate change and economic exploration of the Arctic.

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2. Aim of investigations. Investigations of quality composition and quantitative characteristics changes in marine mammals (including polar bear) benthos and algae from the arctic seas in response to the environmental changes connected with the climate fluctuations and economic activity of a man. Proposals on the rehabilitation so that to preserve biodiversity and forage base for fishes.

The design is directed to the solving of the fundamental ecological problem: preservation of biodiversity and sustainable functioning of the ecosystem. The results of the ecological investigations allow to estimate a modern state of the bottom animals, algae and marine mammals populations in the Arctic, their role in Nordic seas ecosystems functioning.

3. Short grounding. The work is directed in particular, to the investigation of the Russian Nordic Sea algae adaptation mechanisms, providing existence and reproduction of macrophytes in conditions of the unique natural experiment: alteration of polar day and polar night, temperature regimes change, draining during low water, re-freshening. Considering that algae-macrophytes are the major producers of the organic matter at sea, inhabitancy and spawning place for many fishes and invertebrates the work acquires special actuality.

4. Planned result. The Arctic seas bottom population estimation state (species composition, density of settling, biomass) on the basis of the comparison with the data of the previous years. Proposals on the preservation of biodiversity and rehabilitation.

It is supposed to obtain the data on the adaptation mechanisms and growth regulation in the marine macrophytes impacted by environmental factors, including also anthropogenic, providing algae existence in the Arctic conditions. Development of recommendations on preserving and restoration of the coastal phytocenoses, accumulation of valuable invertebrates and inhabitancy places of mammals is also supposed. During sea and terrestrial expeditions the new data on the species diversity, abundance, migrations, seasonal distribution of the Arctic Seas marine mammals will be obtained.

5. Major types of investigations. Investigations are carried out in the sea and terrestrial expeditions.

6. Time, places and resources for field works. Field works are carried out in the places of active economic activity of people (section “Kola meridian”, Kola bay, areas of gas- condensate fields). For sea expeditions R/V and small- sized fleet will be used.

Seasonal field observations are supposed to be conducted on the Murmansk coast of the Barents Sea (from West to East Murman), Spitzbergen coastal zone, White Sea coastal zone Experimental observations are supposed to be conducted at the equipped biological stations of MMBI (settlement Dalnye Zelentsy, settlement Barentsburg). Besides, scientific cruises on board will be carried out.

7. Possible institutions- co.-executors. As the institutions- co.-executors there can be Zoological Institute RAS, Petrozavodsk State University, Zoological Museum MSU, Murmansk Pedagogical University, which in case of the necessity might help in the work on the identification of some groups of invertebrates and with consultations of specialists, Institute of Botany RAS, Institute of Oceanology RAS.

8. International cooperation. International cooperation is possible with the countries interested in preserving of the Nordic Seas biodiversity, and with the countries with long- term experience

in the economic activity in the shelf – Norway, Great Britain, specialists from of the Marine Investigations Department at the Biological Center of the Groningen University.