Marine Mammal Research Programs in the Russian Arctic

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CURRENT THREATS TO BIODIVERSITY IN THE ARCTIC



CLIMATE CHANGE



CUMULATIVE HUMAN IMPACT





Halpern, Benjamin S., et al. "A global map of human impact on marine ecosystems." *Science* 319.5865 (2008): 948-952

LICENSE AREAS 🖌 N 3 X T G I S Лицензионные участки Действующие Картографическая подложка: Sputnik



DEMO DAY

40/02/2045

SHIPPING TRAFFIC

PAH

- Northern Sea Route (transit)
- Local traffic
- Active traffic for oil and gas
- Tourism
- Military traffic
- Other





HABITAT POLLUTION





INTENSIVE FISHING







Current threats to marine mammals and polar bears

- Climate change and shrinking ice sheets
- Intensive shipping traffic via the NSR
- Onshore infrastructure development
- Growing tourism, including spontaneous visits
- Higher chemical and acoustic pollution
- Active fishing in new sea areas
- Growing concerns
- For the polar bear more conflict situations



Coupled with climate warming, increased anthropopression may cause **a cumulative** negative impact on marine mammals and polar bears



Current approaches to the conservation of marine mammals and polar bears in Russia

- Current work programs in specially protected nature conservation marine areas. *E.g., The Russian Arctic National Program.*
- Conservation programs (strategies) for certain key species. For example, polar bear, gray whale, etc.
- Sectoral and corporate programs for biodiversity conservation with the focus on indicator species. *For example, programs of Rosneft and Gazpromneft*
- Individual programs developed and implemented by civil-society groups. For example, Russian Geographic Society, Marine Mammal Council, Clean Seas Foundation, Native Cities Foundation



The disadvantages of the current approach :

- Studies focus on individual species
- Their role as indicator species is not fully understood and proven
- ➤The habitat of these species and the ecosystem as a whole remain outside the focus of scientists, especially those in sectoral research
- ➢There are still no tools to track trends within ecosystems, including negative trends





A <u>holistic approach</u> to the conservation and management of biological resources in the Arctic



A holistic approach aims to create a unified **system** of monitoring and adaptive decision-making.

The system allows a flexible and rapid response to the changing habitat of species and communities of fauna and flora based on various inputs.

The system offers a more comprehensive **ecosystem** approach rather than a mere species focus.



DATA CHALLENGES

>Lack of of up-to-date data on most MM species in the Arctic

Lack of cooperation between different research groups and lack of a well-established system for collecting opportunistic observations of marine mammals

>Restricted access to data collected during oil and gas operations

> 'Departmental' mandates for individual MM species



COMPREHENSIVE PROGRAMS OF THE INSTITUTE OF ECOLOGY AND EVOLUTION OF THE RUSSIAN ACADEMY OF SCIENCES







2021

ПОДРОБНЕЕ

a second second

Генеральный партнер РУССКОЕ ГЕОГРАФИЧЕСКОЕ Научный партнер

ИНСТИТУТ ПРОБЛЕМ ЭКОЛОГИИ И эволюции имени А.Н. северцова ран



Оператор проекта

ПРОГРАММА СОЦИАЛЬНЫХ Инвестиций «газпром нефти»





ОБЩЕСТВО

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EN

A comprehensive approach to data collection



A comprehensive approach to data collection (2019 results)





хозяин



ЗАРКТИКИ





РОСПРИРОДНАДЗОР

Главные информационные партнёры

🥗 РИА НОВОСТИ

C the Arctic

1-20 августа 2020 года

Фото: Леонид Круглов



L-410 airplane



passenger capacity: at least 6 people (2 pilots, 2 observers on both sides, one monitoring equipment operator, cameraman, photographer)

Requirements for aircraft for aerial observations of marine mammals:



high-wing airplane



en-route speed- +- 200 km¥h





airborne **time**: > 5 hours



La-8 amphibian plane



Flying lab equipment

Onboard operated monitoring equipment. Frame rate: 10-15 / min



Tailored system of professional video shooting from the plane





Convex **blister portholes** on both sides of the plane for visual observation



Hemispherical portholes on both sides of the plane to photograph objects of observation

Observations from the altitude of 280m









Assessing the Sustainability of Arctic Ecosystems Based on a Study of Key Species Dynamics

Key species



The goal is to assess the current state and sustainability of Arctic ecosystems based on a study of the dynamics of key species

- Monitoring the status of bioindicator species and implementation of the biodiversity conservation program at the Company's license areas;
- Improving the efficiency of environmental protection planning as part of commercial operations.



Ivory gull Pagophila ebumean

Red Book category - 3 - rare endemic subspecies with declining numbers International Union for Conservation of Nature (IUCN) Red List category - "near threatened" (NT) Walrus Odobenus rosmarus

Red Book category - 2 - declining in numbers for the Atlantic subspecies, 3 - rare for the Laptev subspecies International Union for Conservation of Nature (IUCN) Red List category - "vulnerable" (VU) Polar bear Ursus maritimus

Red Book category is. 4 - uncertain status for the Kara-Barents Sea population, 3 - rare for the Laptev population, 5 - recovering for the Chukotka-Alaska population International Union for Conservation of Nature (IUCN) Red List category - "vulnerable" (VU) Rangifer Rangifer tarandus

International Union for Conservation of Nature (IUCN) Red List category - "vulnerable" (VU)

Study and monitoring of walrus populations: Research methods and area



Species habitat in the Russian Arctic

Area of studies – species habitat in the Russian Arctic with an emphasis on the Atlantic subspecies (Kara and Barents Seas)

Methods:

- Observations from ships, air and land in key habitats (Pechora Sea, Novaya Zemlya, Franz Josef Land);
- Satellite tagging;
- Use of remote sensing data (high resolution satellite images) to take stock of walruses in coastal and ice haulouts;
- Assessment of forage base (non-invasive methods). Assessment of forage stocks according to existing benthic maps and sampling in key areas;
- Collection of biological specimens for laboratory research: molecular genetic, microbiological, toxicological, immunological, parasitological, virological analyses.

Expected results:

- Obtain objective data on the number of Atlantic and Laptev subspecies of walrus, and assess their current status;
- Design measures to protect rare and vulnerable species and critical habitats;
- Develop new non-invasive and more effective methods of recording and monitoring the status of populations;
- Publish a summary brochure and research papers on the results of the studies.



Study and monitoring of walrus populations: Research methods and area





Study and monitoring of the polar bear population: Research methods and area



Species habitat in the Russian Arctic



Methods:

- Special aerial observations (surveillance);
- Installation of collars with satellite transmitters. Remote observation of the movement of individuals using satellite telemetry;
- Collection of biological specimens for laboratory research: molecular genetic, microbiological, toxicological, immunological, parasitological, virological analyses;
- Analysis of satellite images to assess the seasonal distribution of individuals and locations of presumed dens and to monitor ice habitats (including from pugmarks).

Expected results:

- Obtain objective data on the number of polar bear populations in the Russian Arctic, primarily the Kara-Barents Sea population, and assess their current status;
- Design measures to protect rare and vulnerable species and critical habitats;
- Develop new non-invasive and more effective methods of recording and monitoring the status of populations (using high resolution satellite images);
- Publish a summary brochure and research papers on the results of the studies.





DATA PORTAL MAMMALS OF RUSSIA







The project was initiated by the working group on the atlas of the distribution of mammals of Russia of the Theriological Society of the Russian Academy of Sciences.







The main goal of the project:

collecting as much information as possible on the distribution of mammals in the Russian Federation and providing free (ranked) access to this information





Tasks:

- Support a growing demand from professionals, hobbyists, and government agencies for detailed published data on animal distribution
- Ensure correct identification of mammal species (unlike birds, mammal identification is often available only to experts)
- Provide professional support to educational programs





MAIN TASK:

Compile an <u>Atlas of mammal distribution</u> in the European part of Russia

eventually

Atlas of mammal distribution throughout the Russian Federation

Mammals of Russia



Mammals of Russia





www.rusmam.ru

DATA ANALYSIS AND USE



Development of a system of marine protected areas in the Arctic seas of Russia





Development of a system of marine protected areas in the Arctic seas of Russia Ç

Project Objective:

Develop a representative, ecologically coherent, and effective **System** of marine protected areas that would ensure the conservation of biodiversity and functioning of ecosystems in the Russian Arctic seas with account taken of climate change and socio-economic development of the region.

Development of a system of marine protected

areas in the Arctic seas of Russia





Development of a system of marine protected areas in the Arctic seas of Russia

Development of a system of MPAs (marine protected areas).

WWF Russia, together with leading experts, has identified 47 most important areas.

Possible restrictions on economic activity and amendments to laws are suggested.





ARCTIC WILDLIFE - HOW WE WORK - ABOUT US - PLACES - NEWSROOM -



An Arctic Ocean Network of Priority Areas for Conservation

Melting sea ice is transforming the Arctic Ocean. A warming climate and growing industrial development threaten this vulnerable and rapidly changing part of the world. Globally important marine life is increasingly at risk in this unique ecosystem that provides food, livelihoods and cultural identity for people living in the Arctic.

THE ARCNET MAP AN ARCTIC OCEAN NETWORK OF PRIORITY AREAS FOR CONSERVATION

Q-

GIFTS





MITIGATING HUMAN IMPACT





Seminar on the training of marine mammal observers in the exploration and development of offshore oil and gas license areas



Workshops









Onboard workshops





Exam and certification





INPUTS TO REGULATORY DOCUMENTS



Biodiversity Conservation Program Gazprom Group

based on the list of flora and fauna species that are the indicators of sustainable status of marine ecosystems in the Arctic region of the Russian Federation







Проект ПРООН / ГЭФ / Минприроды России «Задачи сохранения биоразнообразия в политике и программах развития энергетического сектора России»



Methodological Recommendations for Reducing Impacts on Large Cetaceans during Commercial Operations

THANK YOU FOR YOUR ATTENTION

