

MANAGEMENT PLANS AND STRATEGIES AT SELECTED SITES OF NEAMPAN IN THE RUSSIAN FEDERATION

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***Far-Eastern State Marine Biosphere Nature Reserve*

**** Center International Project*

*****Sikhote-Alinsky State Nature Biosphere Reserve named after KG Abramov*

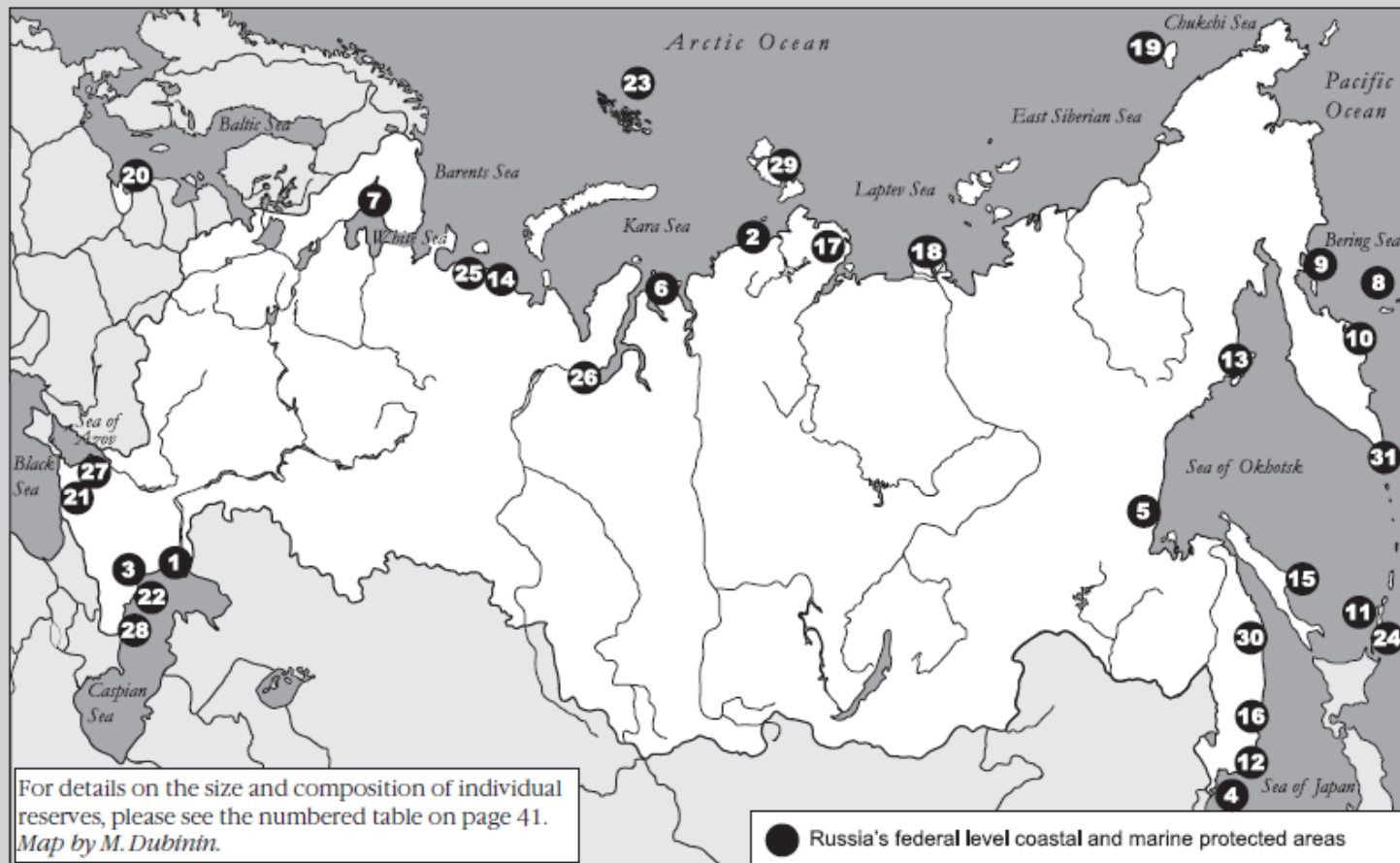
Basic information of the target MPA

- In the Russian Federation, marine and coastal protected areas are areas in the tidal or marine area, together with waters that cover them, and flora and fauna associated with them. These territories have historical and cultural features, the environment of which is subject to full or partial protection by law or other regulatory acts.
- The main goal of the MPAs is biodiversity conservation and increase, conservation of ecosystems, i.e. the ability of marine ecosystems to return to their natural state or it maintaining. Effective MPAs can ensure the long-term viability and genetic diversity of marine species and systems. Such advantages are the result of the protection of rare and endangered species, conservation of habitats, as well as prevention of external activities that damage the marine environment.

Main tasks of MPA should be support of natural processes of self-regeneration of marine ecosystems, prevention and reduction of new anthropogenic impacts, studying of condition and features of their functioning, as well as monitoring and forecast of natural regeneration processes and reaction to the character and intensity of external impacts, including anthropogenic.

Pursuant to the Russian legislation, sea areas are under federal jurisdiction. Therefore, specially protected areas covering marine areas may only have the federal status.

Russia's Federal Level Coastal and Marine Protected Areas



Zapovedniks

1. Astrakhansky
2. Bolshoi Arktichesky
3. Dagestansky
4. Dalnevostochny Morskoi
5. Dzhugdzhursky
6. Gydansky
7. Kandalakshsky
8. Komandorsky
9. Koryaksky
10. Kronotsky
11. Kurilsky

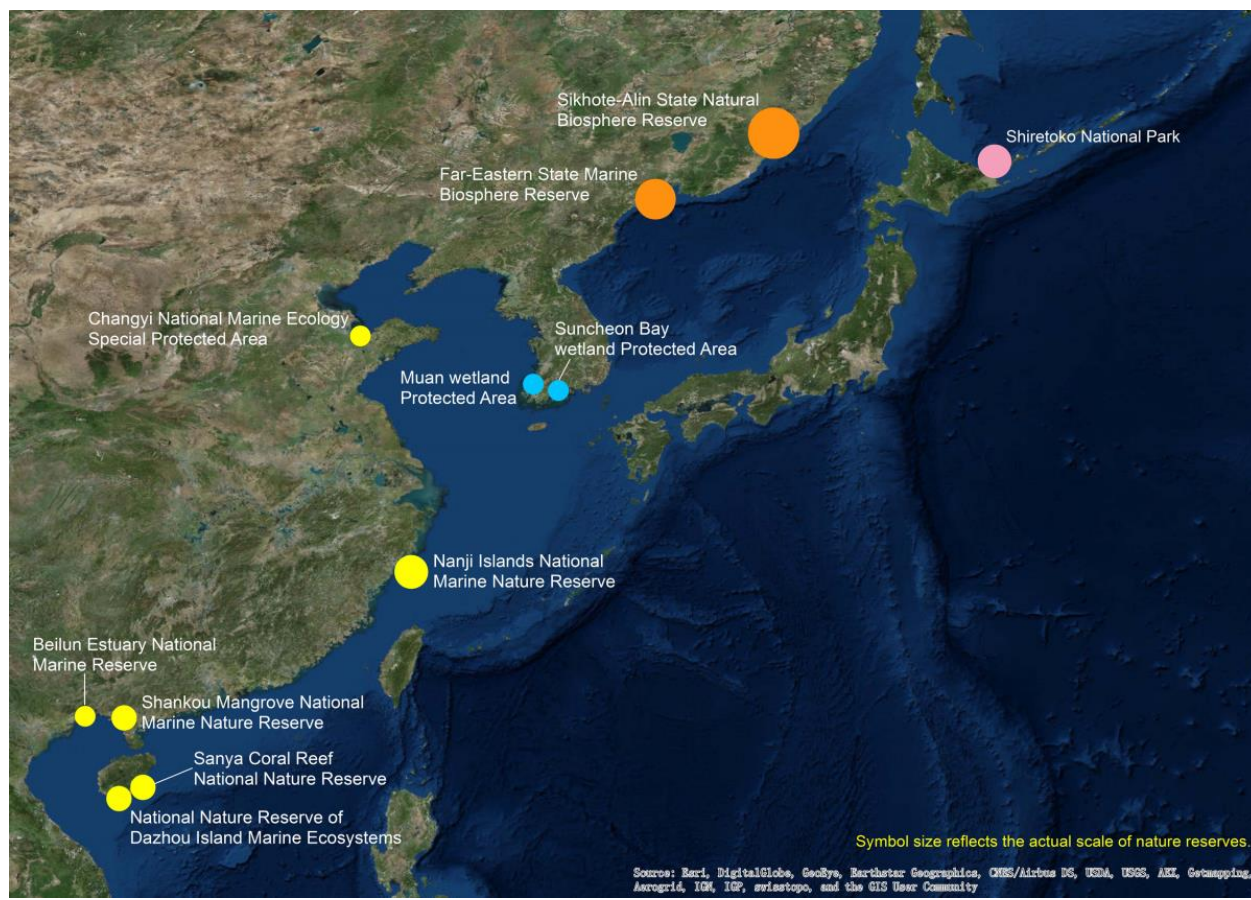
12. Lazovsky
13. Magadansky
14. Nenetsky
15. Poronaisky
16. Sikhote-Alinsky
17. Taimyrsky
18. Ust-Lensky
19. Wrangel Island

National Parks

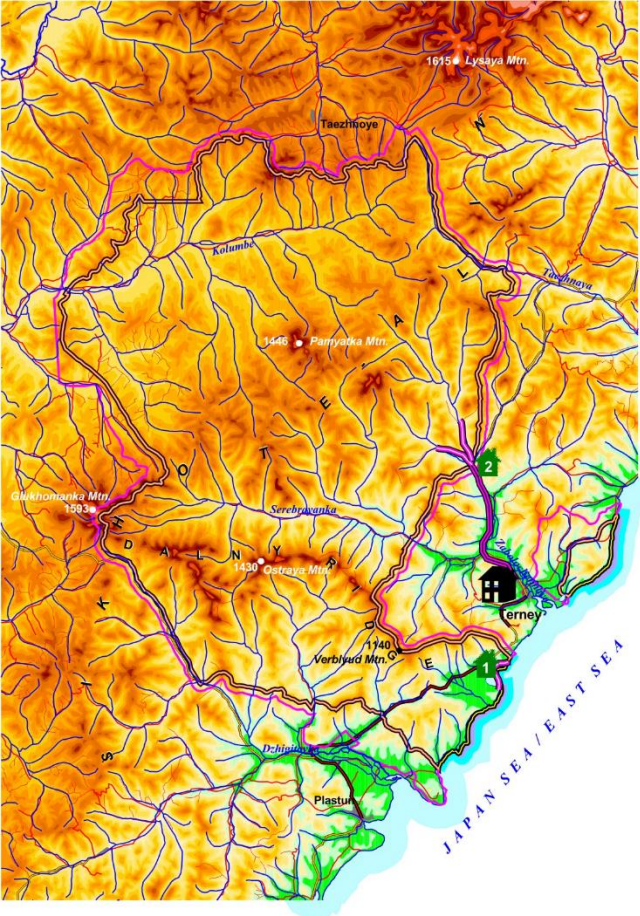
20. Kurshskaya Kosa
21. Sochinsky

Zakazniks

22. Agrakhansky
23. Franz Josef Land
24. Maliye Kurily
25. Nenetsky
26. Nizhne-Obsky
27. Priazovsky
28. Samursky
29. Severozemelsky
30. Tumnsky
31. Yuzhno-Kamchatsky



The main objectives of the Sikhote-Alin State Natural Biosphere Reserve after K.G. Abramov under the MNRE of Russia (Sikhote-Alin Reserve) and the Far Eastern State Marine Biosphere Reserve (FESMBR) are the preservation of the natural functioning of typical and unique natural complexes, including the marine, of the Sikhote-Alin mountain system, and the environmental protection of the richest marine and island flora and the fauna of the Peter the Great Bay, and in the first turn – the conservation of the gene pool of marine and coastal communities, as well as the study of the natural course of natural processes and phenomena, certain species, typical and unique ecological systems, as well as the development of principles and methods for monitoring the state of the environment.



Sikhote-Alin State Natural Biosphere Reserve.

The reserve was founded in 1935 to preserve and study coniferous-deciduous forests of the central part of the ridge Sikhote-Alin.

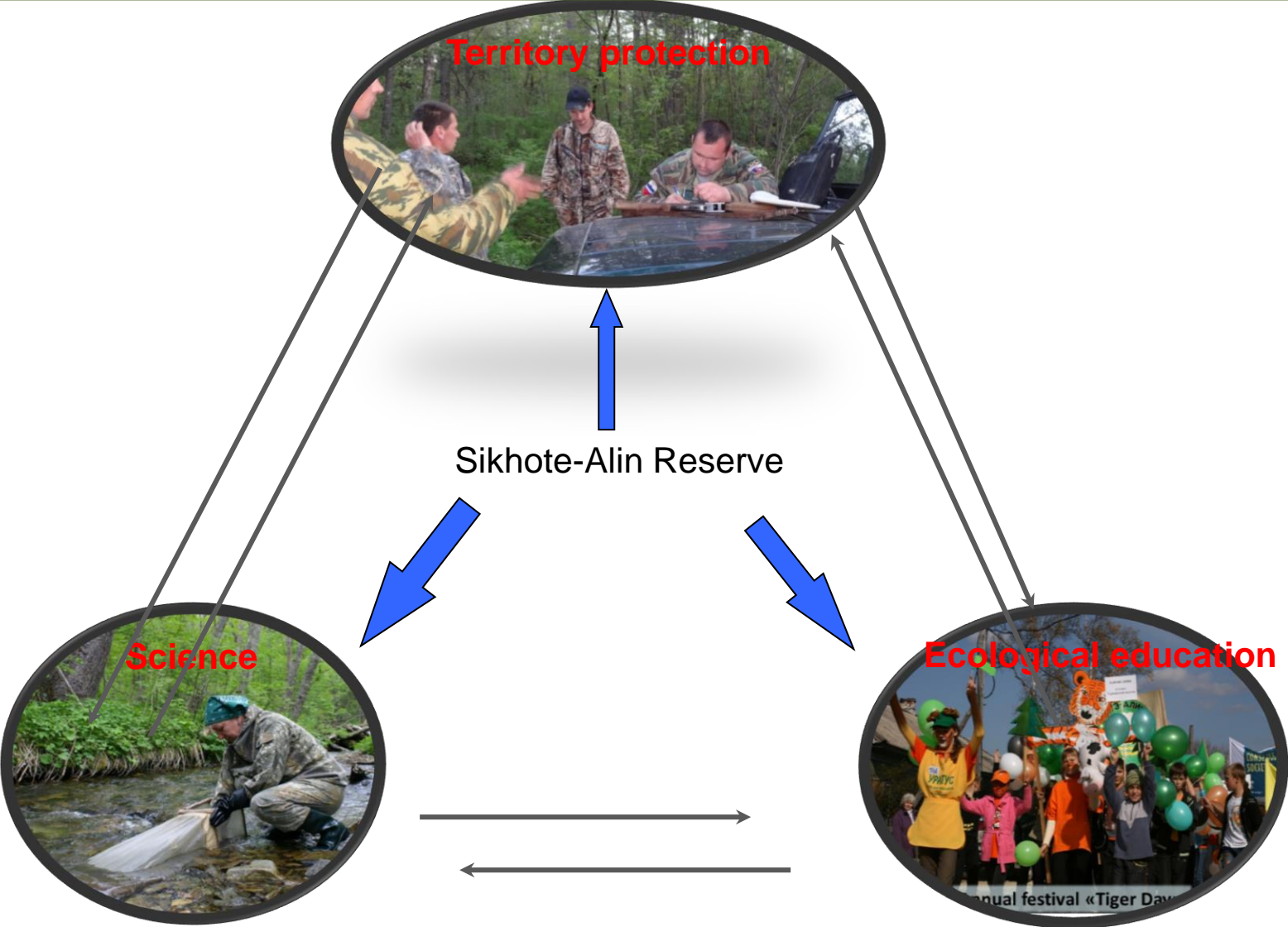
For its animal and plant world is characterized by exceptional biodiversity, where a high proportion of rare endemic and relict species.

Sikhote-Alin is the last large integral territory in the world where the Amur tiger lives. The largest population of the Amur Goral is noted on the reserved coast of the Sea of Japan; this species is located here at the northern limit of its distribution.

Since 1979, it is part of the World Network of Biosphere Reserves, since 2001 - on the UNESCO World Heritage List of Natural World Heritage Sites ("Central Sikhote-Alin").

Reserve has a sea area of the Sea of Japan 1 km wide and an area of 2900 hectares.

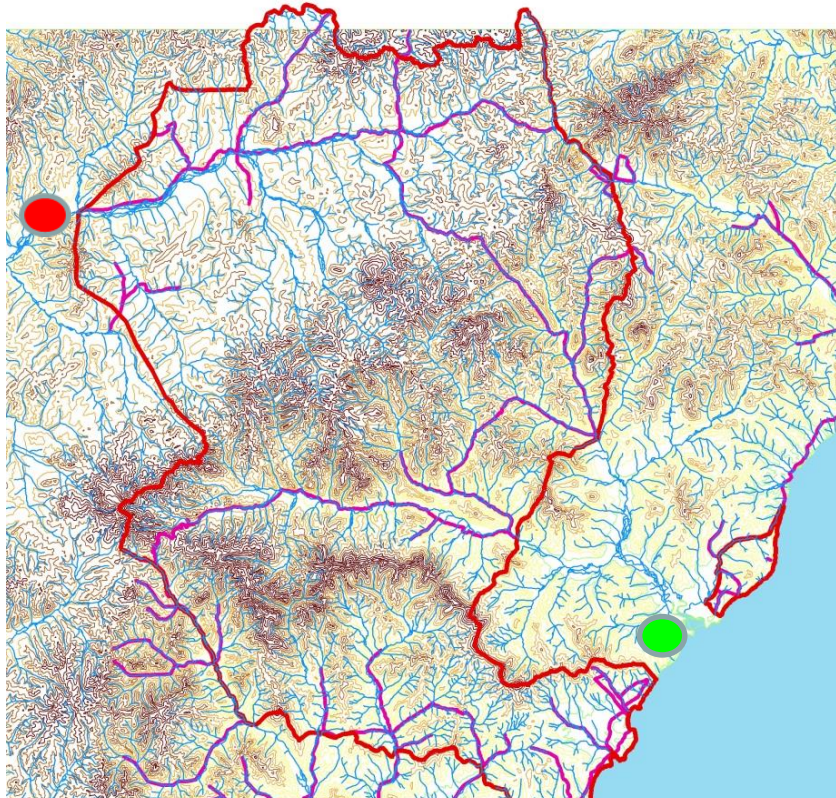
Goals of PA



The main scientific long-term investigations in the Reserve:

- **Climate changing**
- **Vegetation transformations under the impact of the external factors**
- **Natural dynamic of the native and the derivative communities**
- **Biodiversity and its transformation**
- **Destructive processes**
- **Plant and animal phenology**
- **Dynamic of rare species populations**
- **Dynamic of main animal species population size**
- **Freshwater fauna**
- **Marine ecosystems**

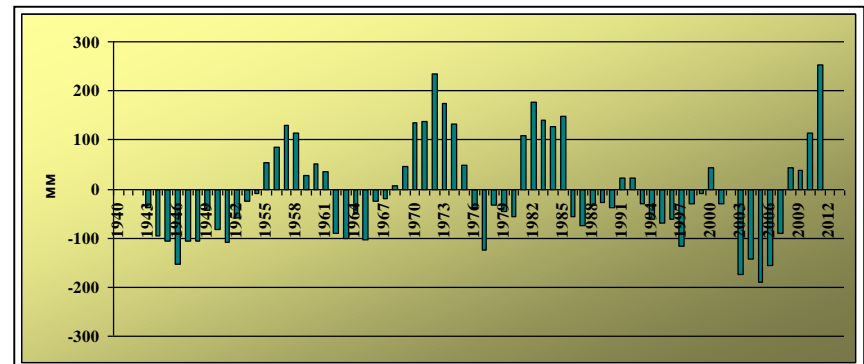
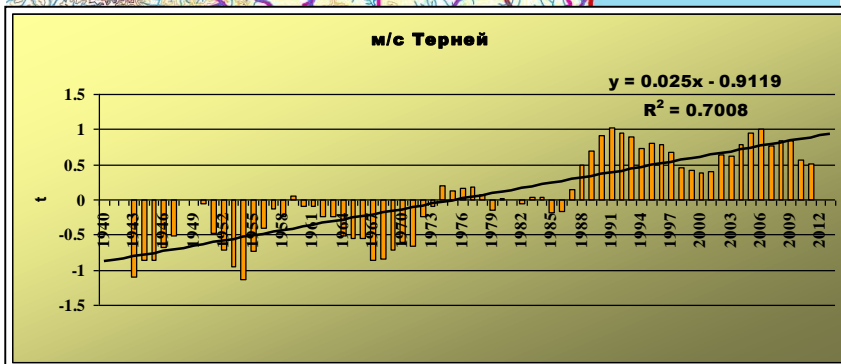
Climate changes



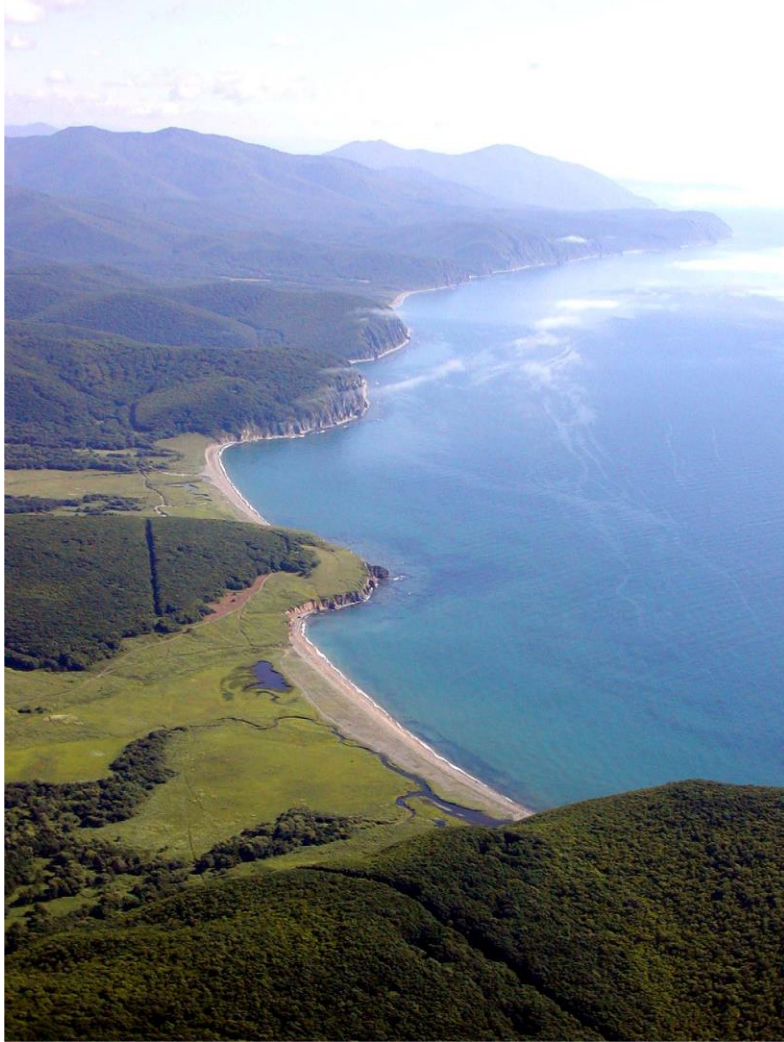
Meteorological station in:

- Terney (from 1941)
- Melnichnoe (from 1940 г.)

	t°C Year	Precipitati on, (mm)	t°C July	t°C January
Terney	3,3	830,1	15,7	-12,3
Melnichnoe	0,3	686,0	19,2	-22,3



The East Sea coastal area



The longest observations over natural processes are executed on the eastern slopes of Sikhote-Alin and in the sea coast, including lagoon lakes: there are two lakes in the territory of the Reserve and one is in its buffer zone.



Far Eastern State Biosphere Marine Reserve



The Far Eastern State Marine Reserve (FESBR) was established on March 23, 1978.

The objectives of creating the reserve were: preserving the coastal and island flora and fauna and their coastal environment, conducting research to describe the reserve's communities and their dynamics, promoting environmental protection by organizing a museum and exhibitions, publishing scientific and popular science writers on marine nature and its conservation.

Three sites with a total area of 63 thousand hectares were assigned to the reserve, a protection zone was approved around the 3-mile-wide sea borders, as well as a 216 hectare area on Popova Island to create an island botanical garden.



2. Background of strategic / management plan of the target MPA

- The basis of the strategic/management plan for the purposes of marine protected areas in the Russian Federation is a system of state strategic planning based on targeted programme planning and including territorial planning in order to identify and implement socio-economic development priorities of Russia for a medium-term (up to 6 years) and long-term (over 6 years) perspectives (Federal Law “On Strategic Planning in the Russian Federation” of 28.06.2014)

Background of strategic / management plan of the target MPA

A key aspect of effective management in any MPA is adaptive management, which is applied under the interrelation of different habitats in the marine environment and the interdependence of adjacent biological communities and under the strong impacts from adjacent coastal or marine sites.

3. The Objective of MPA management plan

is to present at the level of strategic planning the appropriate recommendations to strengthen the capacity of the developed MPA system of Russia as one of the real resources of environmentally sustainable development, requiring special attention and specific approaches to management and integration into local, regional and national socio-economic land (water) systems of life.

The **Objective of MPA management plan**

The objectives of SPA planning, including marine SPAs, are determined by the “Recommendations for the development of medium-term plans for the management of state nature reserves and national parks” (Order of Rosprirodnadzor under the MNRE of Russia of 03.12.2007 № 491 “On the improvement of the planning system of the main activities of the state natural reserves and national parks”).

4. The **key contents of the management plans**

The **key contents of the management plans** of Russia for the MPAs is related to the tasks of conservation of the landscape and ecological diversity of the coastal marine areas of Russia and adjacent waters, taking into account the identified trends in global environmental changes and the specificities of their regional manifestations.

The key contents of the management plans

Planning, establishment and management of the national MPA system has the goal of creating an effective MPA network of Russia, which is based on the following principles:

- **representativeness**, the MPA system should adequately reflect the structure of natural biological diversity;
- **a variety of forms**, the MPA system includes a variety of traditional and specific categories and types of SPAs;
- **compliance and advanced development**; the growth of loads on the water area should correspond to the adequate development of its MPA system. The design and long-term development of the MPA system should take into account the dynamics of potential threats to biodiversity;
- **social efficiency**; the MPA system is a national asset, organized and supported by the state in the interests of the whole society for sustainable socio-economic development;
- **institutional integration**; the MPA system is an integral, equal and independent part of the economic and social spheres of the state, regulated by special legislation. The MPA system is a special economic form of environmental management with its own set of environmental, information, social and economic functions.

***For the Russian Far East,
priorities for MPA activities include:***

- Scientific substantiation and planning of the formation of the territorial network of MPAs, including their location, area size, optimization of boundaries, functions they perform to maximize the full protection of the diversity of natural coastal and marine areas; organization of ecological corridors and reconstruction of existing natural ecological corridors between SPAs, taking into account their local, regional and international significance.
- One of the main directions of MPA management plans in the Far Eastern region is to improve the territorial network of MPAs and increase its representativeness.

4.1. Links between monitoring/assessment results and management

- One of the highest priority activities of specially protected coastal marine land and water areas is environmental monitoring of protected marine and coastal ecosystems, which is based on data on the status of taxon-indicator populations.

For coastal marine SPAs of the Far Eastern region of Russia, such types of monitoring could be:

- monitoring of pollutant transport by rivers;
- monitoring of atmospheric deposition, primarily with a view to forecasting the development of the processes of eutrophication of water areas as being particularly important for the waters of the south of the Far East of the Russian Federation;
- monitoring the impact of sea level rise on coastal marine ecosystems and their individual natural components, monitoring of coastal marine communities near oil platforms;
- monitoring of invaded marine organisms.

Links between monitoring/assessment results and management

The priority inventory work should include:

- Compiling of annotated species lists;
- Compiling of inventories of rare, unique and requiring special attention objects of animate and inanimate nature, habitats of rare species of animals and plants.

Priority in nature reserves and national parks should be considered the problem-oriented researches aimed at the:

- Development or improvement of environmental monitoring methods;
- Identification of the norms of the state of the environment and the levels of permissible impacts on natural complexes;
- Elucidation of the causes of adverse trends in the dynamics of natural complexes, the forecast of their consequences, as well as the consequences of potentially adverse external impacts on natural complexes of a specially protected area;
- Development and improvement of measures for the conservation and restoration of natural complexes and objects.

5. Institutional aspects: Parties involved in the management of MPAs (implementation of plans, monitoring the implementation, etc.)

- The federal executive body responsible for the development of the state policy and legal regulation, including the development and implementation of the state policy and legal regulation in the field of specially protected areas, including wildlife and their habitats, state environmental monitoring (state ecological monitoring) is the **Ministry of Natural Resources and Environment of the Russian Federation**.
- Scientific and information organizations under the MNRE of Russia include the **All-Russian Scientific Research of Environmental Protection** (VNIIEcology) and the **Information-Analytical Center for Reserves Support** (Roszapovedcenter).

**The federal law
"On Environmental Protection"
(from 10.01.2002 № 7-ФЗ)
Article 1**

“Environmental monitoring (environmental monitoring) - a comprehensive system of observation of the state of the environment, assessment and forecast of environmental changes under the influence of natural and anthropogenic factors

“State environmental monitoring (state environmental monitoring) - environmental monitoring carried out by state authorities of the Russian Federation and state authorities of the constituent entities of the Russian”

Regulations on the organization and implementation of state environmental monitoring (state environmental monitoring) (Government Decree of 31.03.2003 № 177)

- Ecological monitoring includes monitoring of atmospheric air, lands, forests, water objects, wildlife objects, the continental shelf of the Russian Federation, internal waters and the territorial sea of the Russian Federation.

MNR of Russia:

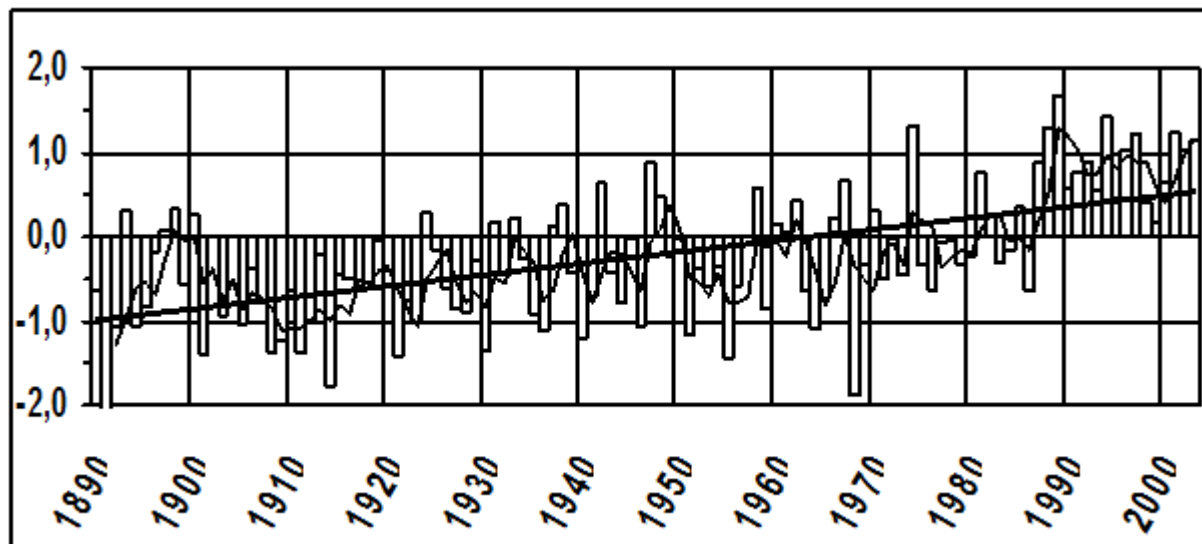
- - coordinates the activities of federal executive bodies in the organization and implementation of environmental monitoring;
- - coordinates methodological and regulatory and technical documents of the federal executive bodies on the organization and implementation of environmental monitoring;
- - ensures the compatibility of information systems and databases on the state of the environment.

MNR of Russia and other federal executive authorities:

- form the state environmental monitoring system and ensure the functioning of this system;
- interacts with state authorities of the constituent entities of the Russian Federation on the organization and implementation of environmental monitoring;
- with the participation of the executive authorities of the constituent entities of the Russian Federation, collects, stores, analyzes and forms state information resources on the state of the environment and the use of natural resources

MAIN THREATS TO MPAs.

Observations of recent decades indicate significant climate change in the southern parts of the Russian Far East. In general, regional climate change trends are synchronous with global ones. Warming in the region has been steadily continuing over the past 120 years to the present. During this time, abnormally warm periods were observed in the late 19th century, in the 1920s, 1950s, and 1960s. In the early 1980s, the most significant warming began and continues to the present. The average annual temperature increased by 1.50 C.



An increase in water temperature causes large-scale southern migrations of aquatic animals and leads to changes in the faunistic complexes. Data on the composition of ichthyofauna hall. Peter the Great Sea of Japan indicate an increase in the number of southern species in recent years.

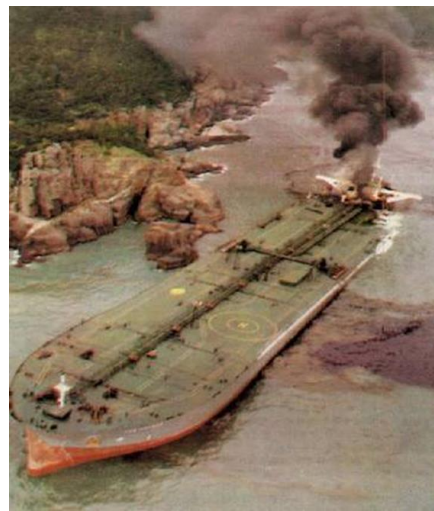
The age-old changes in the composition of the ichthyofauna of the Peter the Great Bay (Sokolovsky et al., 2011)

Years	1901-1910	1951-1960	1981-1990	1991-2000	2001-2010
Fish category					
Residents	176	176	176	176	176
Southern migrants	25	24	35	53	61
Northern migrants	17	6	3	4	8

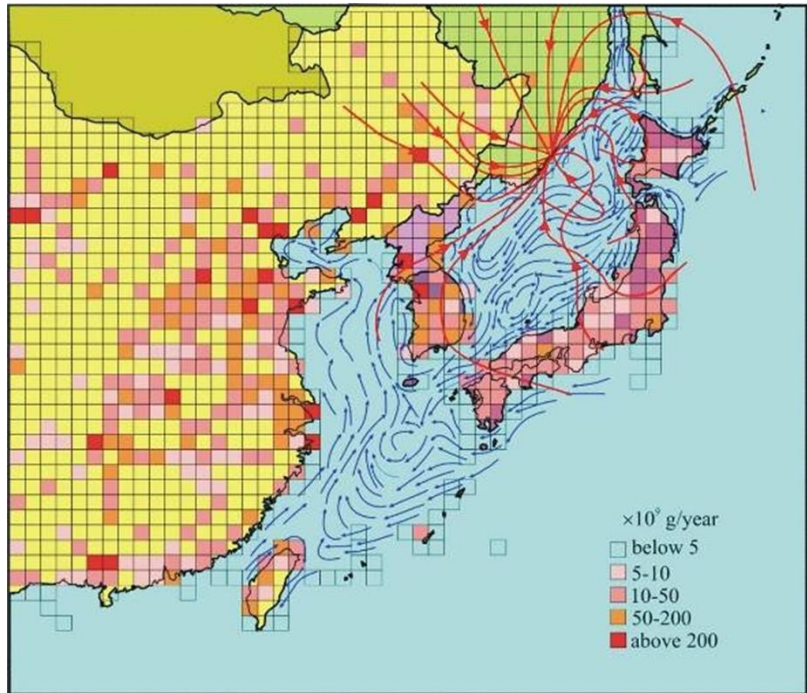
Alien species are capable of creating various problems: toxic algal blooms caused by the massive development of algae, intensive fouling and biocorrosion of hydraulic and water intake structures, the spread of parasitic and disease-causing organisms (including pathogens of epidemics and epizootics), and finally, the complete emptying of fishery stocks.

Harmful algae blooms, including red tides and toxin producing plankton, are a very serious environmental problem, especially in China, Japan and Korea.

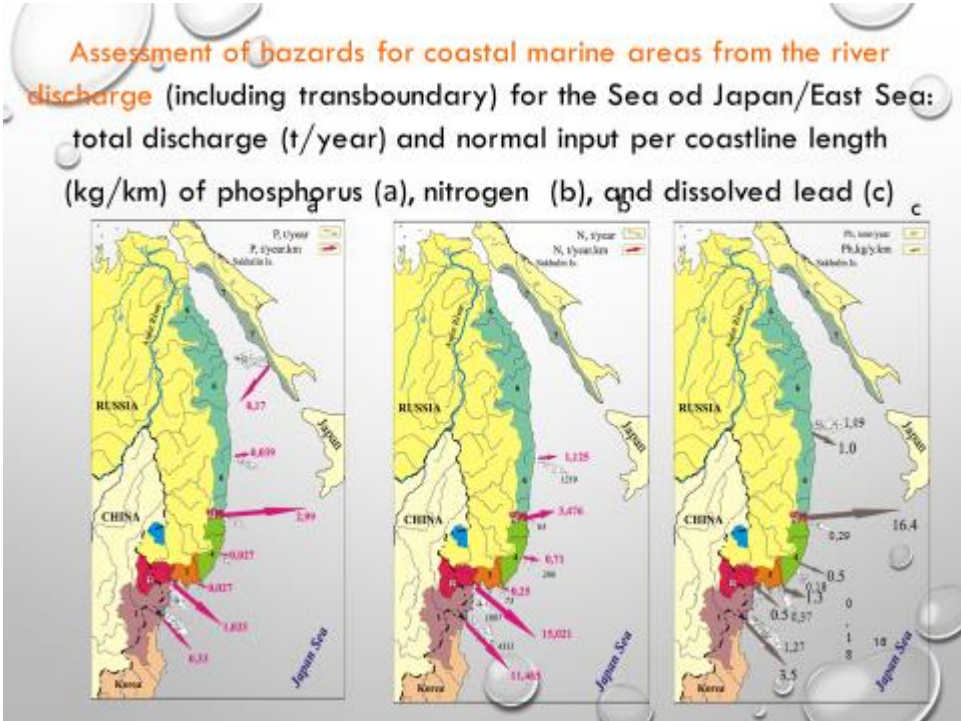
Oil and hazardous/noxious spills, given increasing oil and HNS tanker traffic, are recognized as one of the most potentially dangerous environmental problems in the marine area. The risk of an oil spill in the region is moderately high and risks are on par with the Mediterranean Sea and the Northeast Atlantic.



In the coastal zone of the seas, as a result of pollution of marine waters, the species composition of benthic communities changes, and mass eutrophic species develop. The impact of marine pollution by organic matter on the species composition and structure of benthic communities was studied on the example of Peter the Great Sea of Japan on the example of both poorly polluted and heavily polluted water areas. The general trend is to reduce species diversity and the redistribution of the dominant forms of benthos - the predominance of species that endure elevated levels of organic matter in water and bottom sediments (tolerant to organic pollution) over the indicators of a clean environment.



Distribution of anthropogenically emitted SO₂ and Back Trajectories of Movements of Atmosphere Mass in East Asia



Basic sources of marine litter in Russian Far East

River discharge
from dump sites or
inhabited localities



Beach recreation



Fisheries/aquaculture



Transboundary



Negative impacts of marine litter in Russian Far East

Loss of recreational
attractiveness



Harm to marine life



Growing cleanup costs
for coastal nature users



Microplastic pollution assessment in coastal waters of Russian part of NOWPAP (2016-2017) and river discharge (current activity since 2018)
The activity follows decisions of 20th and 22nd NOWPAP IGM and
is aimed at overall understanding of current situation with microplastic contamination in Russian part of NOWPAP region

NOWPAP POBRAC
 National Oceanic and Atmospheric Administration
 Federal Scientific Center of Oceanography
 Federal Scientific Center of Aquaculture and Aquatic Resources
 Federal Scientific Center of Biological Oceanography
 Federal Scientific Center of Marine Geology and Geophysics
 Federal Scientific Center of Marine Technology and Shipbuilding
 Federal Scientific Center of Marine Biology
 Federal Scientific Center of Marine Fisheries
 Federal Scientific Center of Marine Mammals and Fisheries
 Federal Scientific Center of Marine Pollution
 Federal Scientific Center of Marine Pollution
 Federal Scientific Center of Marine Pollution

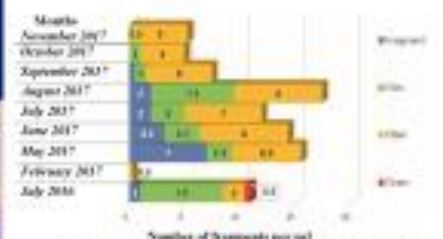
Regional UNEP POPs

MICROPLASTIC POLLUTION
 In the coastal water of the Peter the Great Gulf content and distribution. The first stage of survey

POBRAC - Issue Report No. 11

Sampling sites (rivers discharging into the Northwest Pacific)

River	Length, km	Basin Area, km ²	Mean annual discharge, m ³ /s
Chirchik	206	20,200	231
Chukotka	94	475	230
Chukotka	94	200	434
Chukotka	94	700	930
Chukotka	94	300	400
Chukotka	140	20,000	100
Chukotka	200	10,000	100
Chukotka	200	10,000	100



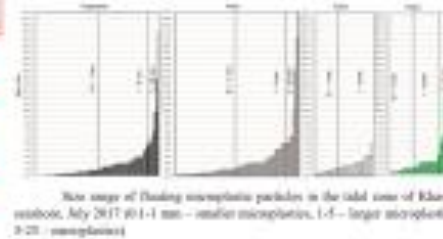
Comparison of microplastic concentrations in the study area and worldwide

Location	Depth, m	MP type, µm	Reference
UK, North Sea	0-100	400-1,000	Agnes et al., 2016
China, Yangtze Estuary	33	500-10,000	Zheng et al., 2015
China, Yangtze Estuary	333	400-10,000	Zheng et al., 2015
SE Korea, coast	50	100-1,000	Yang et al., 2014
SE Korea, coast	100	100-1,000	Yang et al., 2014
SE Korea, coast	200	100-1,000	Yang et al., 2014
SE Korea, coast	400-700	5-10,000	Yang et al., 2014
Colombia, C&C	0-100	200	Castro et al., 2014
Colombia, C&C	100-200	200-10,000	Castro et al., 2014
South, Indian Ocean	333	5-7-10	Mohd et al., 2011
UK, Mediterranean	333	100-1,000	Longden et al., 2011
Mediterranean coast of Israel	333	7-90	van der Meer et al., 2017
Central W. Atlantic	500	10-100	de Jans et al., 2014
Arctic polar waters	200	100-1,000	Ludwig et al., 2011
Southwest Pacific Sea	300	10-100	Smith et al., 2011
Beibu Sea, China	200	100-1,000	Sheng et al., 2015
Off the Pacific, Russia	0-100	100-1,000	This study

Chukotka District

Number of microplastic particles per m³

July 2017, October 2017



Conclusions

- To improve the management of the Russian SPAs and biodiversity conservation, it is necessary to carry out a scientific study and formulate the main provisions of the concept of conservation of landscape diversity of the high seas and deep water areas within the system of reserves.
- Use of the mechanism of integrated coastal areas management will contribute to minimizing the anthropogenic destruction of habitats and improvement of the management of these areas.
- It is necessary to identify the environmental risks of economic activity in coastal marine areas.
- There is a need in optimization of the management structure of national protected areas and development of an environmental and economic rationale to ensure the conservation and restoration of local biodiversity in coastal ecosystems.
- To ensure the sustainable development of the marine regions of the Far East, the Russian Federation should promote the development of ecosystem services of both global and transboundary regional importance, promote regional cooperation for the conservation of marine ecosystems of the seas of the North-Western Pacific.

A large flock of seagulls is captured in flight over a sandy beach. The birds are scattered across the frame, with some in the foreground and others filling the sky. In the background, a green, rocky cliff rises from the beach, and the ocean is visible beyond it. The sky is a clear, bright blue. The overall scene is vibrant and dynamic.

**Thank You Very Much for your
attention**