



**Sikhote-Alin Biosphere Reserve**

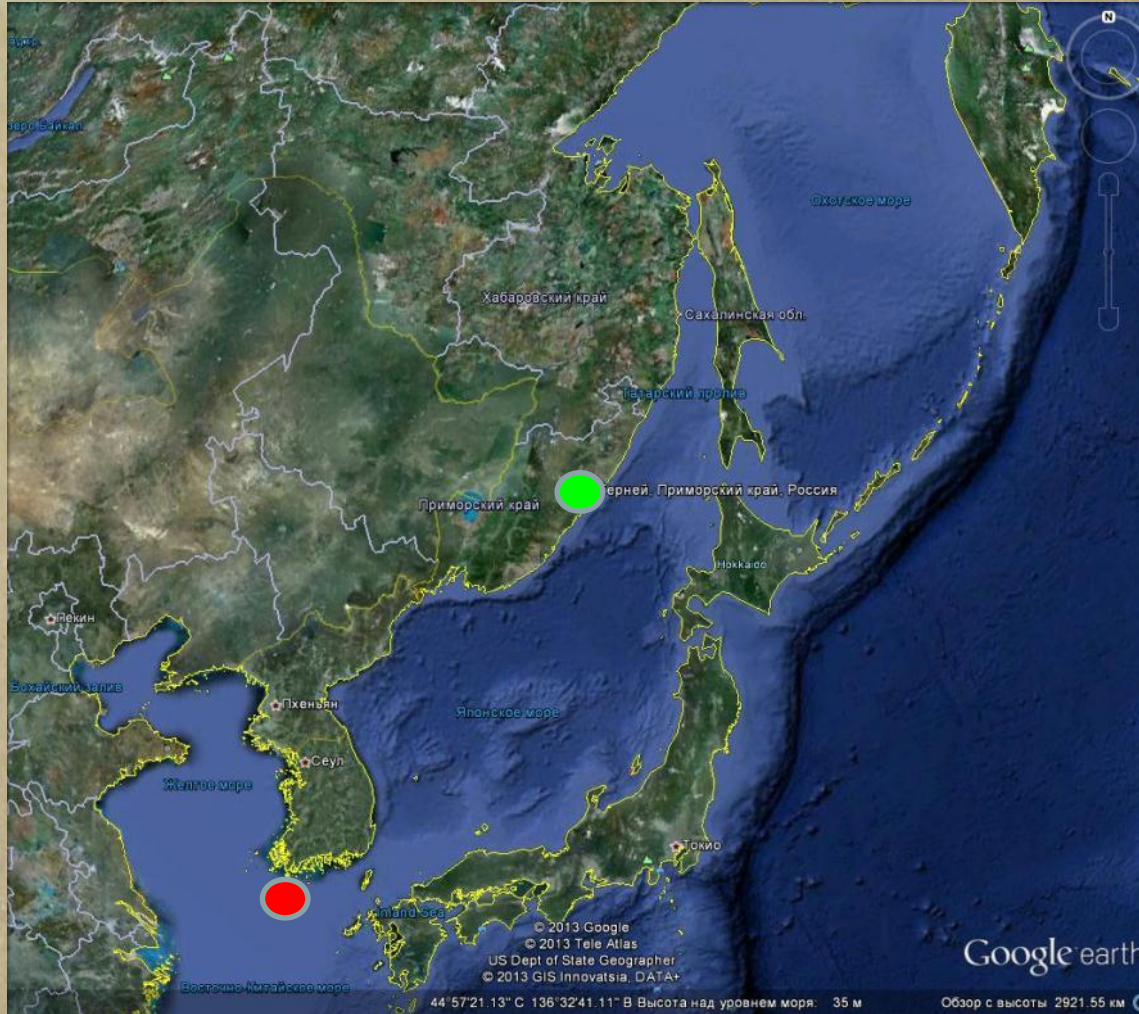


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**MONITORING OF NATURAL SYSTEMS OF THE EAST  
SEA COASTAL AREA IN SIKHOTE-ALIN BIOSPHERE  
RESERVE**



# WHERE WE ARE?



**Sikhote-Alin**  
Biosphere Reserve



# One of the oldest, one of the biggest

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Sikhote-Alin Reserve was founded in 1935 within the protected territory of **1 000 000** hectares

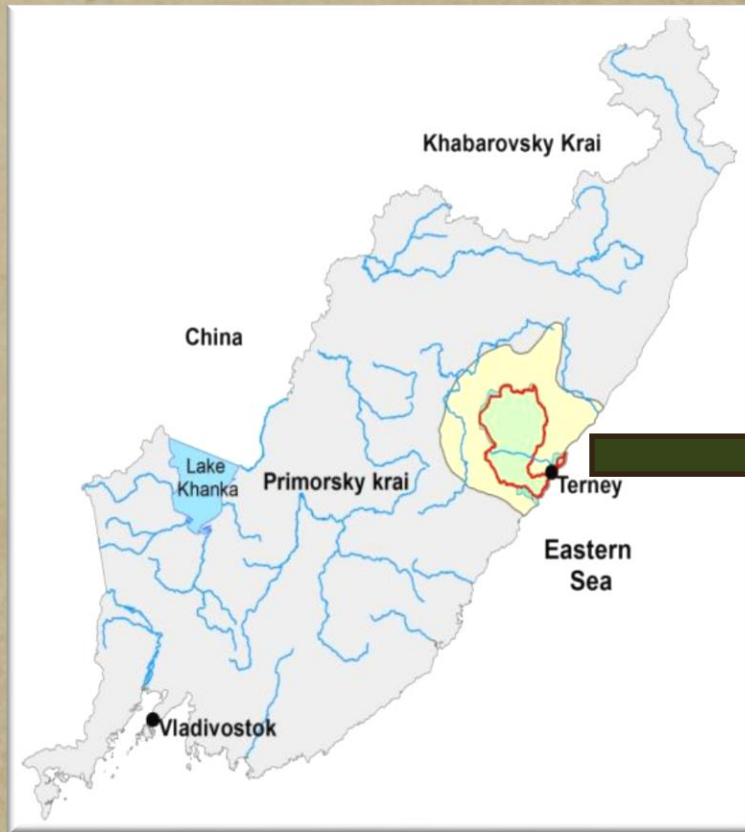
In 1979 designated as **Biosphere Reserve**

In 2001 was entitle as a part of the **World Natural Heritage Site**

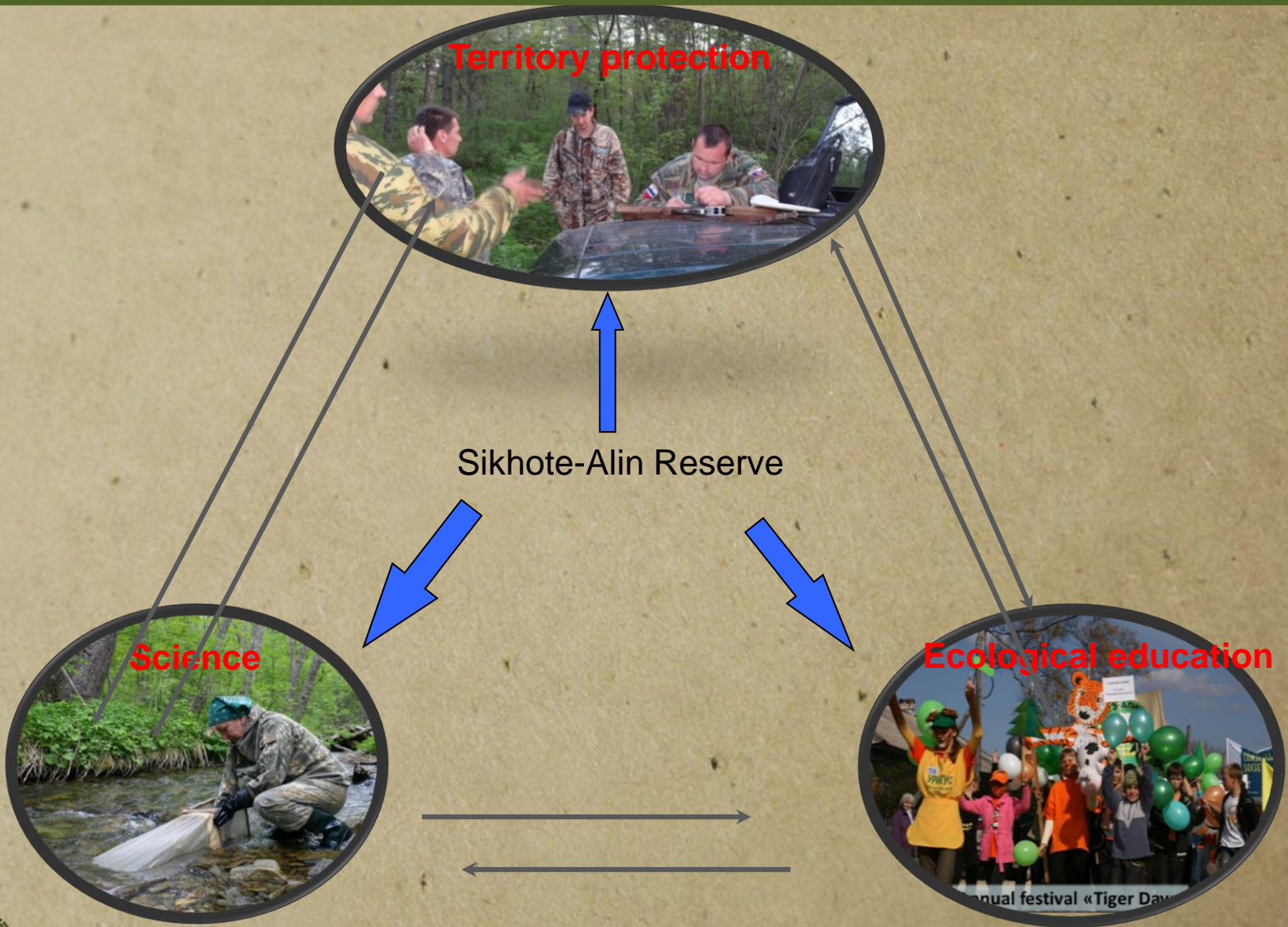


# Big home for Tiger

At present size of the Reserve is **401, 600** ha and protected marine zone of Sea of Japan 2900 ha.  
Buffer zone size is 62550 ha



# Goals of PA



# The main scientific long-term investigations in the Reserve:

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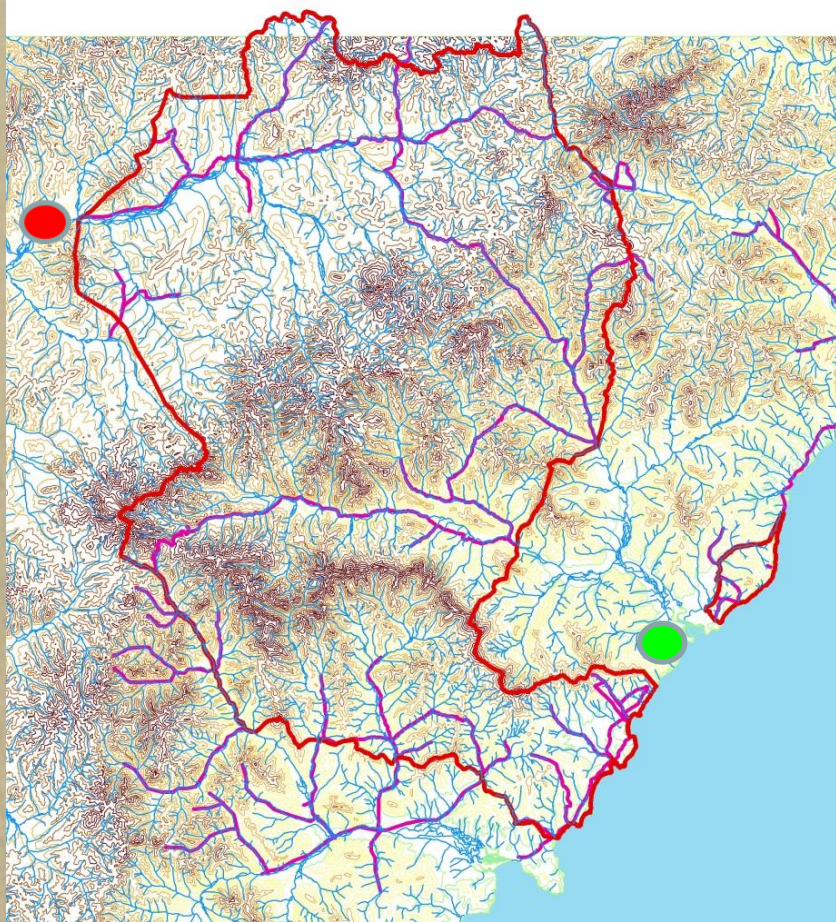
- Climate changing
- Vegetation transformations under the impact of the external factors
- Natural dynamic of the native and the derivative communities
- Biodiversity and its transformation
- Destructive processes
- Plant and animal phenology
- Dynamic of rare species populations
- Dynamic of main animal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

# Climate

- Climate of separate parts of the Reserve is rather differing, because of relief complexity, remoteness from the coast and other physiographic features of the region. Most of all these distinctions are shown in eastern (coastal) and western (continental) macro slopes of Sikhote-Alin. Eastern macro slope constantly is under the impact of the East Sea and Pacific Ocean, therefore its climate is characterized by high humidity and smoothness over of the majority of the hydrothermal phenomena. Here, in the first half of summer prevalence of marine winds is observed with sudden drop in temperature, fogs and incessant rains. The western slopes are isolated from direct influence of the sea by the Sikhote-Alin Range.
- The average January temperature on eastern slopes of Sikhote-Alin mountains is  $-12.9^{\circ}\text{C}$ , on western it reaches  $-24.0^{\circ}\text{C}$ , the average temperature of July is accordingly  $+15^{\circ}\text{C}$  and  $+18^{\circ}\text{C}$ ; the annual sum of precipitations for western slopes is 676,2 mm, for eastern slopes is 826, 4 mm.



# Climate changes



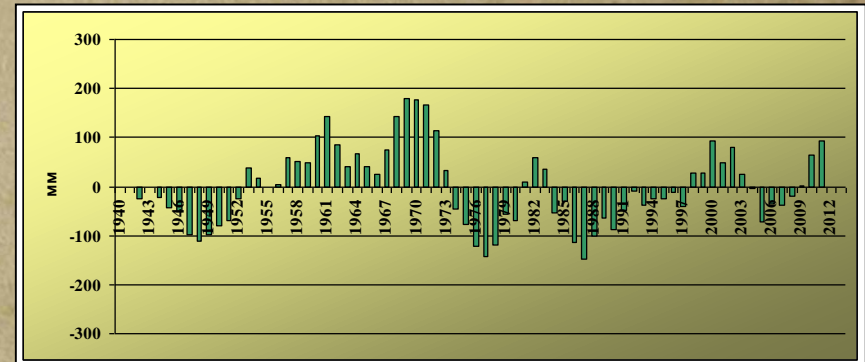
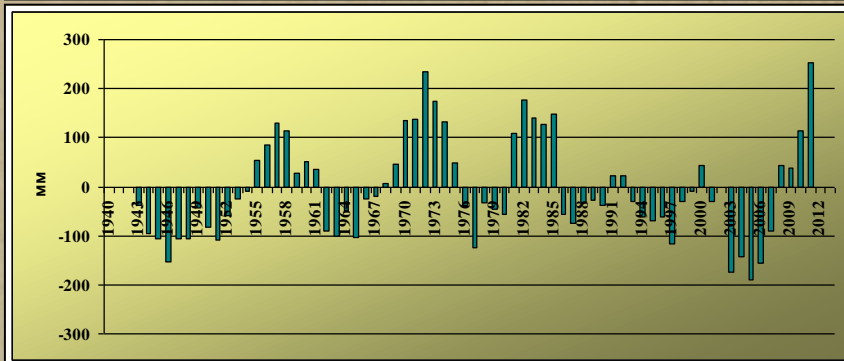
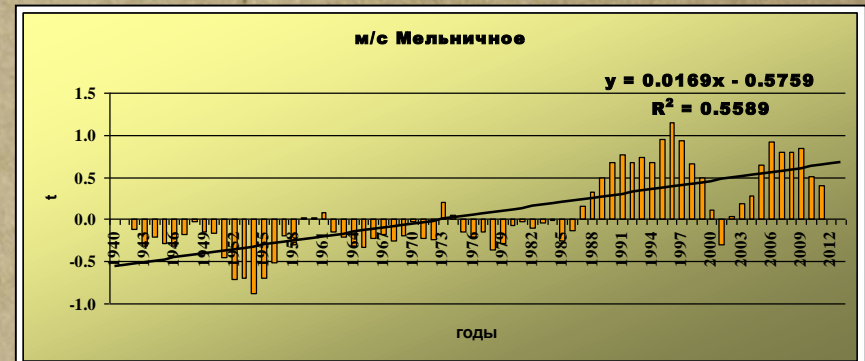
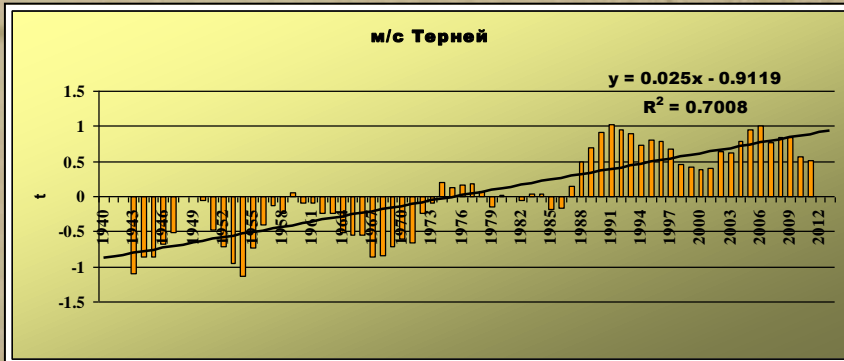
Meteorological station in:

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

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



# Changes of the average annual temperatures



# 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.



# The East Sea coastal area

Natural complexes of coastal area of the Reserve and its cooperation zone (approximately 25 km in width) are strongly influenced by the sea and characterized by the greatest set of habitats, diversity of ecosystems and species. In the coastal area outside of the Reserve there is high density of population, road network is well developed and therefore constant, active anthropogenic influence on natural systems is expressed. Especially influence on salmon is exerted during its migrations from the sea to the rivers of the Reserve and back.



# Marine ecosystems

An aerial photograph showing a coastal landscape. In the foreground, a river flows into a large, dark blue bay. A narrow, green isthmus connects the bay to the open sea. The sea is a lighter blue, and the sky is clear with some light clouds. The land is covered in green vegetation.

**These investigations are very important for understanding of many processes that occur in the East and Okhotsk Seas. The current that comes from the Strait of Tartary to the south not only considerably cools the coastal waters and affect the climate of the Central Sikhote-Alin but also contributes to the sea organisms moving including organisms of the ecosystems of the Reserve. The sea ecosystems are highly damaged by fishery, especially in aquatories of buffer zones and by polluting rivers and the sea. In the low watercourse of Serebryanka river sufficiently large Terney settlement is located. During periodic rising of river level and flooding in summer- autumn time the river takes out household rubbish which pollutes the sea and the sea coast throughout 20 km, including the Reserve areas.**

Very important activity of biosphere reserves is solving the problems which are underlined in the content of our meeting, such as conservation and development of ecological and cultural diversity; development and integration of knowledge about marine, lake, island ecosystems for better understanding interaction “man and nature”. For effective scientifically-proved management of biosphere reserves, besides monitoring, development of applied scientific researches is necessary to increase financing for science and management. It is necessary to create centers in biosphere reserves for permanent scientific researches and monitoring of marine, lake, island ecosystems, ecosystems of the coastal area, and for carrying out programs to improve excursions, ecological education and tourist activities. Unification of several branches of activity on one basis will help to solve many scientific-practical problems with minimum of financial expenses.

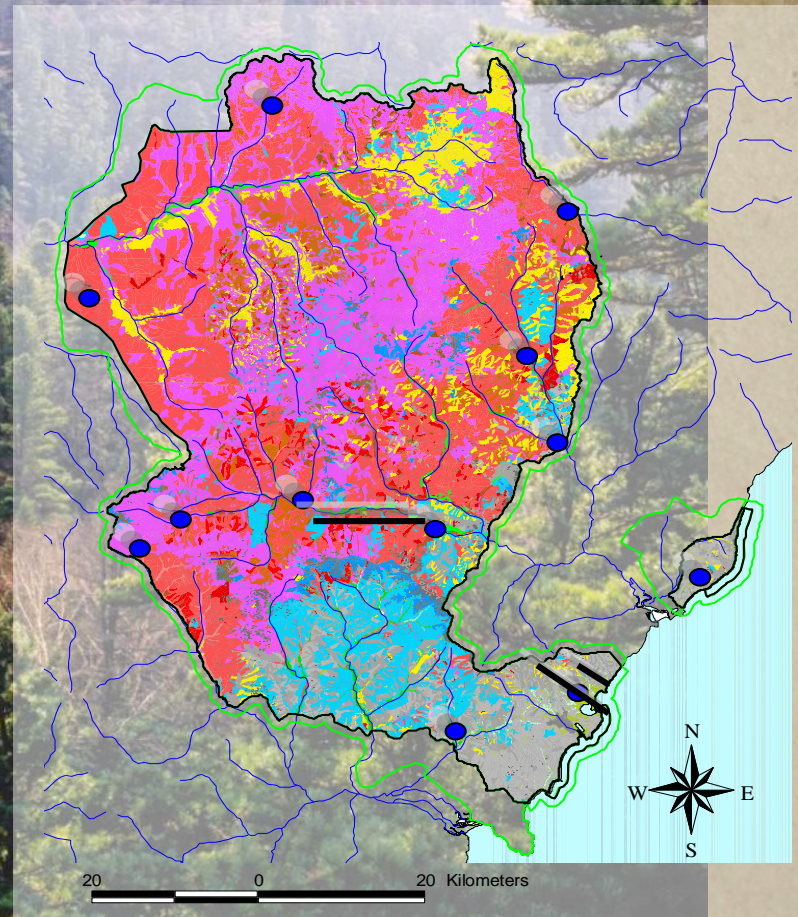


# MONITORING OF VEGETATION

*Forests cover 97% of the Reserve territory.*

**The main goal** is to study dynamic of primary and secondary forest communities.

**The method** is the system of permanent sample plots and ecological transects in different natural zones. Totally in the Reserve 45 sample plots in primary, 22 in secondary ecosystems and 6 ecological transects exist.



# **Dark coniferous forests**

**Transformations of tree stand are more evident in dark coniferous forests than in other types of forests because of their location near the upper forest border. So, high mountainous dark coniferous forests can become better models for global climate changes than oak or coniferous-broadleaved forests.**



## Constant sample plot in Korean pine forest

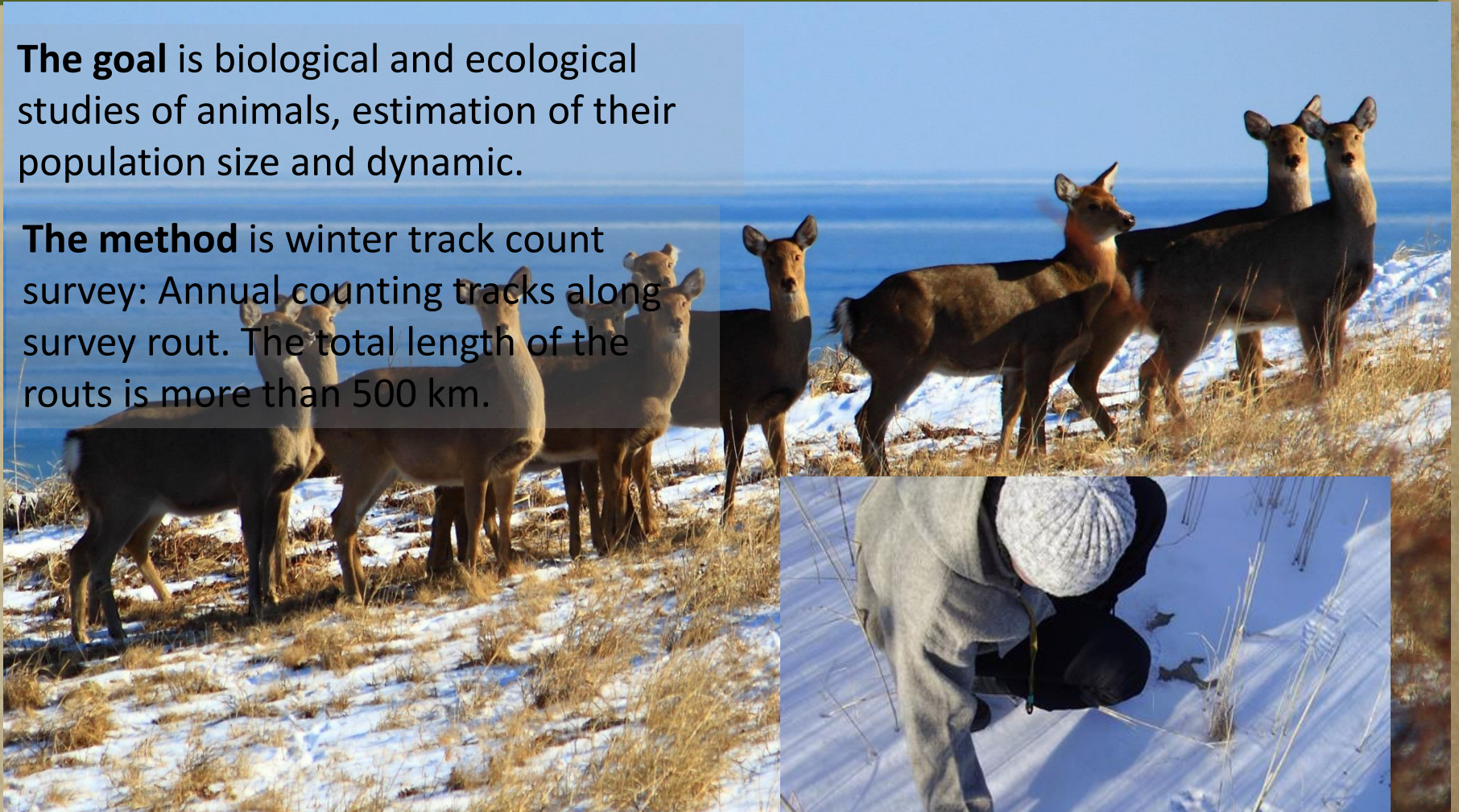
Multiple revisions on constant sample plots and generalization of received information have shown that coniferous-broadleaved forests are an example of self-regulating ecosystems, rather steady to external impact. All transformations that were detected are relevant to age dynamic of communities and are mainly linked with plant stages reorganization.



# MONITORING OF ANIMALS POPULATIONS

**The goal** is biological and ecological studies of animals, estimation of their population size and dynamic.

**The method** is winter track count survey: Annual counting tracks along survey route. The total length of the routes is more than 500 km.



**Thanks for attention**

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