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BIODIVERSITY & WILDERNESS AS ECOLOGICAL GEOGRAPHY EASTERN RUSSIA

Wilderness is often idealized as an undisturbed space, a place where we can escape the spaces otherwise dominated by humans and their attributes. And what about people at such countries like Russia, which support a vast undisturbed wilderness area?

Russia, or the **Russian Federation**, is a transcontinental country located in Eastern Europe and Northern Asia. It extends from the Baltic Sea in the west to the Pacific Ocean in the east, and from the Arctic Ocean in the north to the Black Sea and the Caspian Sea in the south. Russia covers over 17,125,200 square kilometres (6,612,100 sq mi), spanning more than one-eighth of the Earth's inhabited land area, stretching eleven time zones, and bordering 16 sovereign nations. Moscow is the country's capital and largest city, other major cities include Saint Petersburg, Novosibirsk, Yekaterinburg, Kazan, Nizhny Novgorod, Chelyabinsk and Samara.

Concept of wilderness is a kind of environmental philosophy that emerged and has been primarily developed in North America, but widely distributed now and its meaning and understanding are very different around world.
Some general info about Russia. Its area is 17,000 thou sq km of the global land). It is washed by 14 seas.

The territory of Russia features over 120,000 rivers and about 2,000 thousand lakes. The area of wetlands reaches 2 000 sq km and permafrost grounds are spread over almost of the country's territory.



RUSSIA-US SIZE COMPARISON

MAJOR GEOGRAPHIC QUALITIES

- IMMENSE TERRITORIAL STATE
- NORTHERNMOST LARGE AND POPULOUS COUNTRY IN THE WORLD
- A FORMER WORLD COLONIAL POWER
- A COMPARITIVELY SMALL (<150 MILLION) CONCENTRATED POPULATION
- CONCENTRATED DEVELOPMENT
- MULTICULTURAL STATE
- MINIMAL PORTS

RUSSIA

Location

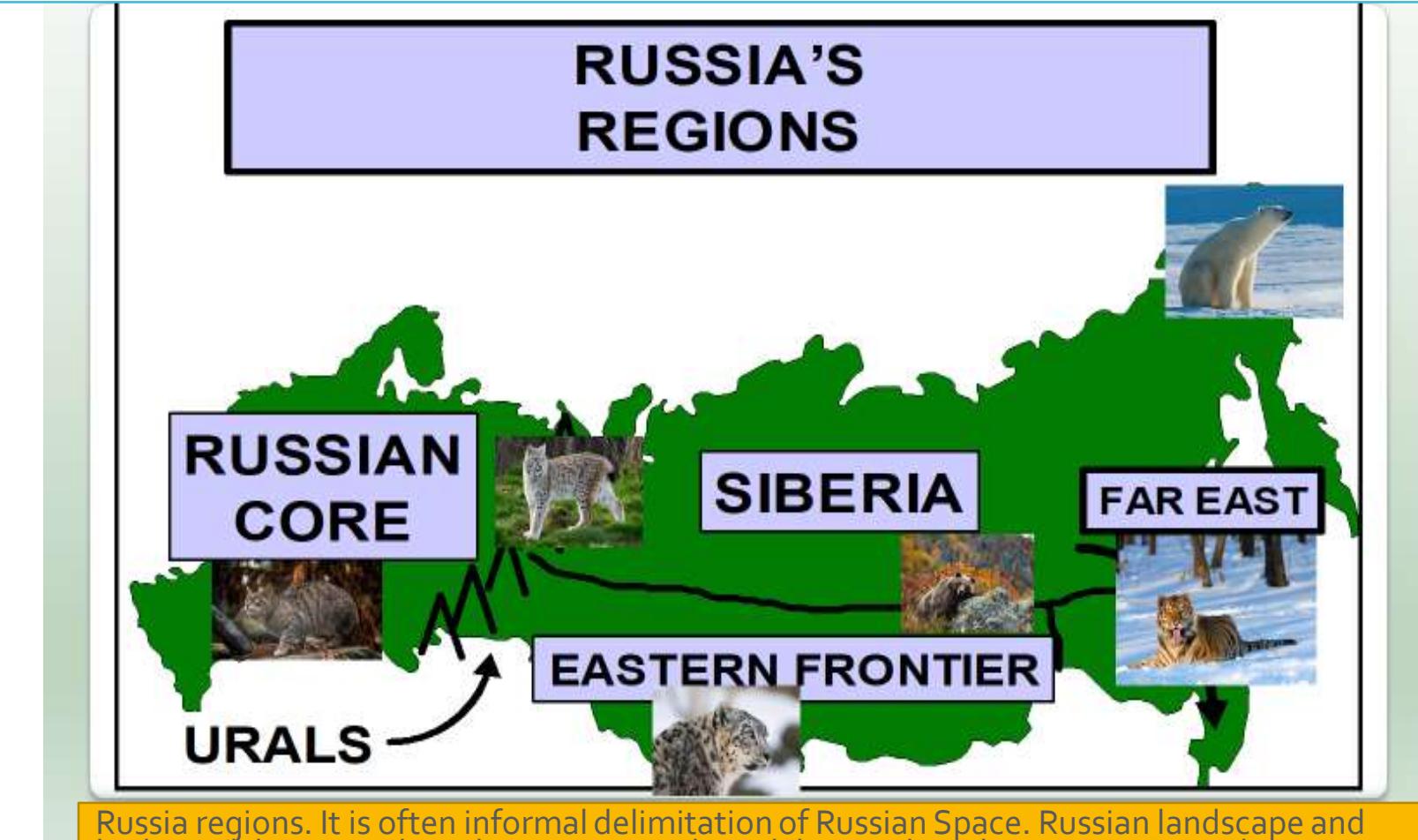
- Russia is bounded by the Arctic and Pacific Oceans
- Ural mountains divide Eurasian continent – and Russia - to Europe and Asia (78% live west of Urals)
- Boundaries with 13 countries



Big country divides on regions.

The anthropogenic transformation level of North Eurasian ecosystems can be very differed. Within Russia there are large plains and mountain (the Khibins, Caucasus, Urals, Altai, Sayans, Verkhoyansk Ridge, Kamchatka and Transbaikalia mountains). Its plains display ecosystems of 8 natural zones (biomes): polar deserts, arctic and subarctic forest tundra, taiga, broad-leaved forests, steppes, semiarid and arid zones.

Approximately two-thirds of the frontier is bounded by seawater. Virtually all of the lengthy northern coast is well above the Arctic Circle; except for the port of Murmansk—which receives currents that are somewhat warmer than would be expected at that latitude, due to the effects of the Gulf Stream—that coast is locked in ice much of the year.



Russia regions. It is often informal delimitation of Russian Space. Russian landscape and biological diversities have been preserved much better than the same in Central Europe and South and South-East Asia, for the exception of biomes of European steppes and broad-leaved forests which became almost completely extinct as far back as past centuries.

The Ural Mountains, which extend more than 2,200 kilometers from north to south, form the boundary separating the unequal European and Asian sectors of Russia. The continental divide continues another 1,375 kilometers from the southern end of the Ural Mountains through the Caspian Sea and along the Caucasus Mountains. Asian Russia is about as large as China and India combined, occupying roughly three-quarters of the nation's territory. But it is the European western quarter that is home to more than 75 percent of Russia's inhabitants.

Natural zone	% of completely transformed lands	Key transformation factors
Polar deserts and tundras	0.06	mineral resources extraction
Taiga: northern central southern	0.84	cuttings, fires, mineral resources extraction, air pollution, land plowing
	1.80	
	10.20	
Broad-leaved and mixed forests	32.65	land plowing, populated sites, communications, hydraulic engineering
Forest steppes and steppes	40.50	land plowing, cattle grazing, water erosion, hydraulic engineering, populated sites communications
Semiarid and arid lands	21.18	cattle grazing, irrigation, salinity of soil
Mountains of Caucasus, Central Asia and South Siberia	29.20	cattle grazing, mineral resources extraction

- The territory of Russia features over 120,000 rivers and about 2,000 thousand lakes. The area of wetlands reaches 2 000 sq km and permafrost grounds are spread over almost of the country's territory. The largest contribution to carbon depositing is made by forests, which is not just due to their spatial dominance, but also current condition, as present-day forest cover in the European part of Russia largely consists of secondary forests of different restoration stage.

In 2017, Russia also celebrated the 100th anniversary of the state's first natural reserve – Barguzinsky – and soon after declared a new National Project «Ecology» to be implemented over the next 6 years. However, at the same, all world countries need more natural resources; therefore, it could see a massive restructuring as production and sourcing move closer to end users and companies localize or regionalize their supply chains. The situation can be dramatically change in case of development global project. One example for that Chinese project the Belt and Road Initiative.

China President Xi Jinping pointed out that the task of «Establishing Protected Areas System with National Parks as its Center» in the next five years implements «The path to China's 'ecological civilization' starts with national parks», and the Russian President declared 2017 the Year of Ecology.

Russia Wilderness and Road & Belt Project Infrastructure Influence



A biodiversity level of Russia is dictated by a higher landscape diversity level presented by zonal ecosystems: polar deserts, arctic and subarctic tundras, forest tundra, northern, central and southern taiga, larch forests and thin forests, mixed coniferous and broad-leaved forests, broad-leaved forests, forest steppe, grasslands, moderately dry and dry steppes, semiarid and arid regions, intrazonal ecosystems marshes, and oligotrophic, mesotrophic and eutrophic swamps, floodplain meadows and forests; various mountain ecosystems (forest, steppe, grassland, tundra, nivalic and petrophilic).

«Wilderness» is the new idea for Russia. It is never considering as a system, do not use at theory and practice of activities to protect natural functions and processes in the human environment. The emphasis of this theme was better understanding the linkage between wilderness and the social and ecological systems (regional, national, and international) in which wilderness is situated. We understand «wild nature» or, in Western words, «wilderness», as a new environmental spatial index designed for the general assessment of the degree of preservation of natural geosystems. Under our spatial Russia wilderness assessment, holistic natural areas with minimal anthropogenic impact were identified.



Russia country's population is 146,7 million people. In a number of European regions, the population density exceeds 50 individuals per 1 sq km (in Moscow oblast it is over 4880 ind \ sq. km. As for the vast spaces of Siberia and European North, it is less than 1 individual per 1 km². Moscow has the population of 9 000 thousands and another 12 cities over 1 000 thou, 22 more over 500 000. These 35 largest cities are responsible for 27.7 % of the country's population. At average, one large city occupies a 500 x 1,000 km territory.

See for details: **WILDERNESS STRATEGIC ELEMENT OF RUSSIA ECONOMIC SPACE**

https://www.researchgate.net/publication/318589848_A_WILDERNESS_STRATEGIC_ELEMENT_OF_RUSSIA_ECONOMIC_SPACE_Vladimir_Nickolaevich_BOCHARNIKOV_Eugene_Gennadievich_EGIDAREV_The_Pacific_Institute_of_Geography_Far_Eastern_Branch_of_the_Russian_Academy_of_S



Wilderness as a Natural Capital

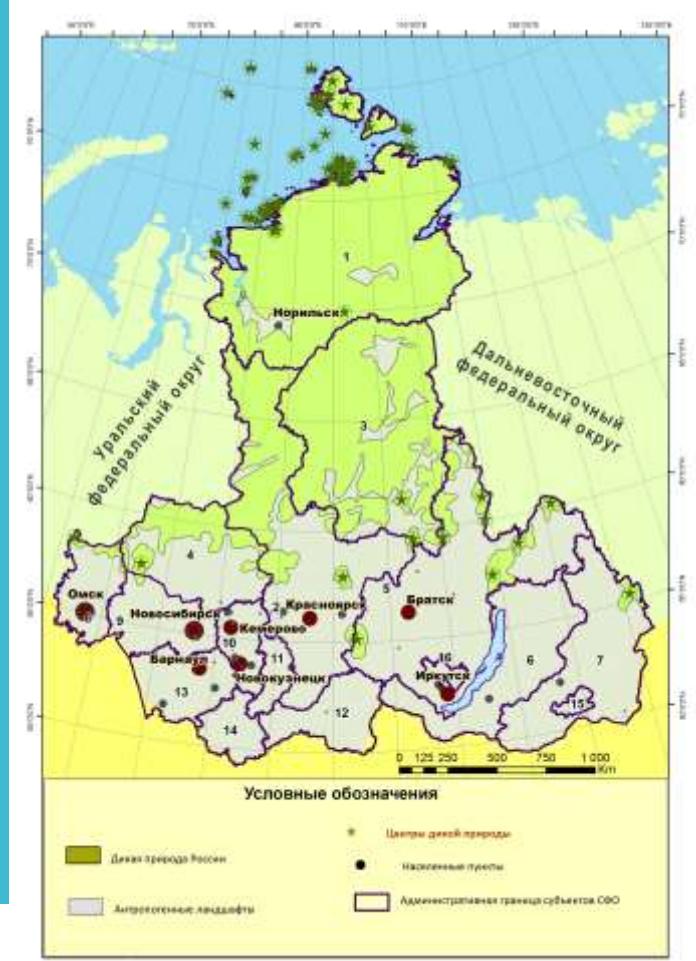
According to 5th Russia national Report to the CBD the basis for the Russian biodiversity is formed by opinion of RAS, the territory of the Russian Federation contains 1513 species of vertebrates: 320 species of mammals, 732 species of birds, 80 species of reptiles, 29 species of amphibians, 343 species of freshwater fish, 9 species of cyclostomes. In addition, 1,500 species of sea fish inhabit surrounding seas. Invertebrate fauna counts more than 100,000 species.

Humans live on the earth that features a diverse ecosystem. In this environment of human beings, nature plays the role of a nurturing mother role. Time may be in the continuation of progress from generation to generation, and the nature of other kinds of billions of biological species, would also be like humans, in constant evolution, in order to adapt to the dangerous natural environment. However, those natural resources are sharply disappearing and dying out because of humans' voracity. In the 21st century, how to protect the ecological environment and the rational use of natural resources have become the serious issues that human beings must solve.



China introduced the concept of the «red line of ecology» as the limit of the countries environmental security, which necessitated the development of new and fundamentally different national and international environmental policy. Some of key challenges to the Russian Federation in relation to the current and long-term sustainable development are: climate change (Russian climate is more sensitive to the global warming than climate of many other regions of the Earth), environment pollution (56.3 million people live in cities with high level of pollution), ecosystem degradation, growth of wastes, issue of accumulated environment damage liquidation, and others. Russia possesses vast intact areas, huge forests and wetlands, freshwater reservoirs, significant biodiversity capacity and is able to make essential contribution to sustainable development in the world.

ENISEY SIBERIA



From Russian National Report to the CBD

- Certain positive achievements were made in stabilisation and increase in population of such species. Among them: - the number of Amur tigers has flattened out and is 428-502 individuals. 95% of the whole Amur tiger population inhabit the Far East — Primorsky Krai and southern part of Khabarovsk Krai.
- The total area of Amur tiger range in Russia is 180,000 km². Protected areas within the Amur tiger range cover about 36,000 km², i.e. 20% of the range, of which 10% are federal-level protected areas; - in accordance with the 2013 Far-Eastern leopard count data, the population increased in 1.5 times and consists of 48 — 50 individuals now. The total area of protected areas (both federal and regional) in the leopard's habitats is 3060 km², so about 70% of its range is protected. Hunting sector was seriously restricted in the buffer zone of the 'Land of the Leopard' national park (820 km²). - the Persian leopard restoration (reintroduction) programme started on the Caucasus. Release sites for this species were organised within its historical range, breeding stock was formed at the Centre of breeding and rehabilitation for the leopard at the Sochinsky national park, first offsprings obtained (4 kittens), the kittens are being trained now to live independently in the wild; - the European bison free-ranging population reached almost 450 individuals. 8 groups of European bisons were established from scratch in woodlands in the European part of Russia under the national Strategy of European bison restoration.

Wilderness Index formula

We developed an index of wilderness for mapping and planning purposes. The methodology for this assessment conducted for Russia starts with recognition of a unified spatiotemporal continuum, one pole of which is represented by a ~~virgo~~ **EFERAT** (immune from human management and impact) natural environment (wilderness), while the other pole of geographical space is considered as the cultural landscape, developed territories and urbanized areas.

Methodologically, we used widely applied geoinformation standard quantitative analyses showing (in absolute terms and as a percentage) large tracts of off-road and uninhabited (or nearly uninhabited) areas, as well as the opposite – anthropogenically disturbed areas.

Our accentuated, generalizing display of different types of transport routes on the map, allows us to obtain a high level of visibility of the huge scale of transformation of geosystems, primarily in the context of "binding" to the centers of transport and economic development of the territory..

A "wilderness index" was calculated by the simple formula:

$$Rast = \Sigma (SPrdor + \Sigma SPIpos) * + \Sigma Znbf + \Sigma SPIpin / OPtre, \text{ where:}$$

Rast = the current state (a area or percent from total) of the remaining large wilderness areas as a some part or at wole of the Russian Federation;
 $\Sigma SPrdor$ is the total area of the "roadless areas";

$\Sigma SPIpos$ is the total area of the settlement of all types;

$\Sigma SPIpin$ is total area of all types of industrial infrastructure and linear industrial facilities (power lines, pipelines, etc.);

$OPtre$ is the total area of the administrative territorial unit subject or physiographic country or landscape and ecological macro-region for example according to like Global200.



The GIS data allowed calculation of the wilderness index, which is further designated as WI. The WI metric expresses a wilderness proportion of total area, and was selected a leading indicator of wilderness in the current study. In parallel, we also determined a metric of anthropogenic disturbance (AD) as a proportion of total area 'occupied' by a human.

Russia Wilderness Assessment Specific

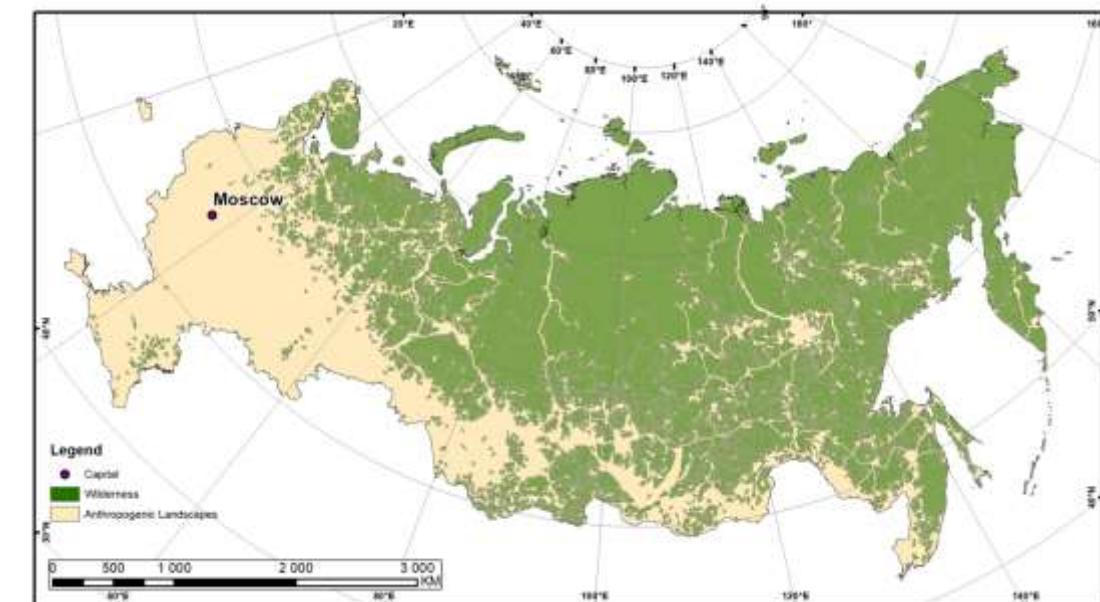


Table 2 – Objects with negative anthropogenic effect on wilderness and their buffer zones
(parameters of AD- and WI-indices of anthropogenic disturbance and wilderness, respectively)

Table 1 – Attributes and basic parameters of federal subjects of Russia

Subject code ^a	Subject name	Area (1,000 km ²)	Population (1,000)	WI ^b (%)	PA ^c (%)	PW ^d (%)
AIK-313:SB	Altai Krai	168	218.9	5.5	0.2	4.1
Amu+320:FE	Amur Oblast	361.9	793.2	5.7	1.6	1.6
Arh+320:NW	Arkhangelsk Oblast	413.1	1100.3	52.4	2.4	2.9
Ast-311:SU	Astrakhan Oblast	49	1014.1	7.9	1.5	0
Vol-210:NW	Vologda Oblast	144.5	1167.7	14.2	1.8	0.7
Yev+320:FE	Jewish Autonomous Oblast	36.3	159.9	35.8	3.5	2.6
Irk+320:SB	Irkutsk Oblast	431.9	1065.8	59.9	2.4	2.4
Kam+320:FE	Kamchatka Krai	774.8	2397.7	85.5	3.6	3.9
Kem-210:SB	Kemerovo Oblast	464.3	314.7	21.1	8.5	23.7
Kir-312:VL	Kirov Oblast	95.7	2674.3	3.7	0.2	4.1
Kos-311:CN	Kostroma Oblast	120.4	1272.1	9.7	1.6	2.8
Krd-313:SU	Krasnodar Krai	60.2	637.2	1.5	5.9	0
Kra+220:SB	Krasnoyarsk Krai	75.5	5648.2	86.6	4.5	5
Len-210:NW	Leningrad Oblast	2366.8	2874	1.5	1.2	0
Mag+320:FE	Magadan Oblast	83.9	1847.9	79.8	1.9	2.3
Mur+320:NW	Murmansk Oblast	462.5	141.2	65.6	4.9	6.2
Nen+120:UR	Nenets Autonomous Okrug	144.9	748.1	83.6	9.8	11.2
Nog-311:NW	Novgorod Oblast	176.8	43.8	1.3	4.4	0
Nos-311:SB	Novosibirsk Oblast	54.5	600.3	17.4	0.7	0.3
Oms-311:SB	Omsk Oblast	177.8	2793.4	21.3	1.3	0
Ore-311:VL	Orenburg Oblast	141.1	1944.2	0.9	0.6	0
Per-210:VL	Perm Krai	123.7	1963	17.6	1.7	8.4
Pri+320:FE	Primorsky Krai	160.2	2610.8	40.7	6.3	6.2
Psk-312:NW	Pskov Oblast	164.7	1902.7	1.8	3	2.8
Alt-420:SB	Altai Republic	55.4	629.7	42.5	12.3	19.1
Bas-210:VL	Bashkortostan, Republic of	92.9	218.9	3.4	2.8	23.9
Bur+320:FE	Buryatia, Republic of	142.9	4051	53.5	6.9	7.6
Dag-412:NC	Dagestan, Republic of	351.3	983.3	4.3	2.2	6.9
Kal-420:SU	Kalmykia, Republic of	50.3	3086.1	11.9	8.1	24.4
Kar-320:NW	Karelia, Republic of	74.7	272.6	23.9	2.6	5.8
Kom+220:NW	Komi Republic	180.5	618	61	6.3	8.3
Yak+220:FE	Sakha (Yakutia), Republic of	416.8	830.2	80	0.7	0.7
Tuv+420:SB	Tuva Republic	26.1	1911.8	56.7	4.1	4.9
Hak+320:SB	Khakassia, Republic of	3083.5	967	26.3	9.1	22.4
Ros-313:SU	Rostov Oblast	168.6	324.4	0.5	0.5	6.9
Sah+120:FE	Sakhalin Oblast	61.6	536.2	37.1	1.2	0
Sve-210:UR	Sverdlovsk Oblast	101	4202.3	19.7	0.9	1.2
Sta-313:NC	Stavropol Krai	87.1	489.6	1.7	0	0

In the small-scale cartographic analysis of the territory of Russia presented here, carried out on the basis of GIS technology (software ESRI ArcGIS10.2) the issues of intact landscapes and their protection are considered. The working scale of our research is based on vector topographic maps of Digital Chart of the World Data (DCW) 1:1,000,000 scale, which was upgraded by the Russian company DATA+ in 2002. The methodological component of the work on wilderness assessment is based on the identification of five main features that are considered to be most characteristic of wilderness.

There is a need in clear definition and proper measuring of all human activities that are assumed to destroy wilderness. The following are human-made objects we accounted for calculating AD index (i.e. objects that reduce areas of wilderness): populated areas (city, town, village, settlement etc.), industrial zones and infrastructure in their vicinity, agricultural areas, detached units (factory, farm, railway station, port etc.) transportation routes (land roads, railway, waterway, pipeline, power transmission lines etc.), lands adjacent to a water basin (ocean, sea, navigable lake, river etc.). Since WI+AD=1, an accurate evaluation of territories harmed by anthropogenic activity (AD index) allows for assessment of wilderness.

Our current research is aimed at the presentation of integral approaches and metrics to assessment of anthropogenic effects on wilderness in different regions of Russia. We employ recently developed techniques for study functional variability of ecological communities (Kosman et al. 2019) with the idea to evaluate extent of wilderness in Russia at regional scale and to determine areas with similar features of nature preservation. Such mapping and differentiation of Russian regions are especially important due to huge territory of Russia and high heterogeneity of natural conditions, ecological systems, distribution of human resources and activities, and social and cultural attributes (Bocharkov 2017).

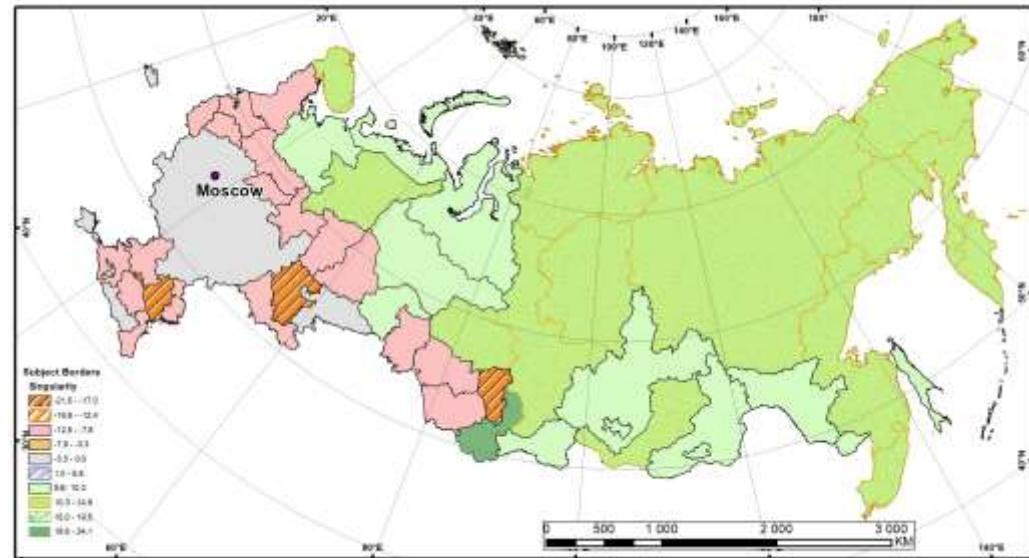


Table 3 – Groups of federal subjects and ranges of the subject parameters within them.

Group ^a	Subject code	WI ^b (%)	PA ^c (%)	PW ^d (%)	Singularity ^e
A (-1)	AIK-313:SB	Ast-311:SU			
	Kir-312:VL	Kos-311:CN			
	Len-210:NW	Nos-311:SB	0.9 – 21.3	0.0 – 1.8	0.0 – 4.1
	Oms-311:SB	Ore-311:VL			
	Sta-313:NC	Sve-210:UR			
B (-3)	Krd-313:SU	Nog-311:NW	1.3 – 1.8	3.0 – 5.9	0.0 – 2.8
	Psk-312:NW				9.48 – 12.32
C (-4)	Dag-412:NC	Kar-320:NW	0.5 – 23.9	0.5 – 2.6	5.8 – 8.4
	Per-210:VL	Ros-313:SU			9.21 – 11.25
D (+5)	Amu+320:FE	Arh+320:NW	5.7 – 59.9	0.5 – 3.5	0.0 – 2.6
	Irk+320:SB	Yev+320:FE			8.59 – 9.1
	Zab+320:FE				
E (+7)	Chu+320:FE	Hab+320:FE			
	HaM+120:UR	Kam+320:FE	75.7 – 92.0	1.9 – 4.5	2.3 – 5.0
	Kra+220:SB	Mag+320:FE			9.99 – 12.37
	YaN+120:UR				
F (+3)	Bur+320:FE	Kom+220:NW	5.6 – 40.7	4.1 – 6.9	4.9 – 8.3
	Pri+320:FE				11.17 – 12.86
G (-2/+1)	Kal-420:SU	Kem-210:SB	11.9 – 26.3	8.1 – 9.8	22.4 – 24.4
	Hak+320:SB				19.93 – 21.84

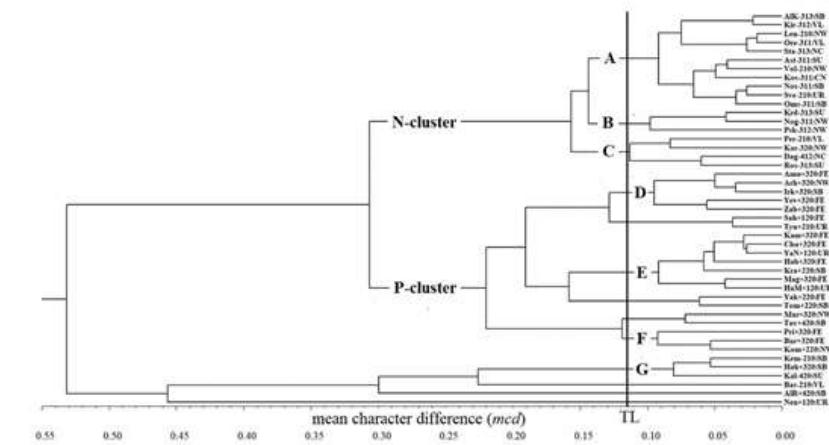
^a – groups were determined according to the UPGMA dendrogram (Fig. 2); number of subjects of ‘positive’ (+) or ‘negative’ (–) singularity within a group are shown in parentheses;

^b – range of wilderness index for subjects within a group;

^c – range of proportion of officially protected areas of federal importance for subjects within a group;

^d – range of proportion of protected wilderness for subjects within a group;

^e – range of absolute value of singularity for subjects within a group.

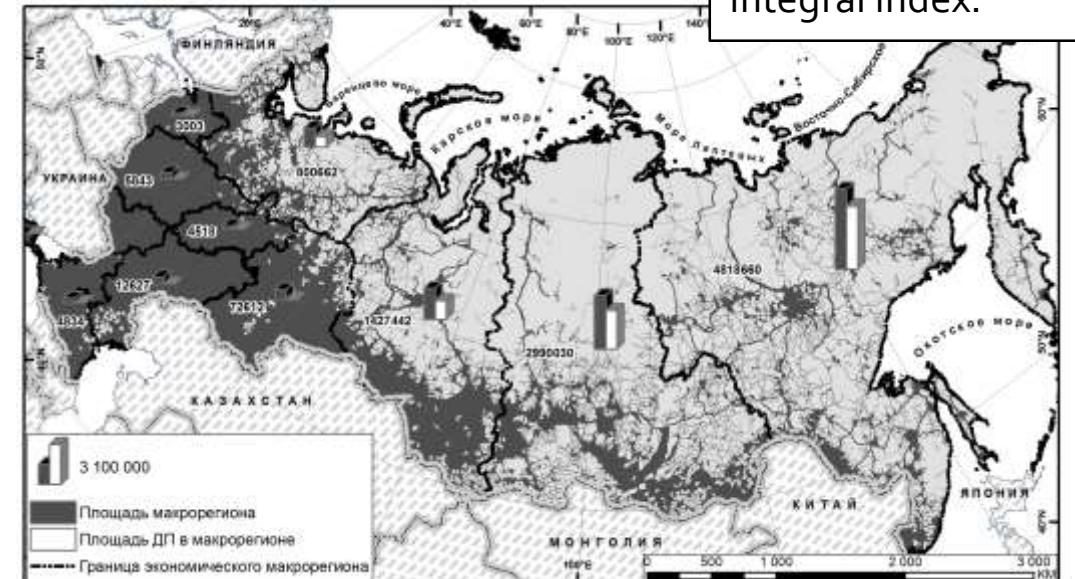
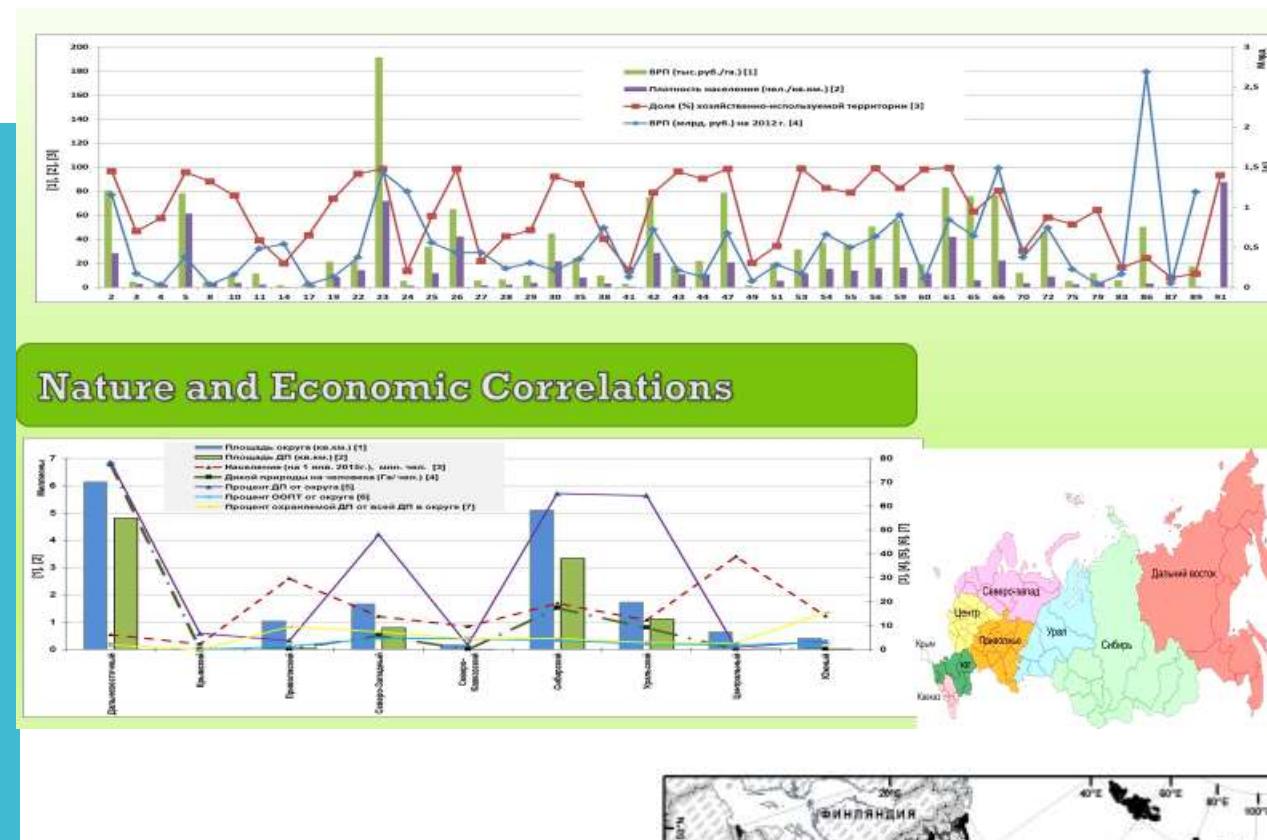


Because the modern concept of wilderness has been primarily a cultural one, the scientific foundation for wilderness is still being established. The first step is to understand it as one part of larger landscapes of inhabitation. Wilderness instantiates a unique form of human-land relations, and wilderness boundaries reveal their permeable and fluid nature. According to the urgent assessment of current level of natural disturbance it is clear that the existing variety of factors and forms of human impact on geosystems cannot be fully understood without a simple and affordable form for the understanding of the integral index. It was necessary to identify, demonstrate and oppose urbanized areas as those that are not administrated territory and which can be interpreted like large holistic pristine nature areas - wilderness.



The geospatial analysis of Russian wilderness that these areas are "empty" from an economic point of view as the territory, which can be considered as resources, conditions, factors of influence in the present, but at its core economic and can only be called in the forecasts and expectations. Wildland preservation is motivated by a variety of ethical, biological, cultural, and recreational concerns. Rarely are efforts to protect wildlands motivated by an interest in promoting economic growth.

Because the modern concept of wilderness has been primarily a cultural one, the scientific foundation for wilderness is still being established. Working on wildland preservation issues have been forced to take up with the issue of local economic impacts because those supporting commercial development of those wild natural landscapes emphatically assert that wildland preservation damages the local and national economies by restricting access to valuable natural resources and constraining commercial economic activity that otherwise would take place.



The first step is to understand it as one part of larger landscapes of inhabitation. According to the urgent assessment of current level of natural disturbance it is clear that the existing variety of factors and forms of human impact on geosystems cannot be fully understood without a simple and affordable form for the understanding of the integral index.

The majority of the remaining large areas of wilderness, consisting of undisturbed flora and fauna; a total of more than nine million square kilometers (54.6% of Russia). We emphasize the particular role of arctic and subarctic regions as wilderness and biodiverse ecosystems.

Transformation of traditional agricultural landscape of temperate and southern taiga, wooded steppe, mixed forests due to abandoning of ploughed fields, hayfields and postures with reforestation in their place, increase in low forest cover with low biodiversity and low feeding quality for migrating animals. 5. Threat of native biodiversity transformation due to alien species invasions. This threat remains relevant to underwater landscapes of the Azov, Black and Caspian Sea, the Volga River basin and its storage reservoirs cascade. In some Russian protected areas alien species count 20 — 25% of mammal fauna.



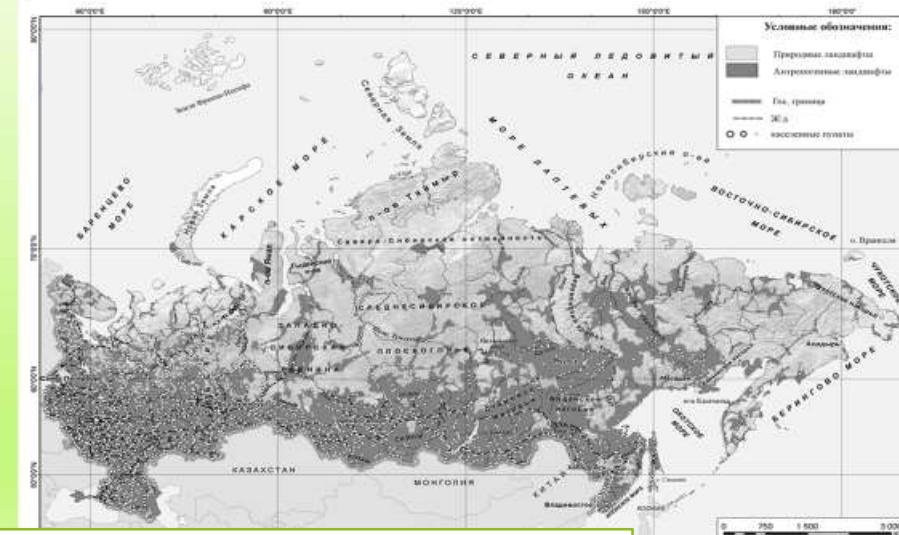
WILDERNESS: European and Siberian differences

We emphasize the particular role of arctic and subarctic regions as wilderness and biodiverse ecosystems (Bocharkov 2019). This vast territory, although dispersed, is inhabited by people at an average density of 1 person per square kilometer. However, quite often, these areas are close to areas that make up the main core areas of oil exploration and Russian gas or other large-scale anthropogenic activities. Today, the existence of a vast territory is due to historical reasons, but if the Russian Empire and the Soviet Union was marked by an active regional policy development of Siberia, the North and the Russian Far East, the Russian Federation could not repeat the experience. The special category of pioneer areas or areas of new development that were undeveloped or underdeveloped areas that have large reserves are economically viable for use in a given period of natural resources, but the process of accelerated development of the territory and resources has already begun. Reserve areas in the strategic objectives were considered as areas for future economic development, actually representing environmental reserves for undisturbed economic impact; that is, «pristine» human nature.

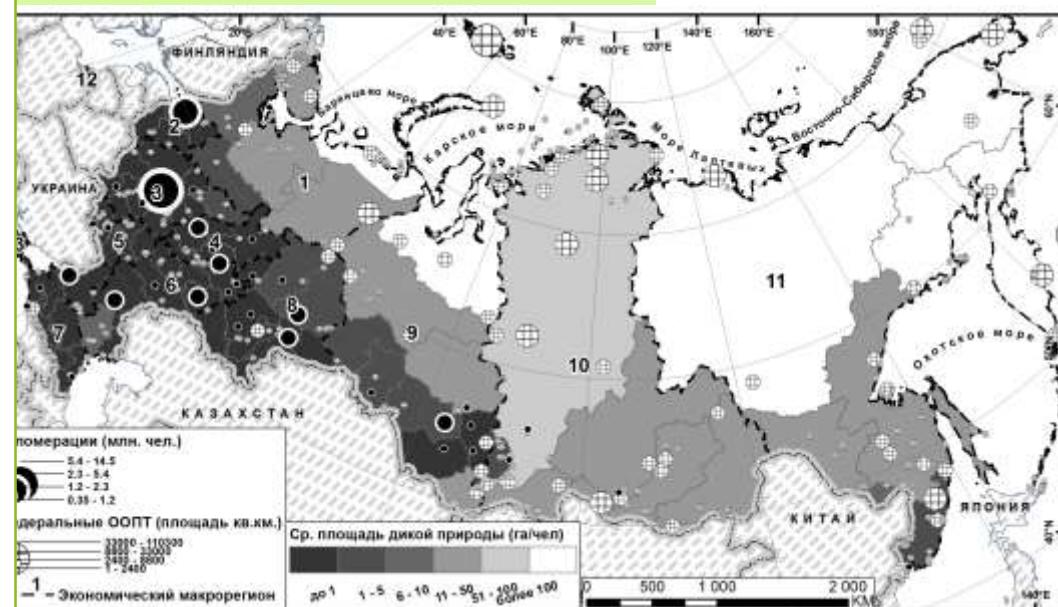
It is obvious that even with the preliminary comparison of the territories we are considering in the "large" grid of the administrative and territorial division in the federal districts, in the European part of Russia, the area of wild nature that is significant and comparable to the Asian part of the country is only the North-West district. This district has preserved almost half of its territory in a low anthropogenic impact state (48.1% of the total area). But in the Central, in the Southern and Privolzhsky districts –only 3% remain.

We need to make more accurate assessment in near future, especially try to divide remote historically areas from lands, being agriculture developed at last two centuries take in mind Russia as at whole and its federal districts. We can show it on some accounts.

OIL, GAS... for sale & SIBERIA FUTURE

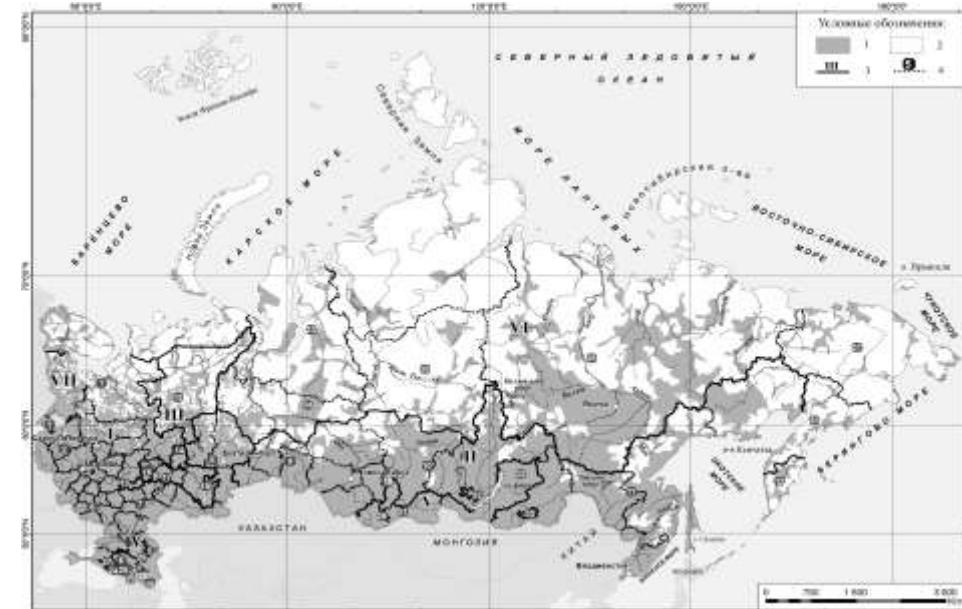


Great value and uptake got the idea of organizing a network of protected areas though. In Russia remote areas harbor some of the world's most undisturbed ecosystems and the idea of protecting wildlife, with references to foreign experience and with adjustments for Russian realities have been expressed nowadays. However, the wilderness idea has not found such popularity, while remaining little-known in Russian scientific and conservation circles. Major conservation gains can be made by effectively protecting nature in these remote zones.



We map out the very large areas of wilderness, along with it the impacts of the consequences of economic development, patterns are clear, not only for Southern Siberia and the South of the Far East, but also in Central Siberia and the Northeast.

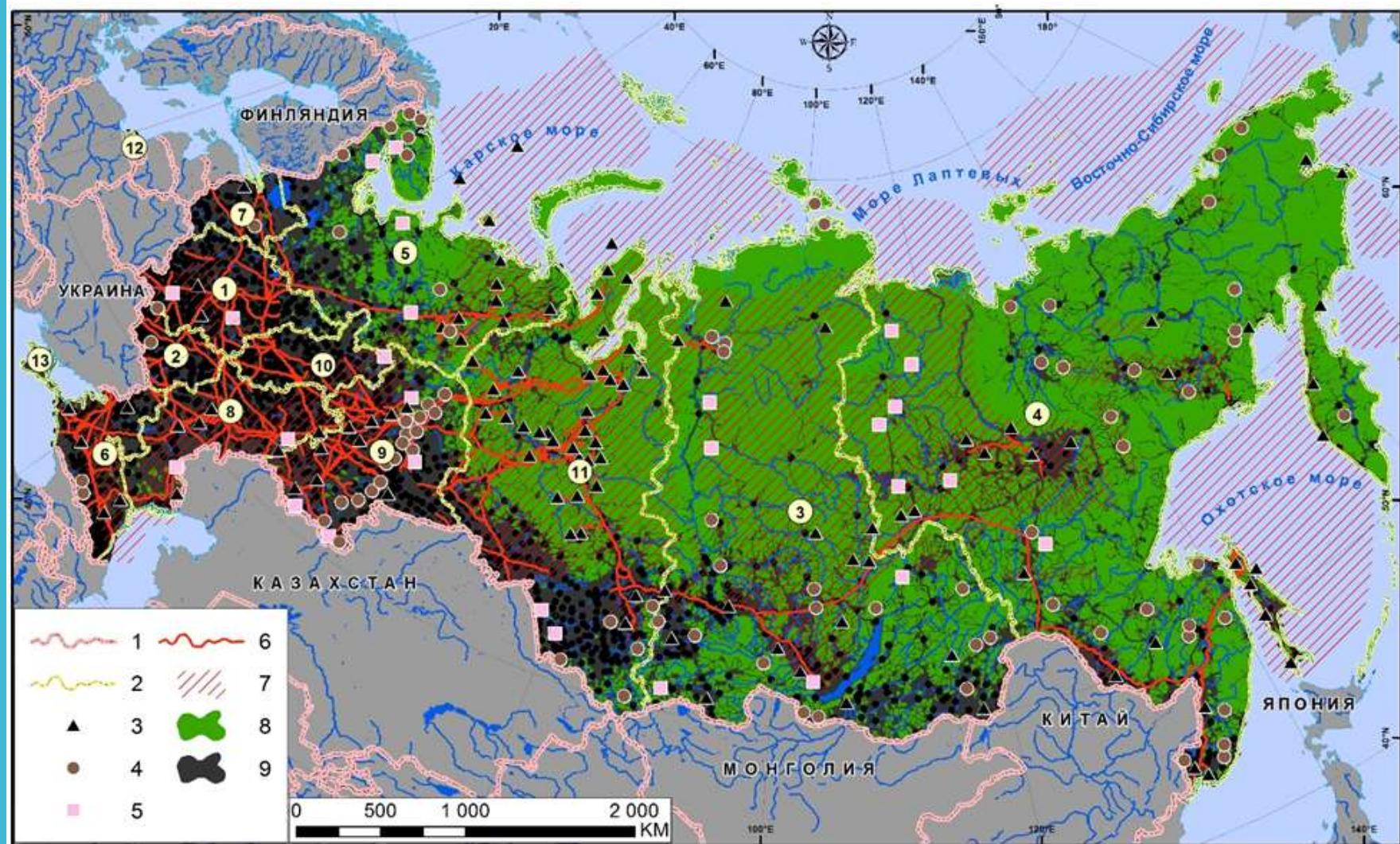
Russian landscapes provide significant impact on worldwide biodiversity of boreal and arctic ecosystems, support services of those ecosystems, and thus, are critically important wilderness areas on the globe. The real scale of anthropogenic transformation of natural landscapes and ecosystems, as well as the critical consequences of geochemical and thermal pollution in sparsely populated and relatively undisturbed areas of the Far North, Siberia and the Far East of Russia are poorly documented and monitored. Abundant natural resources, as well as large, uninhabited territories make the Arctic unique, and if we take into account the animal world of the Arctic, though it has limited species composition typical of northern biogeocoenoses.



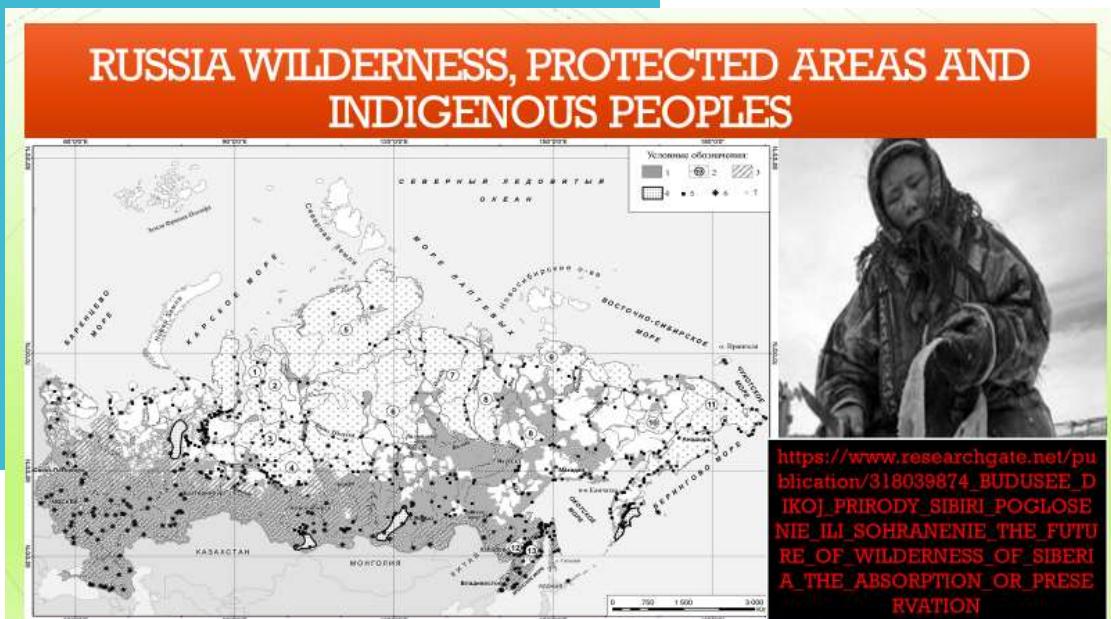
Among Russian Arctic residents, the differences in the relationships between people and high integrity nature can differ by many orders of magnitude. (e.g., in Karelia there are 8.5 hectares of wild nature per person (in Arkhangelsk region - 15, Murmansk - 12, Komi - 33), but in Chukotka - this personal relationship with nature indicator reaches a value of 1,351 hectare per person).

The Nenets Autonomous District is also among the Arctic leaders in intact nature: it has 540 ha per capita; while it is almost half that in Yakutia with 269 hectares; which is twice that in the Yamal-Nenets district, where 114 hectares per person exists. The Krasnoyarsk Territory has about 87 hectares of wild nature per person

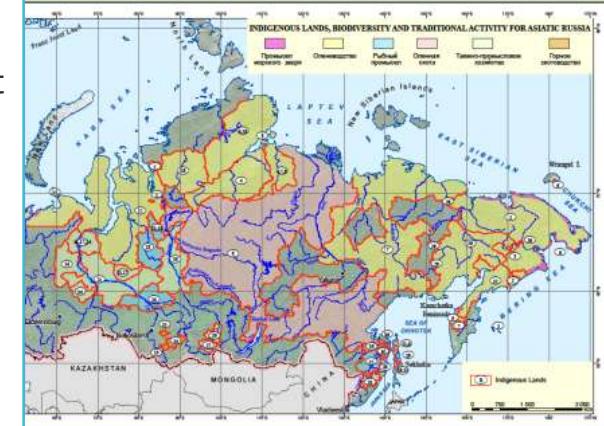
Map of Russia illustrating differences between European and south Siberian areas with high population density and “prosperous” industrial areas. Legend: 1 – country borders; 2 federal district (ocrug) borders; 3 (large coal deposits; 4–5 Gold and other metal deposits wilderness areas 6 – main oil and gas pipelines; 7 oil & gas deposits; - 8 – offroad areas\$ 9 – anthropogenic areas with high level of landscape conversion. All sources for our mapping are public and can be found on site of Russian Geology Service.



The Federal Law on Indigenous Peoples' Rights guarantees indigenous peoples or their representatives the right to participate in projects in terms of ecological expertise. However, this right is already guaranteed to every citizen of the RF by the Federal Law on Ecological Expertise. There is no reason to legislate again specifically for indigenous peoples, as this simply duplicates the existing law. However, the real problem is that though guaranteed, the right of indigenous peoples to contribute ecological expertise is not ensured. They are allowed to participate in discussion and express their opinion, but they cannot influence the final decisions, because the latter are made by federal, regional or local administrations.



The Federal Law on Territories for Traditional Use of Nature (TTUNs) (Northern, Siberia and the Far East Territories) specifies measures for environmental protection in TTUNs. Article 4 protects and promotes the rights and interests of those indigenous and tribal peoples who actively participate in traditional knowledge practices aimed "to protect traditional habitat and traditional knowledge of indigenous peoples, their cultural and spiritual values, and to conserve biological diversity of these territories."



There are 45 ethnic groups of indigenous peoples in the Russian Federation, of which 37 live in the Arctic Territories and the Far East of Russia. Nomadic and semi-nomadic population in the Russian Far East, Siberia, and the North (reindeer-breeders, fisherpeople and hunters) need special support from the government to survive. Traditional economic activities pursued by the northern indigenous ethnic communities during Soviet times were appropriately supported by the central government. However in the Evenk, Koryak, Nenetsky and Chukotsky autonomous districts, Amur, Irkutsk, Kamchatka, Magadan, Sverdlovsk, Tomsk and Chita regions, and the Primorsky territory, over the past three years remote settlements have not been adequately provisioned for the long winter months as promised.

"Siberia" (Sibir) as a geographical term is generally used to refer to all of Russia east of the Urals and sometimes, in a more restricted sense, excludes the Far East. In this book, the focus is generally on those parts of Russia located above the 60° N latitude, but the formal definition of the "North" in Russia can be problematic.

Decision No. 1029 of the USSR Council of Ministers adopted in 1967, and a number of statutory acts that followed, defined the "Far North districts and equivalents" in terms of awarding residents certain special privileges such as higher wages, longer duration of paid vacation, and so on. There are anomalies under this concept of the Far North. For example, the whole Khanty-Mansi AO has the status of "the equivalent of Far North," while only three rayons of the Komi-Permyak AO have the same status, even though the whole Komi-Permyak AO lies almost on the same latitude on the other (European) side of the Urals.



Lev Gumilyov

L.M. Gumilyov believed that historical steppes were understood as stable societies that act in accordance with standards of relations between group of individuals and between individuals. He never believed that the means of existence and development of ethnicities is opposed to be a passionately impact source of which are not only beyond culture, but they are also beyond the Earth. Specialty gifted super activists, having special energetic realms, ethnic organization and its reproduction.

Component approach to the consideration of ethnicity. In the context of this approach "ethnicity is considered as historically emerged and evolved complicated self-reproducing and self-regulating social system, possessing complex composition (structure). The structural components of the highest order are appeared to be components, which themselves have a complex structure.



Ethnos (greek. ἔθνος – people, tribe) is defined in different disciplines – in ethnography, ethnology, anthropology, sociology, ethnolinguistics and etc.

The same term denotes both those peoples who have lagged behind in their development and peoples of highly industrial countries; tribes and nations, small populations (for example, the Udege or the Evenk) and large ones including millions of people (like the Russians or the Japanese).

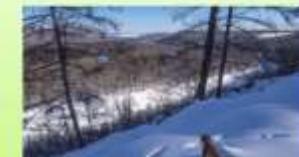
It is used to designate contemporary people as well as those who have vanished with history (for example, the Etruscans or the Scythians); peoples who are territorially compact and those who are dispersed over widely separated areas (for example, the Armenians)

The ethnos and ethnicity



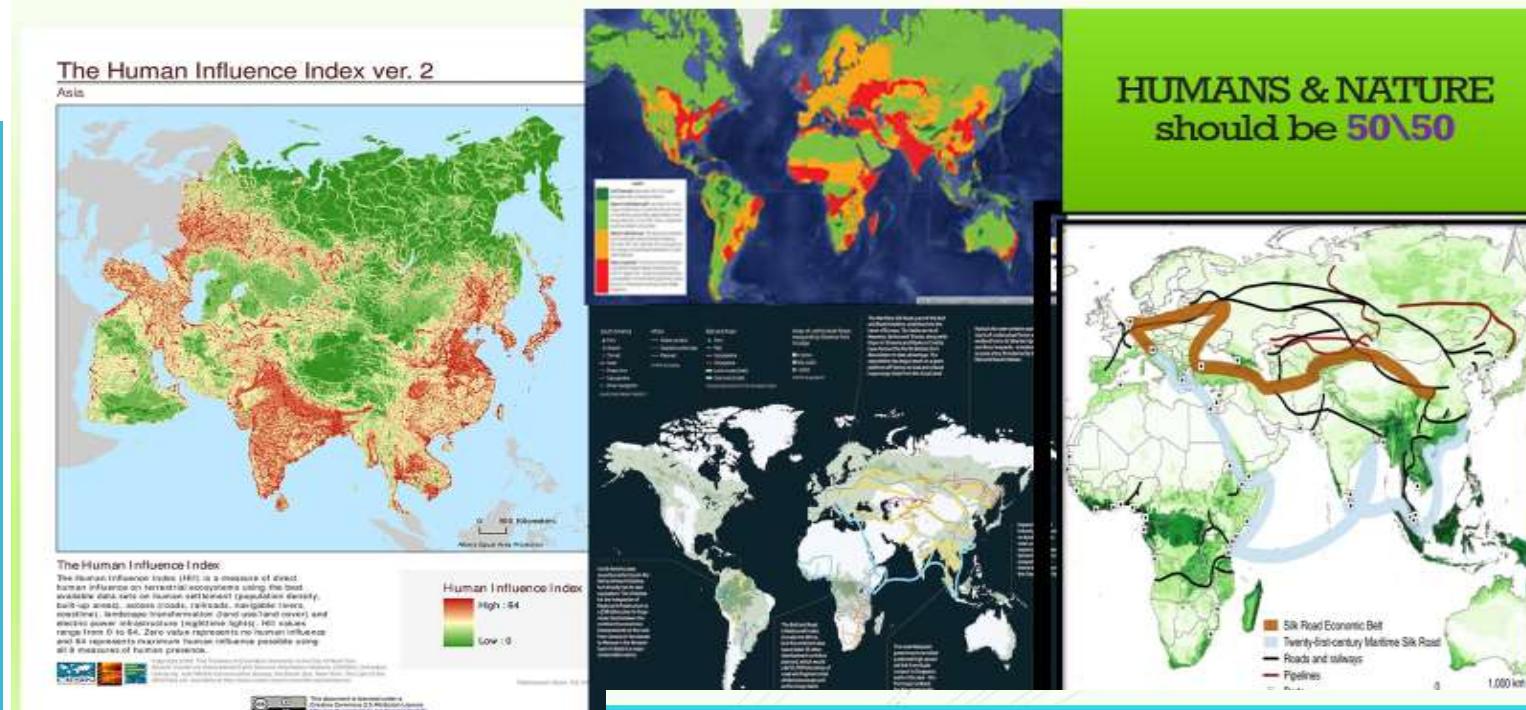
The term *ethnos* or ethnic community has been used in contemporary Soviet literature mainly to denote a human community, referred to in spoken Russian as "a people" (*narod*).

Indigenous traditional forest nature products use



Of the more than 180 peoples inhabiting the territory of contemporary Russia, 45 are officially recognised as indigenous. While the Russian constitution and national legislation set out the rights of "indigenous minority peoples of the North", there is no such concept as "Free, Prior and Informed Consent" enshrined in legislation.

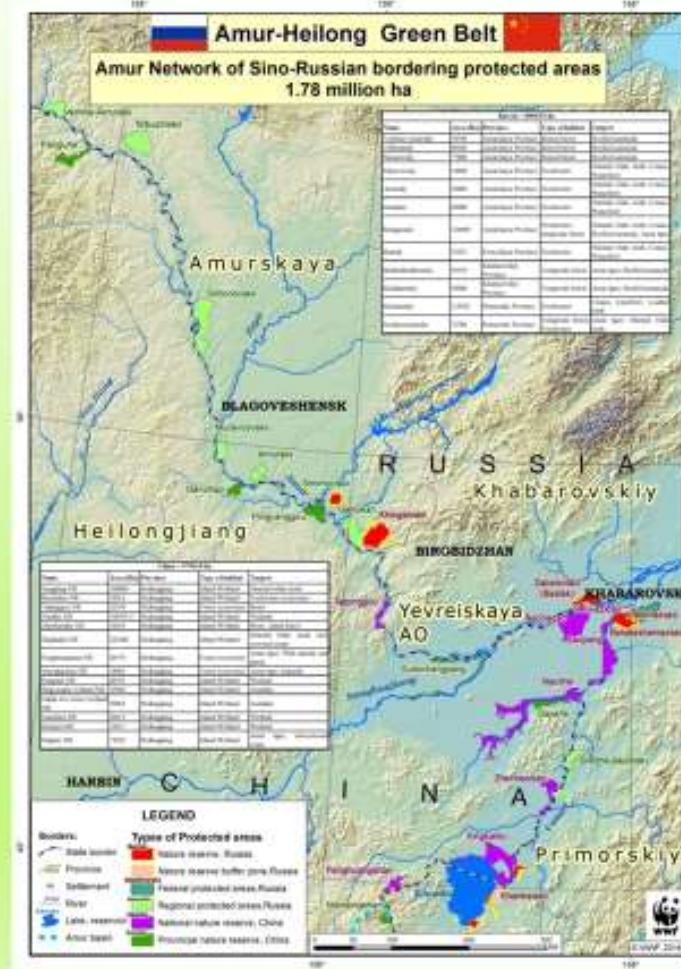
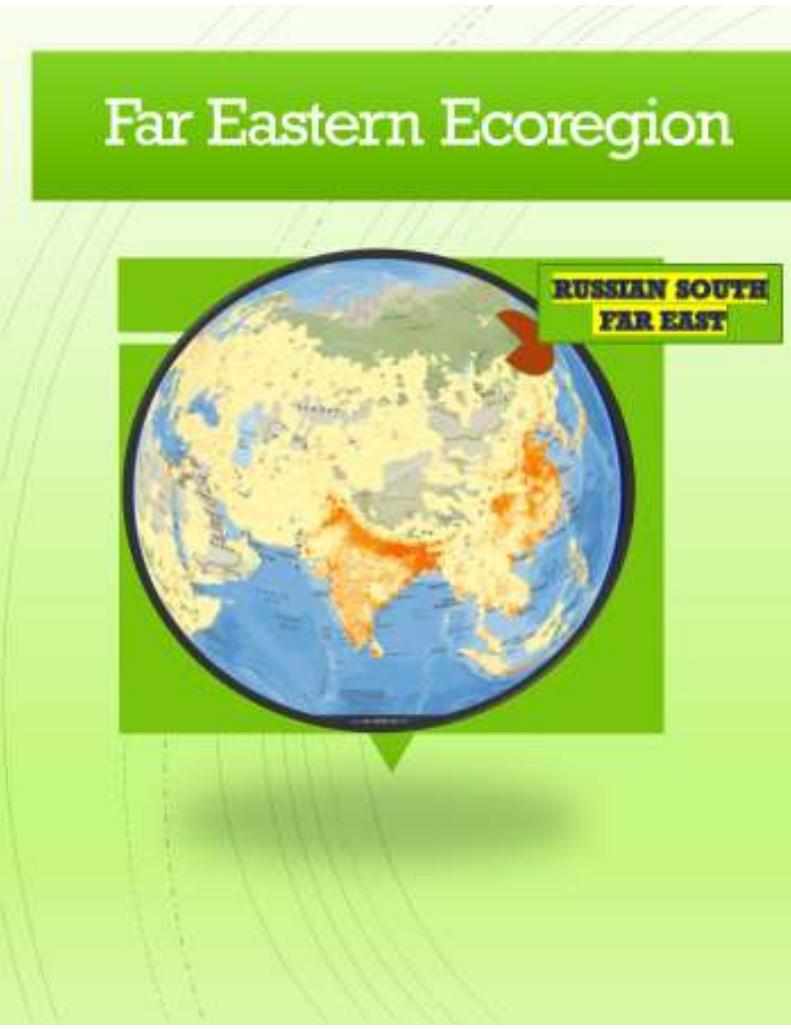
The latter areas located to the east of the Ural Mountains are generally sparsely populated and the least economically developed territories of Russia with about 50% of virgin wild nature. The most Russian wilderness (91.4%) is concentrated in its Asian part. In the European part of Russia, still existing spots of wild nature are extremely limited except the North and North-Eastern regions with wilderness up to 50%



Russia Wilderness as main tool of Eurasian ecological balance



About 4.8 million sq. km. of area remains relatively intact in the Far Eastern Federal District, where the share of natural areas is 78.3%. So, the vast territories of wild nature that are preserved in Russia for the whole planet are not so much resource riches as a vital condition for maintaining the global ecological balance, not yet recognized by the world community.



[Это изображение](#), автор: Неизвестный автор,
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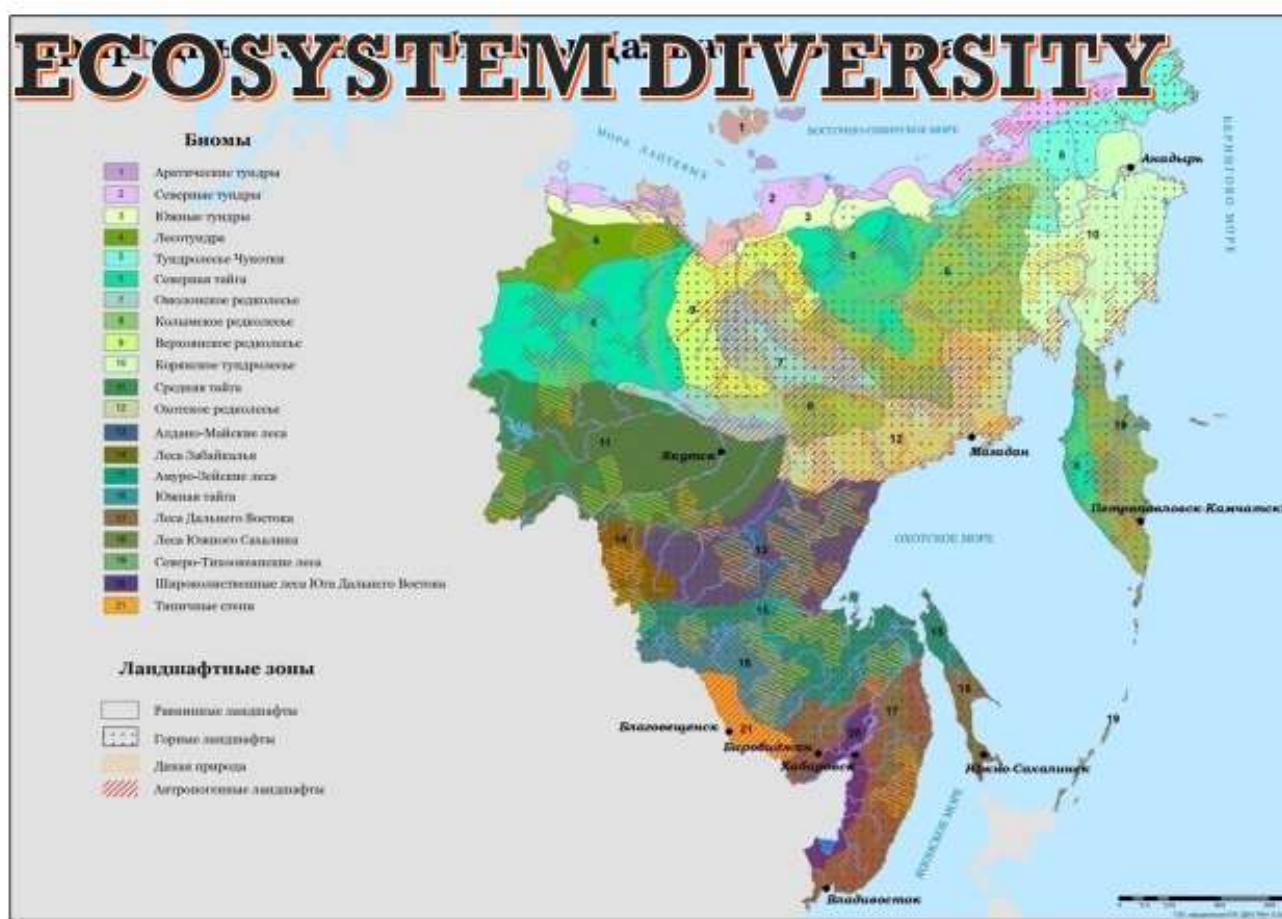
The total input of Russian natural ecosystems in the sustainability of the Earth's biosphere comprises at least 10–11%. They have a key role in the gas balance of the atmosphere, and are a major carbon sink on the planet. The country's boreal forests store the largest amounts of carbon, both on absolute scale and per unit of area. Wetland ecosystems in Russia are equally important for the biosphere regulation. Steppe ecosystems if efficiently managed can also be a powerful carbon regulator as they can accumulate it in the soils in large amounts and for extended periods of time (millenniums). Russian ecosystems also have a global importance for water regulation and protection. Russia has the largest freshwater volume in the world. It has 20% of the world's lake freshwater resources and its annual river flow ranks #2 after Brazil. The inclusion of non-forest ecosystems that actively accumulate carbon (tundra, swamps and steppes) in the post-Kyoto Framework Convention on Climate Change can further strengthen Russia's position as the planet's ecological donor. If a sustainable global carbon market develops, the value of ecosystem services of natural landscapes, according to preliminary estimates, could grow by 15–20% (in monetary terms, by \$50–75 per 1 hectare per year).

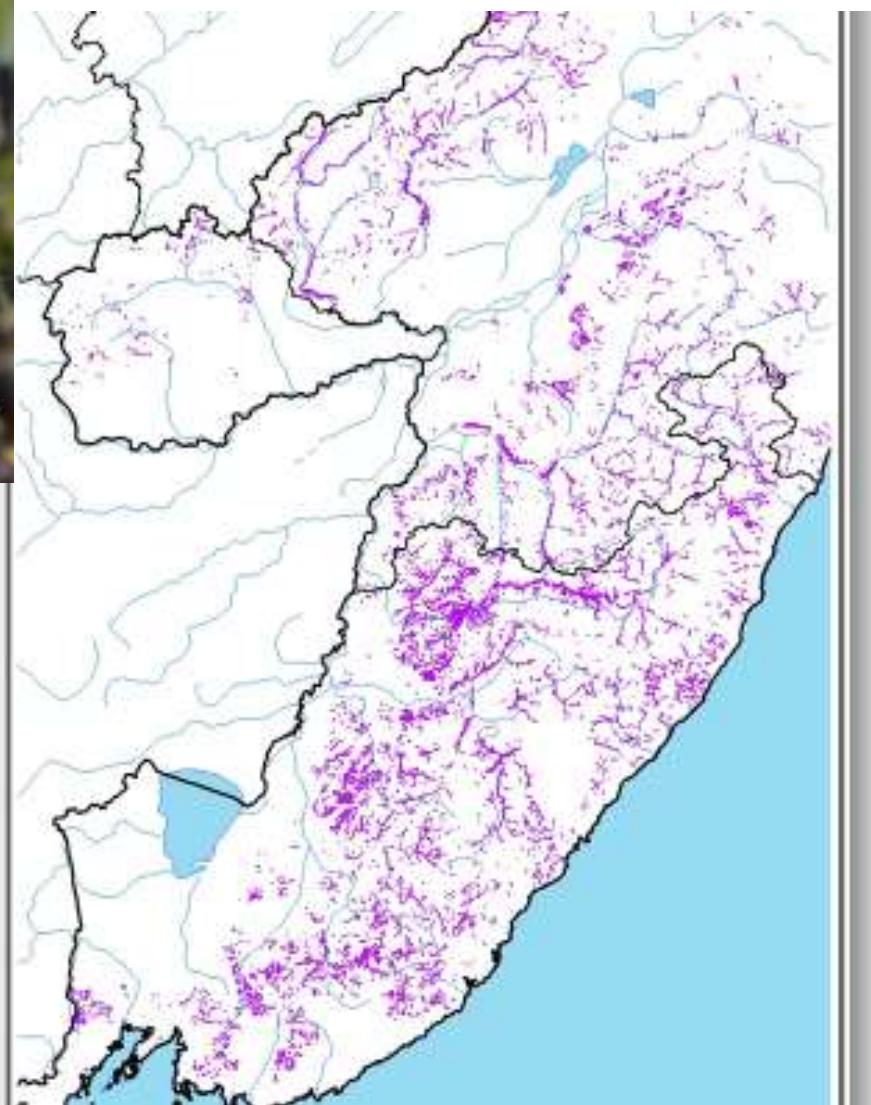
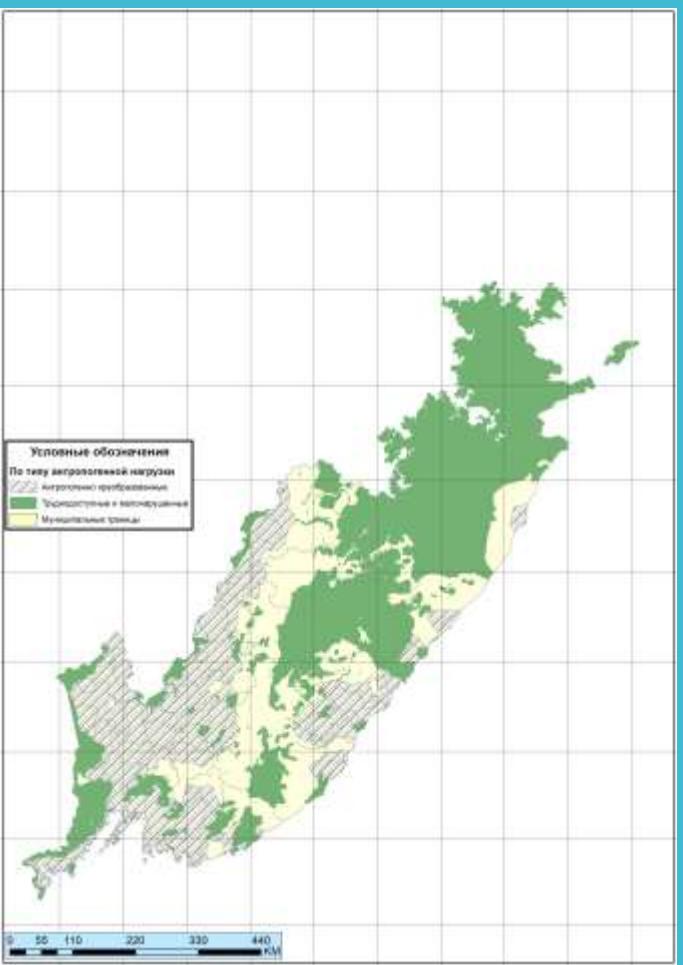
Table 1. Contribution of different types of ecosystems to the carbon sequestration in Russia
(+ – carbon sink from the atmosphere; – its source)

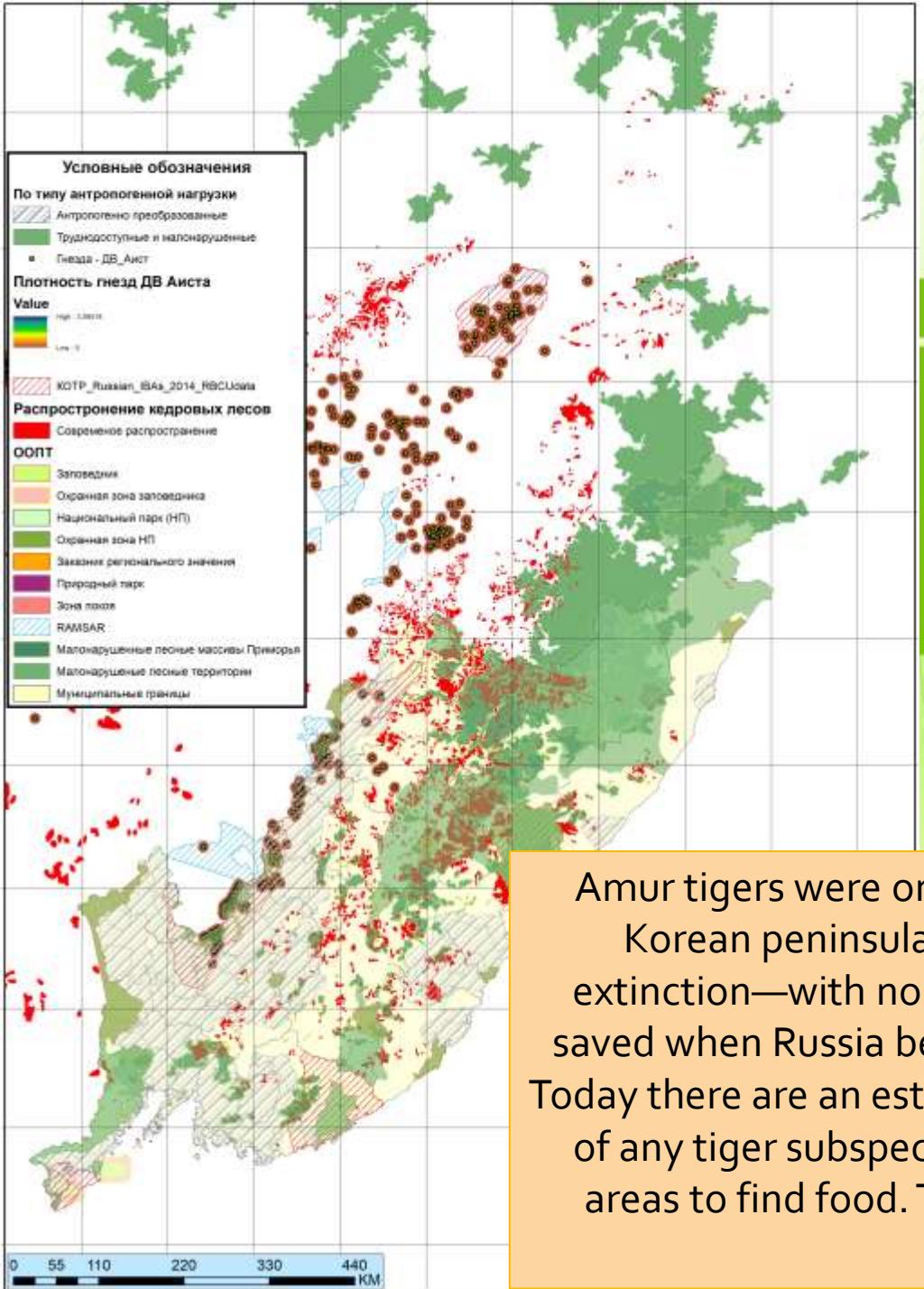
Type of ecosystem	Area, millions of hectares	Carbon balance, megatons per year
Forests	820.9	691.9
Wetlands	144.6	53.4
Abandoned arable lands	29.9	46.1
Meadows	24.0	28.5
Arable lands and pastures	145.8	25.0
Set-aside lands	19.0	4.2
Other areas, including water	101.1	-11.8
Grass and shrub ecosystems	315.7	-15.0
Post-fire sites	23.7	-20.8
Open forests	85.1	-40.3
Ecosystems of Russia, total	1709.8	761.2

In Russia, as in no other country, the priority in the implementation of the Convention on Biological Diversity (CBD) is the conservation of the landscape diversity, because it ensures the conservation of the entire biota pool, or biodiversity, on different levels, through the conservation of the diversity of natural, semi-natural and anthropogenic habitats.

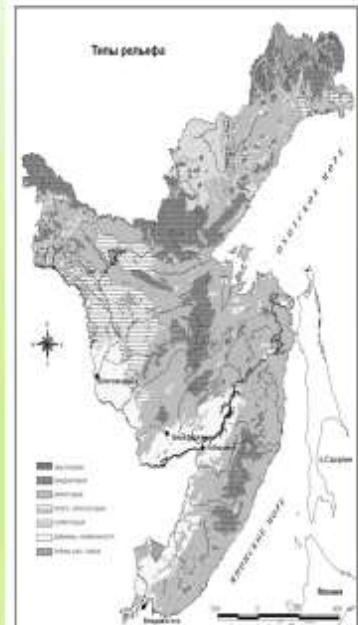
The carbon stocks in the forest vegetation reach up to 49.4 Gt C. Peat bogs occupy an area of over 140 million hectares and deposit 33.6 - 67.2 Gt C. Steppes, meadows and anthropogenic modifications of black soils, including set-asides and pastures, occupy more than 220 million hectares. The total carbon stock for steppe biome in Russia is estimated to be 35 Gt C. Tundra with an area of about 280 million hectares (16% of the country) has carbon reserves that are estimated at 28.6 Gt C. The largest stocks are concentrated in Western Siberia, as well as in permafrost regions and steppes



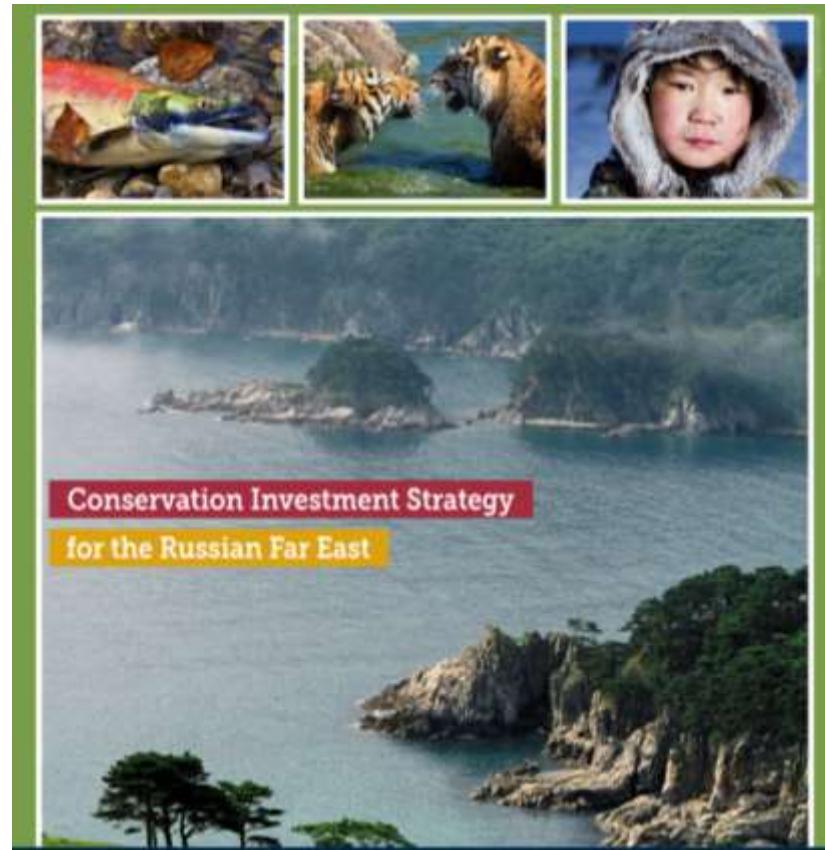




The types of relief and orographic map of the zone adjacent to FER



Amur tigers were once found throughout the Russian Far East, northern China, and the Korean peninsula. By the 1940s, hunting had driven the Amur tiger to the brink of extinction—with no more than 40 individuals remaining in the wild. The subspecies was saved when Russia became the first country in the world to grant the tiger full protection. Today there are an estimated 450 Amur tigers in the wild. They have the largest home range of any tiger subspecies because low prey densities mean they have to search over large areas to find food. This habitat, though, is under serious threat from large-scale illegal logging in the Russian Far East.



Conservation Investment Strategy for the Russian Far East

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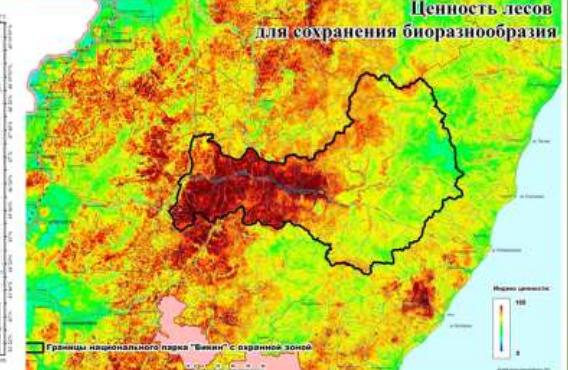
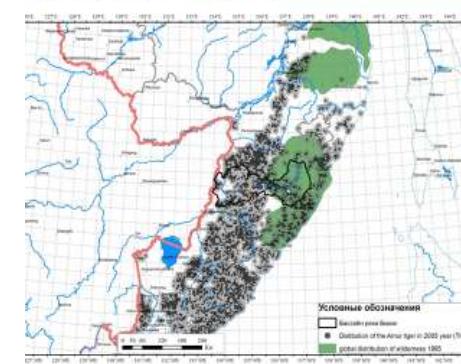
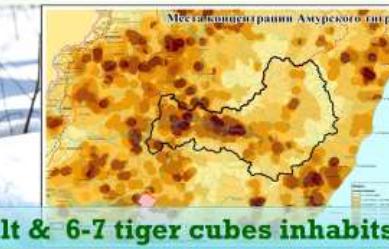
**THE BIKIN RIVER
CASE**



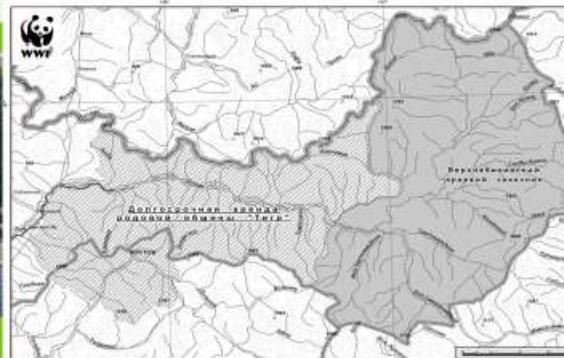
The President,
Tigers and
Forest



25 adult & 6-7 tiger cubs inhabits



THE Central Sikhote-Aline World Heritage Site



Nomination

Bikin River Valley
(Extension of the "Central Sikhote-Alin" World Heritage property)
(RUSSIAN FEDERATION)



The Bikin River Basin





**THANK YOU FOR
YOUR
ATTENTION!**