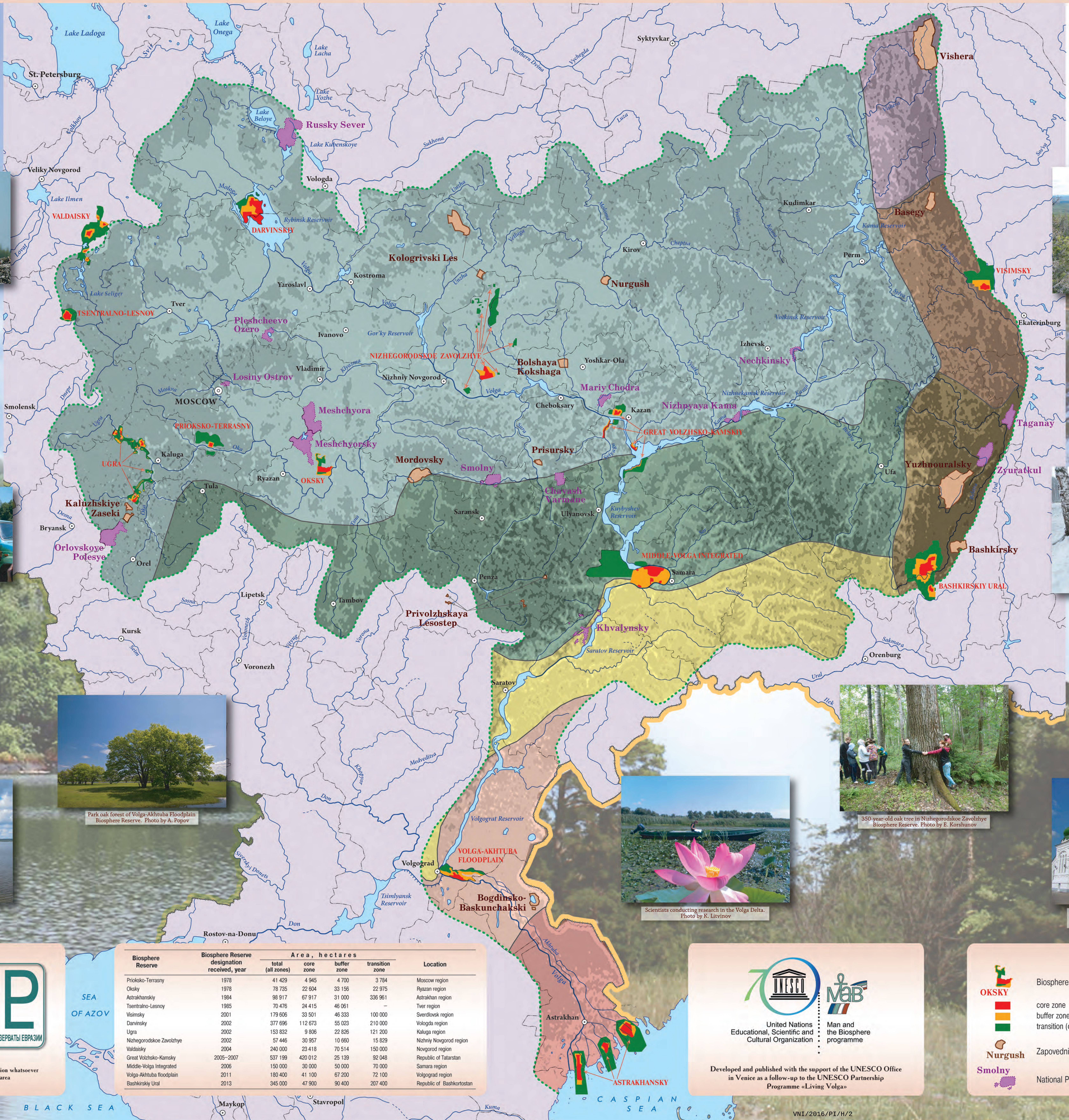
BIOSPHERE RESERVES OF THE VOLGA RIVER BASIN



St. Petersburg
Lake Ladoga
Lake Onega
Syktyvkar
Vishera
Russky Sever
Lake Kubenskoye
Vologda
Veliky Novgorod
Lake Ilmen
VALDAISKY
DARVINSKY
Rybinsk Reservoir
Kologrivski Les
Kostroma
Yaroslavl
Nurgush
Kirov
Kudimkar
Basegy
Kama Reservoir
Perm
VISIMSKY
Ekaterinburg
TSENTRALNO-LESNOY
Tver
Pleshcheevo Ozero
Ivanovo
Gor'ky Reservoir
NIZHEGORODSKOE ZAVOLZHYE
Bolshaya Kokshaga
Yoshkar-Ola
Izhevsk
Nechkinsky
Votkinsk Reservoir
Vladimir
Nizhniy Novgorod
Losiny Ostrov
MOSCOW
Smolensk
Mariy Chodra
Kazan
Nizhnyaya Kama
Cheboksary
GREAT VOLZHSKO-KAMSKY
Taganay
PRIOKSKO-TERRASNY
Meshchyora
Meshchyorsky
Kaluga
UGRA
Ryazan
OKSKY
Mordovsky
Smolny
Prisursky
Chavash Varmane
Ufa
Yuzhnouralsky
Zyuratkul
Tula
Kaluzhskiye Zaseki
Bryansk
Orlovskoye Polesye
Orel
Saransk
Ulyanovsk
Kuybyshev Reservoir
MIDDLE-VOLGA INTEGRATED
Samara
Bashkirsky
BASHKIRSKIY URAL
Lipetsk
Tambov
Penza
Privolzhskaya Lesostep
Kursk
Khvalynsky
Saratov Reservoir
Orenburg
Voronezh
Saratov
Volgograd Reservoir
VOLGA-AKHTUBA FLOODPLAIN
Volgograd
Bogdinsko-Baskunchakski
Tsimlyansk Reservoir
Don
Rostov-na-Donu
SEA OF AZOV
Astrakhan
ASTRAKHANSKY
BLACK SEA
CASPIAN SEA
Maykop
Stavropol
Kuma

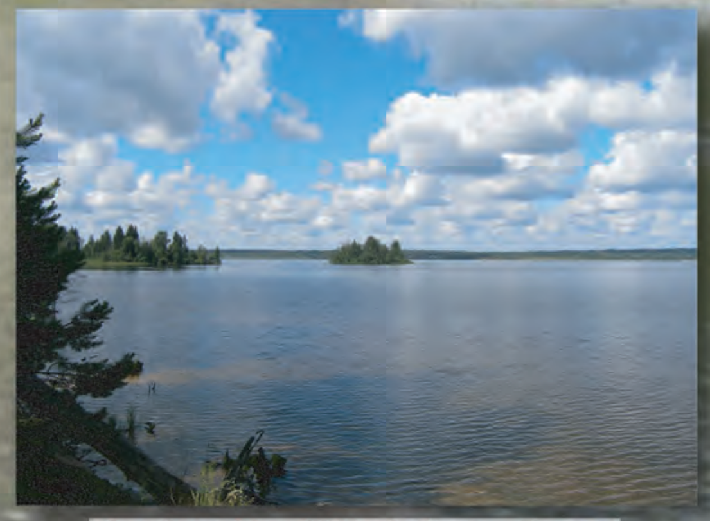

Ecological tourist route of Tsentralno-Lesnoy Biosphere Reserve. Photo by D. Ivanov


The osprey of Darvinsky Biosphere Reserve. Photo by Babushkin


The Ugra River, Ugra Biosphere Reserve. Photo by V. Novikov

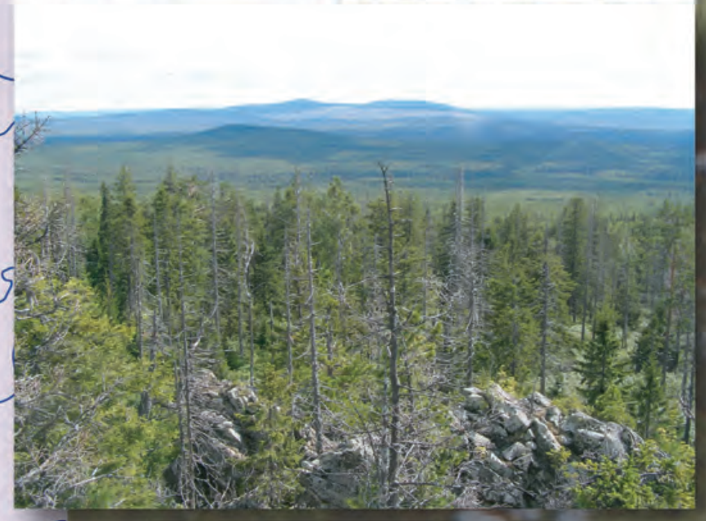

Resettlement of European bison, Prioksko-Terrasny Biosphere Reserve. Photo by N. Treboganova

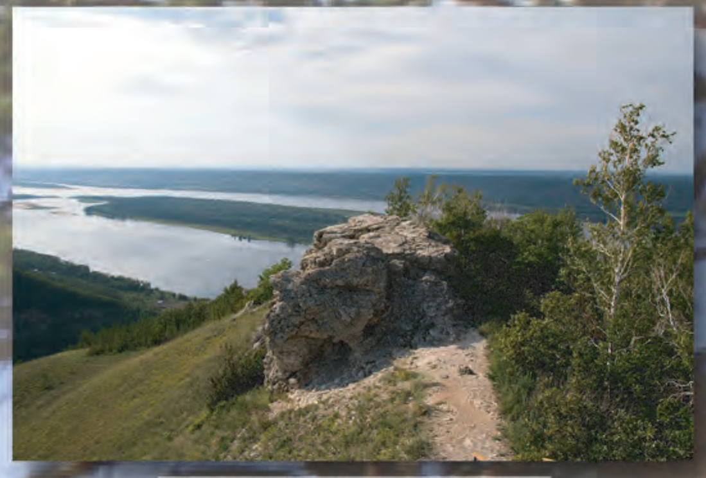

The Pra River, Oksky Biosphere Reserve. Photo by M. Didorchuk


One of many lakes of Valdaysky Biosphere Reserve. Photo by E. Litvinov

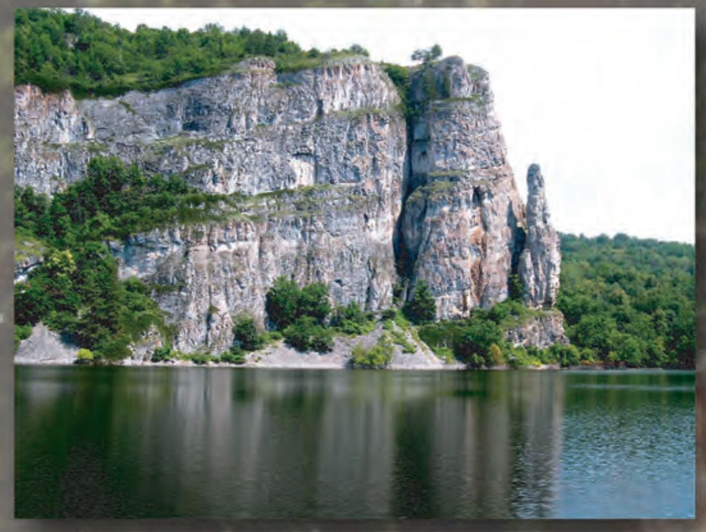
Park oak forest of Volga-Akhtuba Floodplain Biosphere Reserve. Photo by A. Popov


Volunteers in Great Volzhsko-Kamsky Biosphere Reserve. Photo by E. Prokhorov


A view of Visimsky Biosphere Reserve. Photo by E. Larin

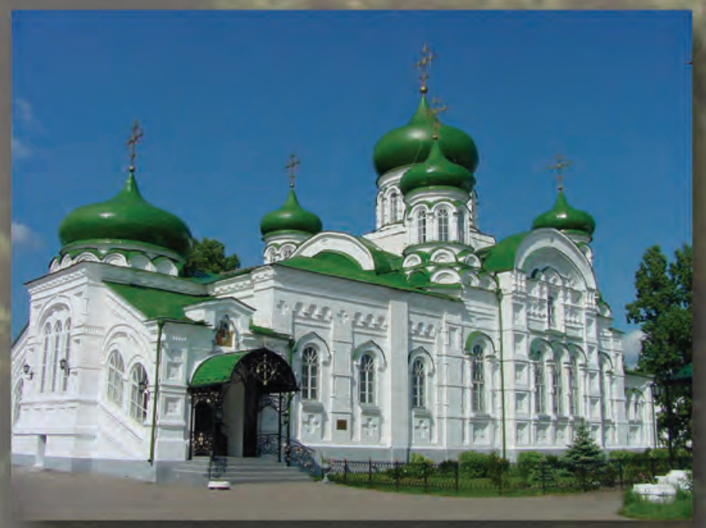

A view of the Volga in Middle-Volga Biosphere Reserve. Photo by L. Kooss


Visimsky Biosphere Reserve is hosting Feed the Birds event. Photo by O. Poroshin


The Belaya River, Bashkirskiyi Ural Biosphere Reserve. Photo by E. Martynenko

350-year-old oak tree in Nizhegorodskoe Zavolzhye Biosphere Reserve. Photo by E. Korshunov

Scientists conducting research in the Volga Delta. Photo by K. Litvinov


The Raifa Monastery of the Mother of God, Great Volzhsko-Kamsky Biosphere Reserve. Photo by E. Prokhorov

United Nations Educational, Scientific and Cultural Organisation
Living Volga
Partnership between UNESCO and Coca-Cola HBC Eurasia
Russian Committee for the UNESCO Program on Man and the Biosphere (MAB)
БИОСФЕРНЫЕ РЕЗЕРВАТЫ ЕВРАЗИИ

The drawing symbols applied and presented on this map do not imply the expression of any opinion whatsoever on the part of UNESCO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Biosphere Reserve	Biosphere Reserve designation received, year	Area, hectares				Location
		total (all zones)	core zone	buffer zone	transition zone	
Prioksko-Terrasny	1978	41 429	4 945	4 700	3 784	Moscow region
Oksky	1978	78 735	22 604	33 156	22 975	Ryazan region
Astrakhanskiy	1984	98 917	67 917	31 000	336 961	Astrakhan region
Tsentralno-Lesnoy	1985	70 476	24 415	46 061	–	Tver region
Visimsky	2001	179 606	33 501	46 333	100 000	Sverdlovsk region
Darvinsky	2002	377 696	112 673	55 023	210 000	Vologda region
Ugra	2002	153 832	9 806	22 826	121 200	Kaluga region
Nizhegorodskoe Zavolzhye	2002	57 446	30 957	10 660	15 829	Nizhniy Novgorod region
Valdaisky	2004	240 000	23 418	70 514	150 000	Novgorod region
Great Volzhsko-Kamsky	2005–2007	537 199	420 012	25 139	92 048	Republic of Tatarstan
Middle-Volga Integrated	2006	150 000	30 000	50 000	70 000	Samara region
Volga-Akhtuba floodplain	2011	180 400	41 100	67 200	72 100	Volgograd region
Bashkirskiy Ural	2013	345 000	47 900	90 400	207 400	Republic of Bashkortostan

United Nations Educational, Scientific and Cultural Organization
Man and the Biosphere programme

Developed and published with the support of the UNESCO Office in Venice as a follow-up to the UNESCO Partnership Programme «Living Volga»

VNI/2016/PI/H/2

L E G E N D

OKSKY — Biosphere reserve
core zone
buffer zone
transition (cooperation) zone
Nurgush — Zapovednik
Smolny — National Park

Landscapes
- Boreal forest, mixed broad-leaved and coniferous forest, and broad-leaved forest
- Forest-steppe
- Steppe
- Semi-desert
- Northern desert
- Mixed loach, tundra, elfin wood, thin forest, and boreal forest, and pure boreal forest
- Pure dark-needled boreal forest, mixed tundra and boreal forest
- Mixed loach, boreal forest, and broad-leaved forest, mixed light-needled boreal and steppe, and forest-steppe

Border of the Volga basin

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The Network of Biosphere Reserves of Russia

United Nations Educational, Scientific and Cultural Organization

Man and the Biosphere programme

Developed and published with the support of the UNESCO Office in Venice as a follow-up to the UNESCO Partnership Programme "Living Volga

Noncommercial partnership Biosphere Reserves of Eurasia and the Russian Committee on the UNESCO Man and the Biosphere Program contributed to publication of this map. Text and graphics are based on open-source information. Design by M.N.Brynskikh, A.A.Luschekina, and V.M.Neronov. This is a free publication.

MAN AND THE BIOSPHERE PROGRAMME

Coastal zone of the Rybensky water reservoir in the limits of the reserve.
Photo M. Babushkin

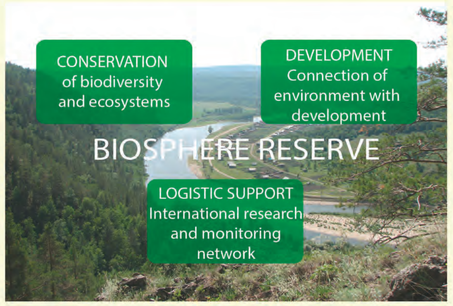
The foundation for the Man and the Biosphere (MAB) Intergovernmental Program was laid in 1968 at the International Biosphere Conference, which took place in the UNESCO headquarters. The Program has been launched in 1971 upon its approval at the UNESCO General Conference, and it initially comprised 14 international projects. The scope of these projects was a study of a broad range of ecosystems; they also studied the ways to optimize interactions between people and the biosphere. In 1974, a targeted working group assembled within the framework of MAB Project №8, a project originally entitled "Preservation of natural areas and genetic diversity within them". This working group proposed a set of specific actions aimed at biodiversity preservation and ecological monitoring in biosphere reserves.

After the First International Congress on Biosphere Reserves in Minsk, Belarus, which took place in October of 1983, the structure of the MAB Program underwent substantial revision. Development of a biosphere reserve concept and network became the Program's new focus. Currently, the World Network comprises 9 regional networks, which include 651 reserves in 120 countries. To control and coordinate activity of biosphere reserves, the office of the Director-General of UNESCO established the International Advisory Committee for Biosphere Reserves in 1992. The International Conference on Biosphere Reserves took place in Seville, Spain, in 1995. At this conference, the Seville Strategy for Biosphere Reserves and Statutory Framework for the World Network were approved.

Goals of biosphere reserves were further specified at the Third International Congress on Biosphere Reserves, which was held in Madrid, Spain, in 2008. At this congress, the Madrid Action Plan was proposed. All biosphere reserves were supposed to implement the Madrid Action Plan by 2013.

Biosphere reserves are facing a great challenge in the 21st century: preservation the diversity of plans, animals, and microorganisms, which constitute biosphere and are responsible for the balanced state of natural ecosystems. This must be accomplished while meeting the needs and wants of growing number of people in the world. How can we strike a balance between preservation and sustainable use of biological resources? Current rate of population growth and distribution, increasing demand for energy and natural resources, globalization of economies, centralization and limited access to information reflect troubling state of environment and prospects for global population in the near future.

WHY DO WE NEED BIOSPHERE RESERVES?



Biosphere reserves are areas within terrestrial and coastal ecosystems that gained international recognition through their participation in the Man and the Biosphere Program. Together, biosphere reserves constitute the World Network of Biosphere Reserves. To join the Network, a reserve must be nominated by appropriate national authorities and meet the criteria developed by the MAB Program.

A biosphere reserve performs 3 complimentary functions:

- **Conservation**

Conservation of landscapes, ecosystems, biological species, and genetic diversity;

- **Development**

Local facilitation of economic development that is culturally, socially, and ecologically sustainable;

- **Logistic support**

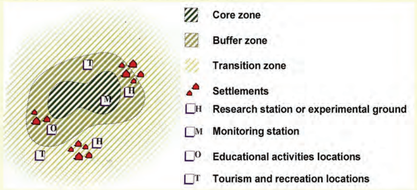
Support of research, monitoring, education, and information exchange relevant to local, national, and global problems of nature conservation and development.

Areas protected by national legislation receive priority consideration in the process of a biosphere reserve designation. Commonly, a structure of a biosphere reserve depends on local factors; however, each biosphere reserve must comprise a core zone, a buffer zone, and a transition (cooperation) zone. Ownership rights may vary across the zones. Although a core zone often is a territory protected by national law, it may also be a personal property or belong to a non-governmental organization. Buffer and transition zones are commonly a privately- or municipally-owned territories. Such zonal structure differentiates biosphere reserves from other types of protected territories.

Designation of a biosphere reserve requires appointment of a governing body, such as coordination council, charged with planning and coordination of interests and activities within all 3 zones of the reserve. This unique zonal structure brings the challenge of resolution of a conflict that may arise between local residents and a governing body of a reserve as it works towards the reserve's goals. Resolution of such conflict is essential. Hence, a management strategy that is open, flexible, and well adapted to local conditions should be implemented. This may be challenging and require much creativity and patience. This management approach does, however, have its rewards, since it allows local community to contribute to nature conservation and sustainable development of the area adjacent to biosphere reserve.

WHAT IS A STRUCTURE OF A BIOSPHERE RESERVE?

A biosphere reserve comprises 3 interconnected zones: a core zone, a buffer zone, and a transition zone. This structure enables the reserve management to effectively conserve and use natural resources of the reserve. The 3 zones are schematically shown on the diagram at right. This structure is not rigid, but rather flexible. It allows variations in the size and position of zones, as long as all 3 zones are present. This flexibility permits creativity in reserve management and is one of the strengths of the biosphere reserve concept.



A core zone

The borders of a core zone of a biosphere reserve must be defined legally. Legal status ensures long-term protection of landscapes, ecosystems, and species that inhabit this zone. The territory of a core zone must be sufficiently large for successful conservation of biological and landscape diversity. This may be accomplished also through designation of several core zones of a smaller size representing each of the notable ecosystems within the reserve. Anthropogenic activity other than research and monitoring is prohibited within a core zone.

To determine whether conservation efforts within a core zone are adequate, researchers keep track of plant and animal species indicative of ecosystem's health.

Biosphere reserves preserve samples of global flora and fauna for living and future generations. Darvinsky Biosphere Reserve boasts the highest density of the osprey (Pandion haliaetus L.) population in Europe.
Photo: A.Kuznetcov

Buffer zone

A buffer zone immediately surrounds a core zone and has clearly defined borders. In a buffer zone, anthropogenic activity should align with conservation goals set for a core zone. Research aimed at optimization of the management strategies for terrestrial and aquatic areas, such as farmland, forest, and fishing ponds, should be conducted in a buffer zone. This research should aim at development of strategies that allow maximal increase of these areas' productivity. Similarly, the buffer zone may serve an experimental ground for research on strategies for optimal recovery of degraded land. Buffer zone is also suitable for education, professional training, tourism, and recreation. Sustainable development of natural resources aligned with interests of local residents is the goal of any activity within a buffer zone.

"To prevent unfavorable anthropogenic influence on protected natural areas, adjacent terrestrial and aquatic areas may be designated as protected areas, within which economic activity is limited" (Federal Law of Russia № 33-FZ "On Specially Protected Natural Territories", provision 3 section 2 dated 1995). This provision allows designation of buffer zones, equivalent to aforementioned protected areas, within Russian biosphere reserves.
Core zone and a buffer zone in Russia are designated on perimetre by notices.

Wooden soldiers are protecting frontiers of the reserve.
Photo: V. Novikov

Transition (cooperation) zone

Transition zone is the outermost zone of a biosphere reserve. Terms transition and cooperation are used interchangeably to refer to this zone; cooperation is a term preferentially used in Russia, while transition zone is accepted internationally. A transition zone surrounds biosphere reserve and may include areas used as residential, agricultural, and for other purposes. Local communities, nature conservation organizations, private businesses, and other entities should work together to find ways to manage and sustainably use this territory in a manner that brings the greatest benefit to the territory's residents. Since biosphere reserves are the driving force behind promotion of sustainable use of region's resources, transition zone plays a major role in economic and social development of the region. Residents of a transition zone have the greatest influence on a biosphere reserve. Their interests and economic needs, for example, agriculture, forestry, and mining needs, deserve careful consideration. Collaboration with local communities is a direct way for a biosphere reserve to participate in planning of development and conservation efforts in the region. Likewise, local residents must be given a right to participate in planning of the biosphere reserve's development and management efforts.

In Ugra Biosphere Reserve, studies of architectural and historic landmarks are given special attention. Museum exhibit featuring the Ugra River battle of the 15th century is under development in the Vorotynsky Convent of the Savior. Pictured is the Vorotynsky Convent of the Savior. Photo by V. Novikov

WHY DO WE NEED BIOSPHERE RESERVES?

Improved biodiversity conservation outcomes

Terrestrial and aquatic ecosystems suffering from anthropogenic stress have lesser diversity of plant species, animal species, and landscape. Biodiversity reduction is a threat to the survival of the humankind, since biodiversity is a potential source of food, fiber, drugs, and raw materials for manufacturing and construction. Hence, biodiversity is an important subject of research. Results of this research supply opportunities for education and recreation. Core and buffer zones of a biosphere reserve simultaneously preserve biodiversity, display it, and provide research opportunities, which help us explore biodiversity further.

Flora and fauna of Oksky Biosphere Reserve are typical of the southeast of Meschersky region; 84% of plant species, 82% of mammalian species, and 87% of bird species of Ryazansky region are represented in the reserve. Pictured is Pra river near Brykin Bor (Oksky Biospere Reserve).
Photo by M. Didorchuk.

Maintenance of ecosystem health

Biosphere reserves play an important role in the function of an ecosystem. For example, a biosphere reserve may help reduce soil erosion, maintain soil fertility and nutrient cycles, regulate rivers' runoff, supply water to aquifers, and consume pollutants.

Tsentralno-Lesnoy Bios-phere Reserve is located in the immediate watershed of the upper streams of Volga and Zapadnaya (West) Dvina rivers along the southwestern edge of the Valdai highlands.
Currently 56 species of mammals are known in the Reserve, a special place among them is belonging to predators – bear (Ursus arctos), wolf (Canis lupus) and lynx (Lynx lynx).

Grey wolf is one of the common predators in the reserve. Photo: V. Bologov

Research of dynamic changes in natural processes

Structure and dynamic changes occurring within the minimally altered natural systems of a core zone may be compared to those of altered natural systems of buffer and transition zones. These studies, commonly conducted over a long period of time, facilitate understanding of the dynamic changes that take place within these natural systems. Selection of similar regions for the research and harmonization of methods make possible the comparison of findings on regional and global scales. Ultimately, these data aid in understanding of changes in global environment.

To researchers who study environment, collection of data over long periods of time is important because analysis of data collected over time helps reveal natural cycles and trends. These trends could then be used to create accurate forecasts. Biosphere reserves play an important role in collection of data by providing grounds for ecology research and monitoring.

Background monitoring station in Prioksko-Terrasny Biosphe-re Reserve assesses the level of pollution in the air, rainwater, snow, superficial water, soil, plants, and bottom sediment. The station also conducts radiation and weather sur-veys. Grounds of the background monitoring station in Prioksko-Terrasny Biosphere Reserve.
Photo: A.Kulichenko.

Preservation of traditional land use practices

Over the centuries, human civilization developed unique land use practices, which allow sustainable use of local natural resources. This valuable experience can improve the modern land use. Biosphere reserve residents can preserve their traditions and improve their welfare by using culturally- and ecologically-appropriate technology. Ancient cattle breeds and grain species, which are of great genetic value to modern agriculture, can also be preserved through the practice of traditional agriculture.

Exchange of sustainable development experience

One of the most important goals of biosphere reserves is to find ways to use land that allow local residents to improve their welfare while causing no harm to the environment. This can be done through research. Results of this research may be shared through education and demonstration of findings, which take place in the reserve. Eventually, research findings could be translated into land use practices and applied in buffer and transition zones. In addition, these research results are relevant to the work of government officials, local authorities, and scientists working on both national and international levels. Thus, every biosphere reserve facilitates exchange of research experience on local, national, and international levels.

Experience exchange is an important aspect of field trips in Middle-Volga Integrated Bioshpere Reserve. Photo:Yu.Krasnobaev.

Support of ecosystem approach implementation

Complexity of government machinery may interfere with accomplishment of nature conservation and sustainable development goals. Biosphere reserves represent a forum where conflicts of interest can be discussed and resolved by involved parties, for example, local administration representatives, landowners, nature conservation organizations, researchers, and private business owners. Communication helps find optimal solutions for a biosphere reserve development. Later, this experience in conflict resolution might be used to resolve conflicts that might arise on adjacent to the reserve territories.

Nature fires pose the most common problem within the buffer and cooperation zones of Nizhegorodskoe Zavolzhye Biosphere Reserve. The management of the reserve commonly discusses this problem in meetings with local residents. Core zone of this resserve. Poto by E.Korshunov.

Darvinsky Biosphere Reserve works closely with educational institutions, media, public organizations, and visitors to preserve its nature. Visitor center of Darvinsky Biosphere Reserve is where work with local residents takes place.
Photo by M. Zubova.

Selection of territories for biosphere reserve designation

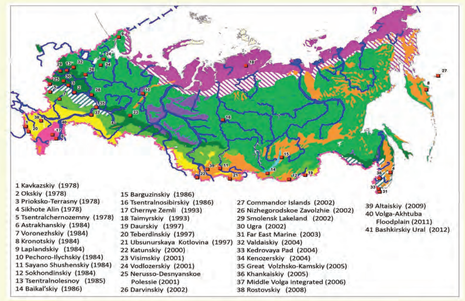
The World Network of Biosphere Reserves spans wide variety of landscapes: mountains, plains, coasts, islands, forests, tropical forests and polar tundra. To receive a biosphere reserve designation, a territory must:

- Represent an important biogeographical region that experiences a range of human interventions;
- Represent landscapes, ecosystems, or plant and animal species and variants of thereof in need of conservation;
- Allow development and practice of approaches to sustainable development of a region, in which the reserve is located;
- Possess a size sufficient to serve the 3 main functions of a biosphere reserve outlined above;
- Possess a zonal structure that includes a legally constituted core zone, a clearly define buffer zone, and a transition zone.

Biosphere reserve management plan must accommodate participation of regional government, local residents, and private businesses. National MAB Program Committee is responsible for preparation of the documentation necessary for the inclusion of a territory into a World Network of Biosphere Reserves. The UNESCO Science Advisory Committee for Biosphere Reserves reviews the application and provides recommendations for consideration by the International Coordinating Council of the Man and the Biosphere Program. Ultimately, the Council makes the decision to designate the territory as a biosphere reserve; the Director-General of UNESCO then shares this decision with the applicant country.

The Seville Strategy and Madrid Action Plan define the scope of activities of a biosphere reserve on local, national, and inter-national levels. These activities assume participation of govern-ment officials, nature conservation organizations representatives, and local residents, whom these activities offer an opportunity to participate in biodiversity conservation and sustainable development of the region.

Network of biosphere reserves of Russia



Russia possesses a unique network of biosphere reserves with widely acclaimed structure and impressive accomplishments. In Russia, a legally constituted nature conservation and research organization is known as zapovednik. Legal status and functions of a Russian zapovednik is similar to those of a core zone of a biosphere reserve. In Russia, 35 zapovedniks and 7 national parks have been designated as UNESCO biosphere reserves; 9 zapovedniks and 5 national parks are protected by the International Convention Concerning the Protection of the World Cultural and Natural Heritage; 12 zapovedniks and 1 national park are protected by the Convention on Wetlands of International Importance especially as Waterfowl Habitat. Currently, Russia lacks legislation that effectively regulates all of these categories of specially protected natural territories despite the importance of a role they play in sustainable development and education within respective regions of Russia. This legislation gap restricts organization and implementation of reserves' activities on a regional level and reserves' contribution to the World Network of Biosphere Reserves.

THE WORLD NETWORK OF BIOSPHERE RESERVES

Composed of 651 biosphere reserves in 120 countries, including 15 transboundary sites, the WNBR of the MAB Programme promotes North-South and South-South collaboration and represents a unique tool for international co-operation through sharing knowledge, exchanging experiences, building capacity and promoting best practices.

Vision

The World Network of Biosphere Reserves of the MAB Programme consists of a dynamic and interactive network of sites of excellence. It fosters the harmonious integration of people and nature for sustainable development through participatory dialogue; knowledge sharing; poverty reduction and human well-being improvements; respect for cultural values and society's ability to cope with change - thus contributing to the Millenium Development Goals. Accordingly, the WNBR is one of the main international tools to develop and implement sustainable development approaches in a wide array of contexts.

Mission

To ensure environmental, economic and social (including cultural and spiritual) sustainability through:

- the development and coordination of a worldwide network of places acting as demonstration areas and learning sites with the aim of maintaining and developing ecological and cultural diversity, and securing ecosystem services for human well-being;
- the development and integration of knowledge, including science, to advance our understanding of interactions between people and the rest of nature;
- building global capacity for the management of complex socio-ecological systems, particularly through encouraging greater dialogue at the science-policy interface; environmental education; and multi-media outreach to the wider community.