

# **The Katunsky Biosphere Reserve (Russia) - Does the Biosphere Reserve Instrument Work in the Altai Region?**

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## I. INTRODUCTION

### A. What are UNESCO-Biosphere Reserves?

Biosphere reserves are "areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognised within the framework of UNESCO's Programme on Man and the Biosphere (MAB)" (Article 1, Statutory Framework of the World Network of Biosphere Reserves<sup>1</sup>). Biosphere Reserves are nominated by national governments. Each biosphere reserve should fulfil the three complementary functions (see figure 1):

1. The *conservation function* for the protection of genetic resources, species, ecosystems and landscapes that require protection;
2. The *development function* to foster sustainable economic and human development compatible with the first function; and
3. The *logistic function* to facilitate demonstration projects, environmental education and training, research and monitoring in support of the first two functions.

Every single biosphere reserve has this array of goals, and their order of priority varies enormously. Thus, depending on local conditions, the three functions are fulfilled to different degrees. Therefore, every biosphere reserve is unique, tailored to meet the specific circumstances of the place where it was established.

The biosphere reserve concept uses the so-called "core area - buffer zone - transition area zonation scheme". This represents a flexible tool, which helps to accommodate the various

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<sup>1</sup> The Statutory Framework of the World Network of Biosphere Reserves has several key functions (UNESCO, 2002): it fixes the 'rules-of-the-game' for the functioning of biosphere reserves; it underlines the existence and potential role of the Network; it confirms the key role of the technical advisory process for ensuring the quality and future development of the overall endeavor; and it establishes a periodic review mechanism for upgrading sites and to ensure that these sites meet the criteria described in the Statutory Framework.

The Statutory Framework of the World Network of Biosphere Reserves is a soft law instrument, which has been adopted by all parties concerned. It provides the network and its individual sites with an international legitimacy, visibility and credibility being flexible at the same time (UNESCO, 2002).

functions of a biosphere reserve. Ideally, each site comprises three zones (UNESCO,1996) (see figure 1):

1. One or several core areas, which are securely, long-term protected sites for conserving biological diversity, monitoring minimally disturbed diversity, and undertaking non-destructive research and other low-impact uses (such as education).
2. The buffer zone, which should surround or adjoin the core area(s) to protect it from human impacts. It is used for cooperative activities compatible with sound ecological practices (including environmental education, recreation, ecotourism, and applied and basic research).
3. The transition area (also called area of cooperation), which may contain agricultural activities, settlements and other uses where local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and other stakeholders work together to manage and sustainably develop the region's resources.

The biosphere reserve zonation scheme is closely related to the idea of seeking to develop the area as an integral part of the bioregional landscape. In this respect, community involvement in both planning and management of biosphere reserves is a crucial task.

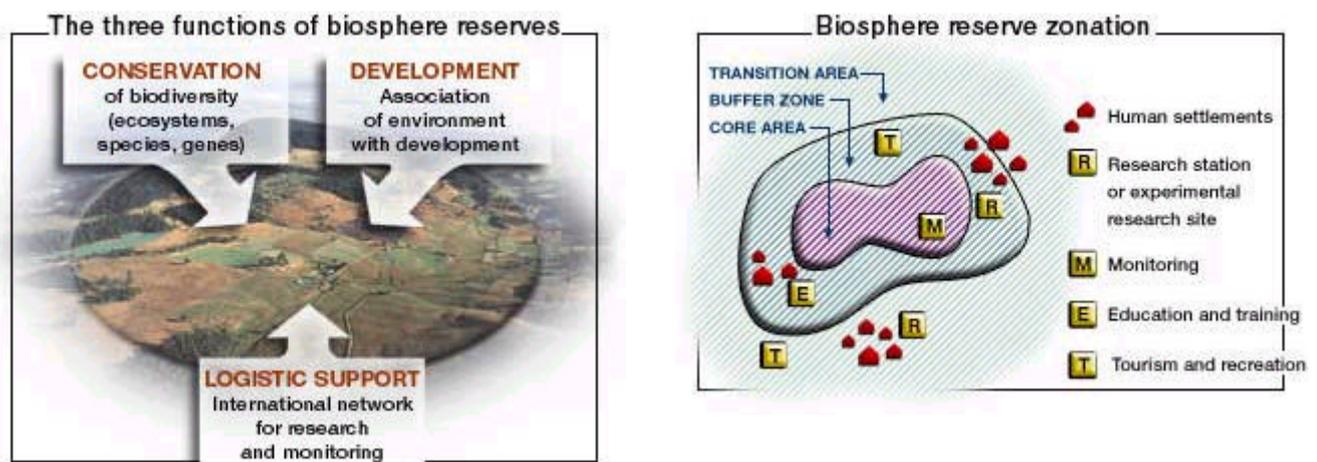


Figure 1: Three functions of biosphere reserves and the biosphere reserve zonation scheme.

## B. Short history and development of the biosphere reserve concept

The biosphere reserve concept constitutes an essential part of United Nations Educational, Scientific and Cultural Organization's (UNESCO) Man and Biosphere (MAB) programme. In 1968 already, it was declared that the utilisation and conservation of resources should go hand

in hand, and that interdisciplinary approaches should be promoted to achieve this goal. However, in the first phase of the concept, the conservation role was prominent, the logistic role minimal and the development role largely forgotten. This was also reflected in early designations of biosphere reserves: criteria were mainly based on the conservation role together with the condition to provide some research facilities. Almost all designated biosphere reserves at this time were already protected, for instance as national parks. Research was mainly of academic character rather than related to ecosystem and resource management and addressing the relationship between environment and development.

This bias towards the conservation and logistic function was partly mitigated in 1974 when the multiple functions of biosphere reserves were stressed, and the crucial role of the development function was recognised. In 1985, the biosphere reserve concept was refined and criteria for the selection of new biosphere reserves were established. In the following, biosphere reserves gained ground as a conceptual alternative to conventional protected areas. However, the quality of the international biosphere reserve network was uneven because of the changed requirements. In this respect, the 1995 Seville Conference reaffirmed the nature of biosphere reserves, described specific criteria for formal designation as biosphere reserves and introduced a periodic review process in order to bring consistency in the World Network of Biosphere Reserves (see above).

In 2000, the Katunsky area in the Russian Altai Mountains was designated as biosphere reserve by UNESCO. Therefore, it belongs to the "new generation" of biosphere reserves, recognised after the Seville Conference. This paper will look at how the new criteria are met.

### C. Special status of biosphere reserves in Russia

All Russian biosphere reserves were designated in areas with an existing zapovednik protection status ("biosphere zapovedniki") (Sittler *et al.* 2000). However, the goals of the biosphere reserve and the zapovednik concept are contradictory: Zapovedniks are nationally protected areas with a strict conservation status, without any economic use and without human population within the area. Zapovedniks are excellent reference sites for research and monitoring. However, they lack the development function and the involvement of human use of nature. According to the IUCN categories, zapovedniks comply only with category 1a

whereas biosphere reserves represent nested IUCN categories in which nature conservation and research are only two elements.

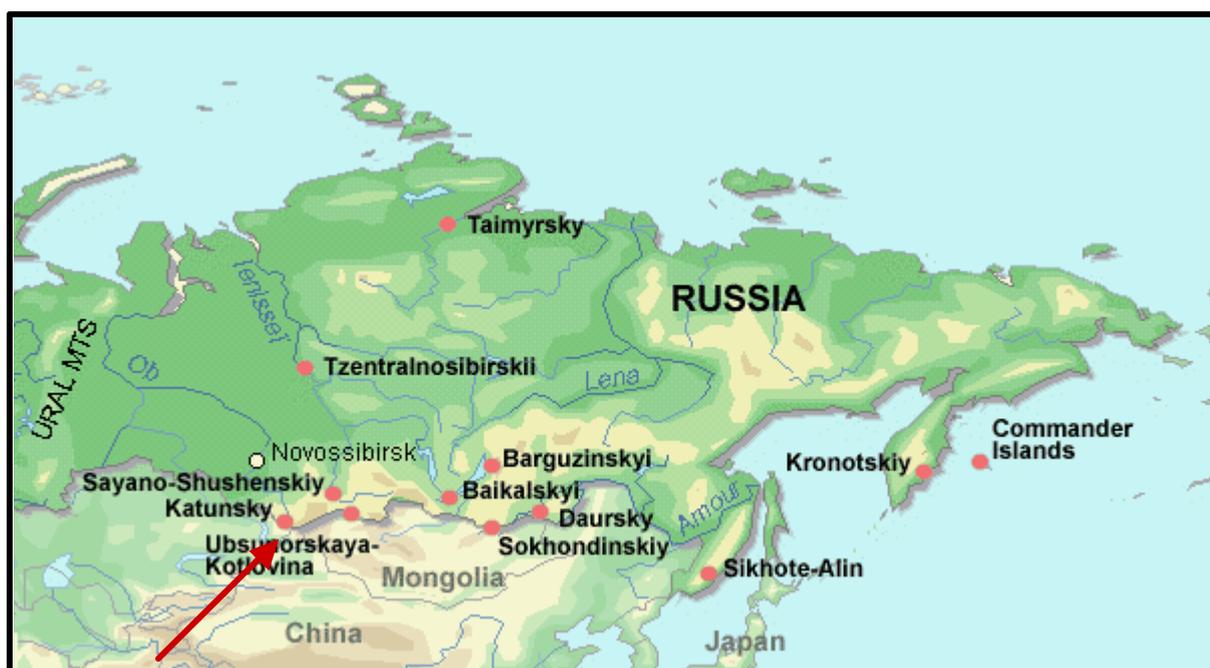
The Russian Katunsky biosphere reserve includes a zapovednik as core area, however a buffer and transition zone surrounds it in order to comply with the numerous other functions of a biosphere reserve. In the following, the Katunsky biosphere reserve is taken as a case study to examine if it meets the criteria and functions of UNESCO-biosphere reserves.

## II. CASE-STUDY KATUNSKY BIOSPHERE RESERVE

### A. Location

The Katunsky biosphere reserve was designated in 2000 being the 20<sup>th</sup> biosphere reserve of the Russian Federation. It is located in the southern region of the “Autonomous Republic of Altai” in southern Siberia along the borders with Kazakhstan, China and Mongolia (Map 1). Its territory comprises the high mountainous areas of the Central Altai, including the northern and southern slopes of the Katun Ridge and northern slopes of the Listvyaga Ridge. Therefore, it represents a major ecosystem type called “mixed mountain and highland systems”. Altogether, it includes a mosaic of fourteen ecosystem types, from mountain tundra to forest-steppe vegetation (see Annex I).

The elevations range between 4,506 metres at the highest point (Mt. Belukha) and 765 metres above sea level. The total area of the biosphere reserve is 695,262 ha (UNESCO).



Map 1: Location of Katunsky biosphere reserve in Russia (source: MAB homepage)

## B. Zonation

According to the zonation scheme of the biosphere reserve concept (Statutory Framework, Article 4, point 5), the Katunsky biosphere reserve provides three different zones to serve the three functions of a biosphere reserve (ANNEX 2).

1. The *core area* is build up by the territory of the state nature reserve zapovednik “Katunsky”, which was established in 1991 and covers 151,678 ha.

Objectives are (UNESCO 1998):

- Protection of nature territories for biodiversity conservation and ecosystem processes
- Scientific researches including “Chronicle of nature” programme
- Environmental monitoring
- Environmental education
- Providing input into ecological expertise of resource use on adjacent land as needed for development projects
- Supporting environmental and conservation training for nature protection specialists

2. The size of the *buffer zone* is 43,584 ha. In Russian legislation its legal status is ‘*protected zone*’. All kinds of economical activities are restricted in this area.

Current activities are (UNESCO 1998):

- combined protection of the protected zone territory from State Forest Guard and Protection Service of nature reserve “Katunsky”
- science researches and monitoring
- limited ecological-educational tourism

3. The *transition zone* covers almost 500,000 ha. It is situated mostly along the Katun river right bank and is divided into different land-use zones, like refugium zone (providing conservation and restoration of natural complexes), zone of regulated recreational nature utilization, zone of intensive recreational nature utilization, settlement zone and zone of traditional land utilization. The latter divided into different sub-zones: deer-farms, sheep breeding, agriculture and hunting (UNESCO, 1998). (see ANNEX 2)

### C. Meeting the criteria

Article 4 of the “Statutory Framework of the World Network of Biosphere Reserves” serves to define the general criteria for an area, which must be met to be qualified for designation as an UNESCO biosphere reserve (by the International Co-ordinating Council of the MAB-Programme).

In this part, we will look at how the biosphere reserve plans to fulfil these requirements.

Criterion 1. *“It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human intervention”* (UNESCO 1996):

The Katunsky biosphere reserve, as part of the Altai-Sayan mountain system, represents an area of the Central Altai province – the biogeographical region of Altai highlands. There are 14 main types of ecological systems (see Annex I) listed in the nomination form.

The degree of human interventions in the past is mentioned in the nomination form in section 9: “land use history”. Here, all types of land-uses in all three zones are described.

Beside the land-use for the primary sector as well as for illegal hunting and grazing; one of the main human influences was tourism (sport-, nature-, recreation tourism). However, the number of tourists decreased drastically after the collapse of the USSR and a following deterioration of the socio-economic situation.

Criterion 2. *“It should be of significance for biological diversity”* (UNESCO 1996):

Twelve plant species, which occur in this region, are recorded in the Red Book of the Russian Federation (1988). Thirteen animal species listed in the Red Data Book of the Altai Republic inhabit the reserve.

Moreover, the snow leopard (*Uncia uncia*), recorded in the IUCN Red List (EN C2a(i)) enters the reserve occasionally.

Criterion 3. *“It should provide an opportunity to explore and demonstrate approaches to sustainable development on the regional scale”* (UNESCO 1996):

The area of the biosphere reserve covers the natural conditions, which are the most typical for the whole Central Altai area. Therefore, Katunsky biosphere reserve “should be a model for

sustainable development in the region by simultaneously promoting environmental protection while studying and promoting social, cultural, spiritual and economic needs of the society from a scientific base(UNESCO 1998).”

In the area of the Katunsky zapovednik a management plan has been elaborated including different programmes (for instance “Programme of territorial planning and social economic development”) and management objectives.

The development programme contains objectives such as promotion of traditional land uses (for instance, the restoration of cattle stock, sheep, increase of milk, wool production) as well as experimental works which are carried out on behalf of the biosphere reserve.

Moreover, the construction of mini-factories for the production of milk, garments, cold cuts, cheese, butter, the farming of vegetables and cereals and development of ecologically sound tourism is hoped to create up to 400 – 500 working places (UNESCO 1998).

The realisation of this programme in the transition area, the existence of the biosphere reserve will promote benefits for local communities through the:

- “1. Realization of livelihood microprojects and traditional types of nature utilization and handicraft industries.
2. Development of tourism and ecological tourism on the territory of proposed transition area and organization of new working laces in the sphere of service.
3. Involvement of representatives of local communities in ecological educational programmes” (UNESCO 1998).

Criterion 4. *“It should have an appropriate size to serve the three functions of biosphere reserves”*(UNESCO 1996):

With a total size of >690,000 ha the biosphere reserve gives enough space to accommodate the three functions.

For every function and its various aspects detailed information is given on how to meet the objectives and to settle conflicts.

Criterion 5. *“It should include these functions through appropriate zonation”* (UNESCO 1996):

As described in paragraph II B, the Katunsky biosphere reserve has an appropriate zonation pattern.

Criterion 6. *“Organizational arrangements should be provided for the involvement and participation of suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve”* (UNESCO 1996):

In September 1998, a round table was held with representatives of the district administration, nature protection bodies, local administrations, educational and local organizations as well as from the private sector. The role of the biosphere reserve in the region and the organisation of the transition zone have been discussed. All stakeholders supported the idea of the biosphere reserve and stressed the importance of interaction with the population, spreading the idea of biosphere reserves among the local communities and providing of organizational arrangements.

Criterion 7. *“In addition, provisions should be made for:*

- a) mechanisms to manage human use and activities in the buffer zone (or zones);*
- b) a management policy or plan for the area as a biosphere reserve;*
- c) a designated authority or mechanism to implement this policy or plan;*
- d) programmes for research, monitoring, education and training”* (UNESCO 1996):

a) The management of main land use and economic activities in the buffer zone are described as follows: protection, research and monitoring, limited forestry, limited grazing and pasturing, apiculture, hunting and fishing, limited technical purchasing of officinal plants, limited tourism.

b) The non-governmental organisation Biodiversity Conservation Centre (“BCC”) in cooperation with a working group of the nature reserve “Katunsky” has elaborated a management plan for the biosphere reserve. This plan intends to familiarise the nature reserve staff, local population, administrators, stakeholders and the public with problems and goals of the biosphere reserve” (UNESCO 1998).

c) The implementation of the management plan started in 1999. A designated authority or mechanism responsible to implement this plan was not named in the nomination form.

d) The management plan includes following programmes:

- Programme on protection of natural and cultural heritage and biological diversity
- Programme of territorial planning and socio-economic development
- Programme of scientific research works and ecological monitoring organization
- Programme of ecological education and public support of the nature reserve formation
- Programme of the nature reserve administrative and economic activities organization

The latter three provide a frame for the implementation of research, monitoring, education and training in the reserve area.

### III. DISCUSSION

During our excursion in the Altai region (Siberian Expedition organised by the Technical University of Berlin, see also <http://www.siberian-expedition.de>), in summer 2002, we had the opportunity to discuss with Siberian natural scientists about problems of protected areas in that region. We focused on the potential of biosphere reserves to support sustainable development in the Altai region, with particular respect to the “Katunsky” biosphere reserve which is suggested for extension (transboundary biosphere reserve with Kazakhstan, Mongolia and China).

These discussions showed that the idea of biosphere reserves is not really working to the satisfaction of many local scientists due to various reasons. One of the main problems they mentioned is the lack of money. Many useful ideas and projects can not be realised for financial reasons. Moreover, lacking advice and cooperation with the MAB secretariat in Paris was criticized.

Thus, we looked at how the criteria (UNESCO 1996) for the establishment of a biosphere reserve are met.

Criterion 1 is concerned with the gradation of human intervention in the area as according to the MAB programme concept, which says: “*biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere*” (UNESCO 1996).

As indicated in the nomination form, there are no people permanently living in the reserve area. 38 are mentioned to be seasonally in the core area, however no explanation is given on their activities. In respect to the transition area, the number of 4,408 people seasonal staying in the area is given. (Table 1)

	permanently	seasonally
Core area	-	38
Buffer zone	-	-
Transition zone	-	4408

Table 1 : Human population of proposed biosphere reserve (from: UNESCO Biosphere Reserve Nomination Form(1998))

As inhabitants in the area are a prerequisite to manage the region in a biosphere reserve manner, in this case, the absence of permanent human populations might be a point of discussion if the biosphere reserve instrument is appropriate for that area.

On the other hand, the nomination form mentions the existence of “citizens living in seven villages” (UNESCO 1998). According to the map in the proposal form, these settlements are located on the edge of the biosphere reserve area, “the nearest at a distance of 40 km from core area” (UNESCO 1998). Therefore, some human activities still take place and can be sustainably managed within instruments of the MAB concept.

The above given review of the criteria and (planned) functions of the biosphere reserve led conclude that the biosphere reserve concept is an appropriate instrument in this case. It needs to be mentioned that the Katunsky biosphere reserve exists now for only two years. Therefore, many of the occurring problems might be justified with difficulties during the initial phase.

From our point of view, there are some main proposals which should be focussed on in order to realize an effectively working biosphere reserve.

#### *Environmental education and public awareness*

In order to establish greater public awareness about the opportunities of the biosphere reserve for the whole Altai region (including its nature and citizens), environmental education should be strongly enhanced for both locals and tourists. So, people of all age groups should be intensively and regularly provided with information about the biosphere reserve, in seminars, schools or by leaflets, newspaper articles and even by radio broadcasting .

### *Funding*

It is very important to put energy on finding foundations, companies and investors (even international ones) to fund projects which support the idea of biosphere reserves and thereby promote further sustainable development.

### *Ecological tourism (scientific and educational tourism)*

Tourism, often mentioned as one of the biggest threats and chances at the same time is important, too. Ecotourism and especially educational tourism might be a change to get interested people into the area, show them the beauty of the Altaian nature and to sensitise them to the situation in that area. They are ideal guests for the biosphere reserve as they bring money and normally do not have high expectations on living standards during their trips and expeditions. Therefore, the infrastructure does not have to be heavily changed as for mass-tourism.

Particularly educational and scientific tourism (mainly directed to practical field courses for students) is according to Sheftel and Moraleva (2000) one of the most promising kinds of ecological tourism in protected areas. In the biosphere reserve very good specialists are working, who carry out their investigations and have a broad knowledge about the region, they can provide lectures and excursions on a very high scientific level.

Generally, the mainly undisturbed natural landscapes provide a perfect reference area to the often highly altered ecosystems in Middle Europe. In such areas, students will get a unique opportunity to study ecological basics. Furthermore, students who get to know this interesting area might decide to carry out an own project (internship or masters thesis) in the biosphere reserve. Thus, investigations could be internationally undertaken.

In visitor centres both within the biosphere reserve and in bigger villages outside, tourists could have the chance to learn about the region. They could be sensitised to particular problems so that they might even support the biosphere reserve with a donation. In addition, excursion programmes and nature guides should be available for them.

Moraleva *et.al.* (2000) state that the regulation and control of the visitors is minimal. That results in a greater part of non-organised tourists entering the core area illegally. Accordingly, neither the biosphere reserve and local communities, nor biodiversity conservation and the Altai ecosystems will benefit from such wild tourism.

So far, there is no information about the existence of the biosphere reserve in the whole Republic of Altai (Moraleva *et. al.*, 2000). That's why environmental education and

information should not just be restricted to the local area of the reserve itself, but also carried out on a regional scale (in the whole republic). The public needs to become aware of the natural wealth, which they can be proud of but also should be responsible of.

#### *Network/partnership*

Although stated in the nomination form that Katunsky biosphere reserve collaborates with other biosphere reserve on national level (Oksky and Barguzinsky biosphere reserves) there was no information available about any activity on this point.

On an international level, the biosphere reserve is part of a regional UNESCO network, the East Asian Biosphere Reserve Network (EABRN ). Together with China, the Democratic People's Republic of Korea, Japan, Mongolia, Republic of Korea, the biosphere reserves of the Russian Federation (eastern of the Ural) build up this network.

In respect to the planned transboundary biosphere reserve in the Altai Region, such network can even support the collaboration between the different adjacent nations.

Another idea is to find a partner biosphere reserve in a completely different area or on another continent however with similar concerns in order to share experience and knowledge so that the development of the Katunsky biosphere reserve can be accelerated.

#### *Research and Monitoring*

We felt that the concept of Russian state nature reserves (zapovedniki) is much more accepted among the Russian scientists than the idea of biosphere reserves. A lot of activities are carried out in and for the Katunsky zapovednik. However, they seem to work independent from the biosphere reserve, although the zapovednik is equivalent to the core area of the biosphere reserve. A better co-operation between both would be highly desirable.

We conclude that the Katunsky biosphere reserve has a big potential for sustainable development. It depends now on the local management authorities if the given chances are used. Nevertheless, the biosphere reserve concept is the appropriate tool for the mitigation of land use problems and for raising public awareness in the area.

## ANNEX I

UNESCO Biosphere Reserve Nomination Form, 1998:

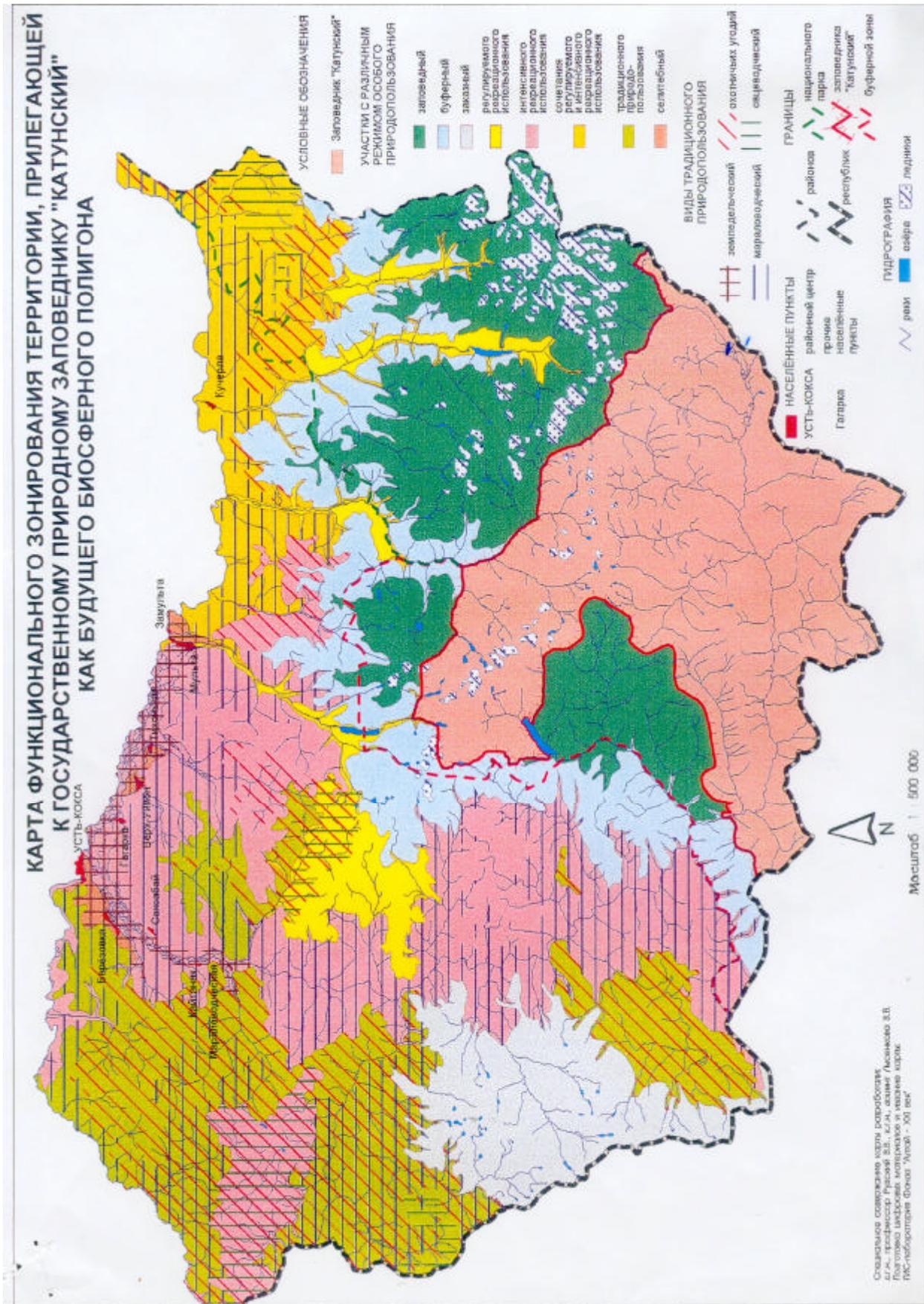
According to the physical-geographical zonation of the Altai-Sayan mountain system the area of the Katunsky biosphere reserve is part of the Central-Altai province.

The main ecosystem types of in the territory of the future biosphere reserve are the following:

- (1) High-mountain exaration and erosive-denudational glacial-nival landscapes
- (2) High-mountain glacial-nival deeply dissected drained tundra
- (3) Small spots of high-mountain polygonal lichen tundra
- (4) High-mountain alpine and supalpine meadows
- (5) High-mountain bogs (occupy small area)
- (6) Middle-mountain alpine and subalpine low- and high-grass meadows
- (7) Mountain-valley larch-cedar (Siberian sone pine) subalpine thin forest
- (8) Meadow steppes with predominance of orchard grass
- (9) Fragmentary presented forest steppes
- (10) Mountain-valley forests, cover the surface; grassy and mossy swamps in combination with meadow tundra, dwarf-birch communities and alpine meadows
- (11) Spruce, larch-spruce, birch-spruce and spruce-birch flood-plain forests
- (12) Riparian willow forests
- (13) Mixed forests
- (14) Coniferous (larch-dark coniferous) forests

ANNEX 2

Zonation map of the Katunsky biosphere reserve (UNESCO 1998).



We would like to thank the UNESCO-MAB Secretariat in Paris for its co-operation in providing the nomination form of the Katunsky biosphere reserve.

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