World Heritage Scanned Nomination

File Name: 769rev.pdf **UNESCO Region:** ASIA AND THE PACIFIC

SITE NAME: **Uvs Nuur Basin**

DATE OF INSCRIPTION: 5th July 2003

STATE PARTY: MONGOLIA / RUSSIAN FEDERATION

CRITERIA: N (ii)(iv)

DECISION OF THE WORLD HERITAGE COMMITTEE:
Excerpt from the Report of the 27th Session of the World Heritage Committee

Criterion (ii): The closed salt lake system of Uvs Nuur is of international scientific importance because of its climatic and hydrological regimes. Because of the unchanging nature of the nomadic pastoral use of the grasslands within the basin over thousands of years, current research programmes should be able to unravel the rate at which Uvs Nuur (and other smaller lakes within the basin) have become saline (and eutrophic). These processes are on-going and because of its unique geophysical and biological characteristics, the basin has been chosen as an IGBP site for monitoring global warming.

Criterion (iv): The Uvs Nuur site has a large range of ecosystems, representing the major biomes of eastern Eurasia, with a number of endemic plants. Although the basin is inhabited and has been used for nomadic pastoralism for thousands of years, the mountains, forests, steppes and deserts are extremely important habitats for a wide range of wild animals, many of them threatened or endangered. The steppe ecosystem supports a rich diversity of birds and the deserts a number of rare gerbil, jerboas and the marbled polecat. The mountains at the western end of the basin are important refuges for the globally threatened snow leopard, mountain sheep (argali) and the Asiatic ibex. Uvs Nuur itself is an important habitat for waterfowl as well as for birds migrating south from Siberia.

BRIEF DESCRIPTIONS

The Uvs Nuur Basin (1,068,853 ha), is the northernmost of the enclosed basins of Central Asia. It takes its name from Uvs Nuur Lake, a large, shallow and very saline lake, important for migrating birds, waterfowl and seabirds. The site is made up of twelve protected areas representing the major biomes of eastern Eurasia. The steppe ecosystem supports a rich diversity of birds and the desert is home to a number of rare gerbil, jerboas and the marbled polecat. The mountains are an important refuge for the globally endangered snow leopard, mountain sheep (argali) and the Asiatic ibex

---

1.b State, Province or Region: Uvs Aimag, Zavhan Aimag, Huvsgul Aimag (Mongolia); Mongun-Taiga Kojuun, Ovur Kojuun, Tes-Khem Kojuun, Ersin Kojuun (Tuva)

1.d Exact location: N50 16 30.0 E92 43 11

Nomination

"UVS NUUR BASIN" Nature Complex

RUSSIA (TUVA) and MONGOLIA

For inscription on the

UNESCO World Cultural and Natural Heritage List

Submitted by

the Government of the Russian Federation and the Government of Mongolia

Prepared by:

- **Ubsunur international center of biosphere research, Russian Federation**
- **Geography institute of Russian Science Academy**
- **Geology institute of Mongolian Science Academy**
- **Geoecology institute of Mongolian Science Academy**
- **Administration of «The Uvs Nuur» preserve, Mongolia**
- **Administration of «The Ubsunur Hollow» preserve, Russian Federation**

With the support of:

- **Greenpeace Russia**
- **Federal Agency For Nature Conservation (BfN), Germany**

2001

Contents:

1. Identification of the Property	**Page 3**
2. Justification for Inscription	**Page 4**
3. Description	**Page 7**
4. Management	**Page 10**
5. Factors Affecting the Property	**Page 13**
6. Monitoring	**Page 14**
7. Documentation	**Page 14**
8. Signature on behalf of the State Party	**Page 16**

1. Identification of the Property

a. Country (and State Party if different)

Russia (Tuva) and Mongolia

b. State, Province or Region

Mongolia: Uvs Aimag, Zavhan Aimag, Huvsgul Aimag

Russia, Republic of Tuva: Mongun-Taiga Kojuun, Ovur Kojuun, Tes-Khem Kojuun, Ersin Kojuun.

c. Name of Property

Uvs Nuur Basin

d. Exact location on map and indication of geographical coordinates

The Uvs Nuur Basin is located in the heart of Central Asia. The Basin covers the neighboring territories of the northwestern part of Mongolia and a part of the republic of Tuva located on the southern frontier of the Russia Federation.

«The Uvs Nuur Basin» site includes territories of two nature preserves - «The Ubsunur Hollow» in Russian Federation and «Uvs Nuur» in Mongolia. Russian nature preserve has seven clusters with the following coordinates (central point coordinates):

1. «Mongun Taiga» cluster - E 90^{o} 12'; N 50^{o} 12'
2. «Ubsu-Nur» cluster - E 93^{o} 08'; N 50^{o} 37'
3. «Oroku-Shinaa» cluster - E 94^{o} 00'; N 50^{o} 37'
4. «Aryskannyg» cluster - E 94^{o} 44'; N 50^{o} 40'
5. «Jamaalyg» cluster - E 94^{o} 45'; N 50^{o} 15'
6. «Tsugeer els» cluster - E 95^{o} 15'; N 50^{o} 05'
7. «Ular» cluster - E 95^{o} 38'; N 50^{o} 32'

The «Uvs Nuur» preserve (Mongolia) consists of five clusters with the following coordinates:

8. «Tsagan shuvuut» cluster - E 91^{o} 09'; N 50^{o} 19'
9. «Turgen» cluster - E 91^{o} 22'; N 49^{o} 46'
10. «Uvs Lake» cluster - E 92^{o} 53'; N 50^{o} 20'
11. «Altan els» cluster - E 95^{o} 00'; 49^{o} 50'
12. «Tes River» cluster - E 93^{o} 45'; N 50^{o} 28'

e. Maps and/ or plans showing boundary of area proposed for inscription and of any buffer zone

1. Site location on the map of Central Asia
2. Physical-geography map of the Ubsunur basin with marked boundary of the nomination
3. Map of «The Ubsunur Hollow» nature preserve (Russian Federation)
4. Topographic map of the Uvs Nuur basin with marked boundary of the nomination
4. Diagram of «Mongun Taiga» cluster and its buffer zone
5. Diagram of «Aryskannyg» cluster and its buffer zone
6. Diagram of «Jamaalyg» cluster and its buffer zone

7. Diagram of «Tsugeer els» cluster and its buffer zone
8. Diagram of «Ular» cluster and its buffer zone
9. Ecosystem map of the northern part of Uvs Nuur basin
10. Diagram of the «Uvs Nuur» nature preserve (Mongolia)
11. Diagram of «Tsagan shuvuut» cluster and its buffer zone
12. Diagram of «Turgen» cluster and its buffer zone
13. Diagram of «Uvs Lake» cluster and its buffer zone
14. Diagram of «Altan els» cluster and its buffer zone
15. Ecosystems of «Tsagan shuvuut» cluster
16. Ecosystems of «Turgen» cluster
17. Ecosystems of «Uvs Lake» cluster
18. Ecosystems of «Altan els» cluster
19. Diagram of «Tes River» cluster

f. Area of property proposed for inscription (ha) and proposed buffer zone (ha.) if any

Total area of property proposed for inscription onto the World Heritage List is 1 068 853,5 ha (258 620 ha – Russian Federation, 810 233,5 ha – Mongolia), including total area of preserves' territory of 898 063,5 ha (87 830 ha – Russian Federation, 810 233,5 ha - Mongolia) and total area of buffer zone of 170 790 ha (Russian Federation).

1. «Mongun Taiga» cluster - 15 890 ha, buffer zone - 84 510 ha
2. «Ubsu-Nur» cluster - 4 490 ha
3. «Oroku-Shinaa» cluster - 28 750 ha
4. «Aryskannyg» cluster - 15 000 ha, buffer zone - 11 800 ha
5. «Jamaalyg» cluster – 800 ha, buffer zone – 4 000
6. «Tsugeer els» cluster – 4 900 ha, buffer zone – 50 000 ha
7. «Ular» cluster - 18 000 ha, buffer zone - 20 480 ha
8. «Tsagan shuvuut» cluster - 23 170 ha
9. «Turgen» cluster - 116 831 ha
10. «Uvs Lake» cluster - 424 298 ha
11. «Altan els» cluster - 148 246 ha
12. «Tes River» cluster - 97 688,5 ha

Total area of Mongolian buffer zone is 476 411 ha.

2. Justification for Inscription

a. Statement of significance

The Uvs Nuur Basin contains 6 ecological zones: cold desert, desert-steppe, steppe, taiga, alpine tundra, boreal forest and deciduous forest within an ancient central Asian lake basin 160 km from north to south and 600km fom East to West. Within this limited area are habitats including flood plain forest, salt marshes, mobile and fixed sand dunes and permanent snow fields. All of these essential habitats are now preserved within strictly protected areas.

The Uvs Nuur Basin shows remarkable signs of the earth's evolutionary history. It is the site of both remnant glaciers and lakes left over from the end of the ice age era. The process of transition from a giant ice age lake to the subsequent desertification is of some scientific interest and much of the evidence of this transition lies within the protected areas.

This basin is a very extraordinary place with regard to the diversity of ecosystems and species present within such a small, enclosed basin. This being the case, it provides an excellent opportunity for the study of watershed basin dynamics within many different biomes. Much of this basin has never been subjected to high impact living conditions or resource extraction. The Uvs Nuur Basin has many spectacular natural phenomena, many of which are located within the protected areas. Uvs Nuur (the largest lake according to surface area in Mongolia), several tall peaks, 20% of Mongolia's glaciers, Mongolia's 2nd tallest waterfall and many high altitude lakes are all within the protected areas.

With regard to significant habitats for threatened species, Turgen Uul, Tsagaan Shuvuut and Mongun-Taiga strictly protected areas contain essential habitat for snow leopards. The Uvs Nuur Basin is situated near the northern extent of the range for snow leopards and it is the farthest north in Mongolia where snow leopards are now known to exist. In addition, there is a very rare lichen *(Aspicilia esculenta)* which grows in a narrow stretch along the northeastern shore of Uvs Nuur. This is the only place in Mongolia where this lichen is known to grow. There are two species offish endemic to Uvs Nuur or western Mongolia which live in Uvs Nuur. They are *Oreoleuciscus potanini* and *Oreoleuciscus pewzowi* and are considered to be the remnants of species which lived in the huge lake which was present here during the ice age.

Due to the fact that this is a fully enclosed basin all natural weather processes are contained within this basin. This effects the many ecological zones present within the basin. Within this relatively small basin live a remarkable number of plants and animals forming a natural biosphere genetic fund. In this area live many different types of animals; some such as Snow leopards *(Uncia uncia)* Argali *(Ovis ammon)* and Willow grouse *(Lagopus lagopus)* prefer high mountain areas; whereas some reside in desert areas including Marbled polecat, Racerunners and some animals which live on the steppe like Marmots *(Marmota spp).* This basin has many marshes and wetlands in which many migratory birds nest and stop over. Thus this area is a very valuable region for biological diversity.

Many mountains have been eroded by wind forming many beautiful rock outcropping which can be found in this area. Also this basin is the homeland to many peoples as evidenced by artifacts which can be found here today. In this basin there have several places where the important ecosystems have been preserved.

b. Possible comparative analysis (including state of conservation of similar properties)

Unlike the other natural objects of the World Heritage situated in Russia (Komi-forest, Volcanoes of Kamchatka, Baikal) the Uvs Nuur Basin is a monument reflecting all of the natural zones located within a relatively small territory. Furthermore, the basin is a cultural monument where the ancient history of the land, with its kurgans (burial mounds), steles (standing carved stones), and Paleolithic settlements of ancient people, harmoniously join with the natural landscape. The fauna is very original due to the high percent of endemism, proof of the formative processes proceeding on a large scale. First of all it can be observed in the example of the isolation of intra specific forms.

Uvs Nuur Basin is on the border of two biogeographical provinces (Altai Highlands and Mongolian / Manchurian Steppe) but also contains elements of another (East Siberian Taiga) in its portions that are at higher elevations. The basin itself is one of a number of depressions in Central Asia which are remnants of a large inland sea which existed during the Tertiary geological period. The Uvs Nuur Basin is the furthest north of the Central Asian depressions and although not the largest, it is the wettest and the one with the greatest variety of ecosystems. There are no natural heritage sites in these biogeographical provinces as of yet but several have been nominated and are now under consideration (Altai Mountains, Lake Baikal). Another similar site in Mongolia (Lake Hovsgol National Park) has also been suggested as being of potential World Heritage value.

The importance of the Uvs Nuur Basin rests in good part on the fact that it has a great variety of ecosystems in a relatively small area. This is partially due to its geographical location at the border of the Siberian taiga and Mongolian steppe. These characteristics, however, are also shared with the Baikal area (100 km to the north-east) which has an even wider range of ecosystem types. The predominant biotope in UNB, however, is steppe which is a biome covering an enormous expanse of grassland from Hungary to China. There are a large number of protected areas in this region, many of which provide a more complete and natural representation of the steppe ecosystem, but often do not contain other ecosystem types within the same area.

In conclusion, the Uvs Nuur Basin is distinguished by having a great variety of ecosystems within its borders. All of the separate ecosystems, however, taken separately are better displayed elsewhere (e.g. in the Altai, at Lake Hovsgol and at Baikal). The natural value of the Uvs Nuur Basin thus is not so much focused on a singular feature but more as a combination of separate representative samples of ecosystems that occur in one relatively confined area. Apart from comparison of the natural values, UNB is also nominated for its cultural values with which they are strongly linked.

c. Authenticity / Integrity

The Uvs Nuur Basin is a naturally complex and enclosed basin. This basin is surrounded by many large mountain ranges. The northern border of the basin is the Tannu-Ola range, to the east is Sangilen Mountain and the Bolnai Mountain Range; to the west is Tsagaan Shuvuut mountain range and Shapshaskee; to the south is the Turgen Uul and Hanhohee mountain ranges. Inside this basin there is one large river, the Tes River.

For conservation of different types of ecosystems were created cluster biosphere preserves. All clusters were chosen with consideration of landscape biodiversity, they are functionally

connected and make their contribution into integrity of the property.

d. Criteria under which inscription is proposed (and justification for inscription under these criteria).

The governments of Mongolia and the Russian Federation have presented the following justification for designation of the Uvs Nuur Basin as a World Heritage natural property:

(1) The property contains examples of the major stages of earth's history and outstanding geological features. Glacial activity, slope erosion and mobile sand dunes are significant geo morphological processes which are found in this area.

(II) The basin contains examples of on going ecological and biological processes. The property contains a wide range of natural ecosystems in close proximity to each other, and is thus ideally suited for ecological research.

(III) The basin contains natural phenomena and areas of exceptional natural beauty and aesthetic importance.

(IV) The basin contains the most important and significant natural habitats for several endangered species. This property supports a high level of biodiversity, including a high number of relict and threatened species. (Annex D).

3. Description

a. Description of Property

For inscription onto the World Heritage List are proposed 12 preserved clusters which fully reflect all nature diversity of the Ubsunur basin.

Clusters of the preserves together with their buffer zones show all representative ecosystem types.

In high-mountain clusters are found alpine and nival landscapes, mountain tundra, mountain taiga belt, mountain steppe **(«Mongun Taiga», «Tsagaan shuvuut», «Turgen Ula»)**. Large glaciers on Mongun Taiga (3986 m - sacred places for tuvins) and Turgen-Ula mountains are an unusial phenomena for such arid region. Below the glacier lay alpine moss-and-lichen meadows. Along the valleys spread forests of Bedwarf birch and silver-weed bushes. Snow-leopard, tartarian roe, Altai argali (the largest sheep in the world) and Altai marmot are the most notable mammals of these clusters. Altai snow-cock, alpine willow-grouse, bearded and black vultures, stripe goose are the most noted bird species.

Clusters include large areas of mountain tundra, sub-alpine meadows of mountain taiga and, in lower areas, forest steppes. Larch (*Larix sibirica*) and cedar (*Pinus sibirica*) are dominant species in upper storey of forests. The most widely spread bushes are meadowsweet and rhododendron. Among herbaceous are spread: gentian, edelweiss, anemone sp. and Orchidaceae family. They follow southern slopes. At the foot of northern slopes have been remained relict club-moss steppe. Unique feature of landscapes of these clusters is neighborhood of such typically tundra species as reindeer, willow grouse, Mongolian plover, with taiga species, such as maral, brown bear, lynx, capercailzie and tawny owl.

The **«Ular»** cluster is located in the Sangilen mountain massive near the western border of the hollow. Its peculiarity is created by alternation of mountain rivers, bogged lowlands and riverside meadows. Flora of high-mountain meadows is presented by such species as monkshood, larkspur, meadowsweet, false hellebore. Taiga plants follows up slopes and on plato-like surfaces it is changed by forest tundra and mountain-bog plant groups, which, from the height of 2300 meters, are also changed by real tundra plants.

Remarkable sandy dunes of the eastern part of the hollow are located in the central part of the **«Zuger els»** cluster. The whole dune complex is represented within the vast territory of the cluster – from plantless dunes scattered by wind to dunes held up by pea-shrubs. Inhabitants of these areas are: Tolai-hare, steppe and daurian partridge, bustards, and also such specialized species like Northern three-toed jerboa, Agama genus and sand snake. In the central part of dune landscape lays Tere-Khol' lake, which differs from other lakes of Western Mongolia and Tuva by its uniquely pure and transparent waters. On the lake side are noted nesting of red hawk, black kite and common heron.

"Altan els" – are Central Asia's northern sandy massifs representing desert ecosystems. Among sandy deserted massifs stand out remnant mountains and barchan lowlands presenting green oasis. In the sands is found an effluent of Narijn-Gol river, along which are found forest plants (pine, larch, sallow-thorn) and grass meadows.

Landscape complex of the Uvs Nuur lake, including deltas of Tes-Khem and Torkhiologijn Gol, is located within the **"Uvs Lake"** and **«Ubsu-Nur»** clusters. Desert landscapes, which at some places meet lake's surface, show unique natural feature, very interesting from ecological point of view. Delta of Tesijn-Gol river consists of 5-6 branches, presenting landscapes of meadows and saltierras. Delta of Torkhiologijn Gol river consists of deserted and salted landscapes, of forested flood-plain and plavni origin, forming islands where nest numerous species of migrating birds and create colonies.

From far **«Yamaalig»** cluster reminds granite island in a rolling steppe lowland. Lichens and numerous weathering forms, deep canyons bring this massive a picturesque view. In the southern part of the massive lays a complex of important cultural and historical monuments – over 400 burial-hills and stone columns. In the mountains nest such bird species as booted eagle (*Hieraaet?s pennatus),* eagle owl, rock partridge.

The Uvs-Nuur Basin includes a high diversity of landscapes within a well defined boundary. These include high mountains and glaciers, snowy-mountain tundra and alpine zones, mountain-taiga landscapes, forested steppes, steppes, semi-desert and shifting sand dunes. River valleys, deltas and flood plains add to the variety of physical features.

Ecosystems range from the snow and ice-fields of the glaciers, through high mountain tundra, meadow and shrub thicket, through narrow belts of larch and pine forest, grass and herbaceous meadow steppes to river valley ecosystems with willow, poplar and finally reed beds, sedge swamps and salt meadows and other halophytic communities. Such a diversity of habitats is reflected in a rich flora and fauna. Some 359 bird species have been recorded and a number of internationally important species such as the Dalmatian pelican (*Pelacanus crispus),* Red-crowned crane *(Grus japonensis),* White-tailed sea-eagle (*Haliaeetus albicilla),* Siberian crane *(Grus leucogeranus),* Houbara bustard *(Chlamydotis undulata),* Asian dowitcher *(Limnodromus semipalmatus),* and Relict gull (*Iarus relictus)* occur, Mammalia of conservation interest include Snow leopard *(U??ia uncia)* Marbled polecat (*Vormela peregusna),* Ibex *(Capra sibirica),* Argali *(Ovis ammon)* and Musk deer *(Moschus moshiferus).*

There is a long history of nomadic occupation in the region, dating from the Paleolithic. and there are large numbers of historical artifacts. These include ancient burial sites (kurgans), carved stone stele and evidence of more recent occupation in the from of Buddhist monasteries and military fortifications. Many aspects of traditional, nomadic lifestyles are still in evidence in the practices of the current human population.

This small basin is situated on the boundary of both countries, in the precise center of the Asia Continent. The natural landscape of the basin has not been depressed by heavy industry and extensive agricultural development. The prevailing form of economy is livestock herding, which was developed during ancient times and, in its traditional forms. does not destroy the

natural systems. The Uvs Nuur Basin has within its territory great historical treasures, although they have not been put into scientific or cultural circulation. It estimated that there are more then two thousand ancient grave sites (kurgans) within its territory. Many of them are as ancient as the Egyptian pyramids. There is not a single mountain in the basin without kurgans nearby which creates a unique historical and cultural landscape.

The Uvs Nuur Basin's landscape attracts attention by its striking beauty and brightness. In the opinion of most experts, it is one of the most beautiful countries of the world. Uvs Nuur Basin is the object of intensive scientific investigation, which was started at the beginning of this century and is currently still being carried out. In these investigations, not only Russian and Mongolian scientists, but also the international scientific community, have been taking part. In the last decade these groups have united to form the "Uvs Nuur Experiment" scientific program. The Tuva Republic Government and the Siberian Branch of Russian Academy of Science have created the Uvs Nuur International Center for biosphere research. The Russian and Mongolian Governments have created, on their respective territories, Cluster Nature Preserves, which have recently (1997) been included in UNESCO's World Network of Biosphere Preserves.

b. History and Development

The historic and traditional use of the majority of the Uvs Nuur Basin was much the same as it is today, nomadic herding. This activity has been occurring since ancient times in these areas with very minimal environmental impact. However, in recent times, it has become evident that the environmental balance which had previously prevailed has gone awry. As populations have increased and herd sizes have grown, the natural vegetation within this basin has begun to show signs of difficulty in sustaining itself. During the years of socialism in Mongolia the nomadic herders were organized into cooperatives, assisted in managing larger homogeneous herds and encouraged to have large families. AH of which have had effects on the land.

The short and long term modifications by man include, but are not limited to, the following; deposition of biodegradable and non biodegradable wastes, frightening away and over-hunting of native animals, soil destruction, appearance of new roads on easily eroded land, deforestation, agricultural production in sensitive areas, permanent dwellings in the peripheral zones of the protected areas and semi-permanent animal shelters in the limited-use and peripheral zones of the protected areas.

c. Form and date of most recent records of property

In 1992-1993 the adoption of the legislative act for the establishment of the preserve an inquiry was sent to UNESCO (Paris) in order to receive the status of the international biosphere reservation. In 1997, the protected nature areas in both Mongolia and Tuva were granted the designations of World Biosphere Preserve. In view of the nature of the Tuvan and Mongolian parts of the basin, the scientific research of the Russian and Mongolian parties were conducted together. It was decided to put in application for awarding to the basin the status of the World joint on behalf of both parties.

d. Present state of conservation

The property put forth for nomination is an enclosed basin, hemmed in by mountains located on the boundary of the Siberian taiga and Central Asian steppe, "this peculiarity of the basin

leads to its natural and biological diversity. The unique character of the Uvs Nuur Basin is revealed by its large number of endemic, rare, endangered and relict species. Currently there arc 81 rare and endangered bird species known to be within the basin. They are entered in the Red Book of Tuva, and 2 species - the White-tailed sea eagle (*Haliaeetus albicilla* L.) and Hooded crane (*Grus monacha* Temm.) entered in the Red Book 1UCN. There are 22 rare species of mammals, among them the following two species - the red wolf (*?u?? al?in?s Pallas)* and the snow leopard (*Uncia uncia Schreber*) are entered in the Red Book 1UCN, of Tuva and the Russian Federation. The endemic species rank high among other species of flora and fauna of the property. Among the reptiles one can name 4 species of the isolated population of Toad-headed agama (*Phrynocephalus versocolor* Strauch), Multi-cellated racerunner (*Eremias multiocellata* unther). Patterned grass-snake *(Elapha dione Pallas)* and Gobi racerunner *(Eremias przewalskii Strauch).* Sixteen out of the existing 20 rarely met species of beetles are endemic. The flora of the property numbers 19 endemic species in Mongolia and Tuva, 51 relict species and 94 species of rare plants.

The low intensity of nature-usage, especially in north-eastern steppe regions of the property and the absence of industry can explain rather fair preservation of natural and cultural landscapes in comparison with the other basins of Central Asia. The unique diversity of types of landscapes and biomes in the property creates an important prerequisite for protection of nature, culture, science and stable nature-usage; the unusual beauty of the area is sure to attract local and foreign tourists. The above written facts prove the necessity of awarding to the Uvs Nuur Basin the designation of a UNESCO World Heritage site.

The protection of the preserve is provided by the executives of Mongolia and the Russian Federation including the government of Tuva. The local administrations of Tuva and Mongolia execute control over the local situation.

e. Policies and programs related to the presentation and promotion of the property

It is our goal to promote scientific research within the basin by local scientists as well as international experts. Every two years, an international symposium is held to discuss research currently being conducted within the basin, the preservation and development of the basin's resources, and the general health and welfare of the basin's inhabitants. The next symposiums will be held in the summer of 1999 in Ulaangom, Uvs Aimag.

An educational information center is being developed for use by the general public as well as by visitors. Other informational materials are also being developed. In addition, plans arc being made to increase tourism to the area.

4. Management

a. Ownership

The governments of Mongolia and Russia.

b. Legal status

In addition to a general level of legal protection covering the entire property, the nominated sites receive higher levels of protection. These have been implemented at three levels of government as follows: Republic of Tuva (Natural Monument established in 1992), the Russian Federation (clusters of Ubsunur Hollow Nature Preserve, namely Mongun-Taiga, Ariskannig, Ular, Zuger els and Yamaalig, established in 1993; Uvs Nuur and Oroku-Shinaa, established in 2000) and Mongolia (clusters of Uvs Nuur Nature Preserve, namely Uvs Lake, Turgen Uul, Tsagaan shuvuut Uul and Altan els, all established in 1993).

Preserves have cluster (odd) structure, which presents all types of landscapes and ecosystems of the hollow, and also cultural-historical landscapes. Every cluster has its buffer zone where all means of activity, which may disturb integrity of ecosystems, are prohibited. Cluster cores are not inhabited and trespassing is prohibited there. Enlarging of preserves' area is possible in future.

?. Protective measures and means of implementing them

1) According to Tuvan legislation, the basin received the status of the republican (limitation) of all non-traditional kinds of nature-usage (Appendix B).

2) The protected areas which have been founded within the limits of the Uvs Nuur Basin (Nature Preserves Ubsunur Hollow and Uvs Nuur) have staffs responsible for the preservation of those regions.

3) In the basin there are natural objects considered to be sacred according to religious canons and they are under the protection of the local inhabitants: Uvs Nuur (lake), Tore-Holl (lake), Tsagaan-Khairkhan, Turgen, Tsagaan shuvuut, Mongun-Taiga, Kheiracan and others.

d. Agency/agencies with management authority

The Russian Federation:

Ministry of Natural Recourses
Russia, 123812 Moscow, B. Gruzinskaja 4/6 St.
Tuva, Russia, Kyzyl, Moskovskaya 2 St.
Administration of Erzin kojuun p. Erzin
Administration of Tes-khem kojuun p. Samagallai
Administration of Ovur kojuun p. Khandageity
Administration of Mongun-Taiga kojuun p. Mugur-Aksy

Mongolia:

Ministry for Nature and the Environment of Mongolia
Ulaanbaatar, Mongolia
Administration of Uvs aimag, Ulaangom,
Administration of Zavhan aimag, Uliastai,
Administration of Hovsgol aimag, Moron

e. Level at which management is exercised (e.g., on property, regionally) and name and address of responsible person for contact purposes.

Any kind of activity in the basin will be implemented under the competent management of the state. The responsible manager - coordinator for the Russian portion is Prof. Bugrovskii Viktor Viktorovich, a scientific director of the International Center for Biosphere Research of Tuva and the Siberian Branch of (he Russian Academy of Science.

Address: Russia , Tuva 667 000 Internationalnaya street 117 / A

The responsible manager - coordinator for the Mongolian portion is S. Banziagch. Address:
Ministry for Nature and Environment Ulaanbaatar - 11, Mongolia

Deputies:
Director of the Preserve "Ubsunur Hollow" - Andrian Dugarovich Doduk, Erzin, Tuva, Russia
Director of the Mongolian Uvs Nuur Basin Strictly Protected Area - B. Ganbold, Ulaangom, Mongolia.

f. Agreed plans related to property (e.g., regional, local plan, conservation plan, tourism development plan) (Appendix B)

Management plans of «The Ubsunur Hollow» and «Uvs Nuur» nature preserves worked out in 2000, foresee close interaction of the preserves in fields of protection, science research, personnel training, ecological tourism, etc.

Regional plan:

- cooperation of the nature preserves and the Uvs Nuur Hollow Research Center
- preservation of traditional forms of agriculture
- encourage further protection of sacred areas by different ethnicity of local people
- promote use of appropriate technologies for efficient extraction and use of natural resources
- encourage the prohibition of further exploration of precious metals and encourage the use of appropriate mining technology in existing operations
- development of recreation and tourism areas

Local Plan:

- development of an ecological education programs for use by schools and the general public
- development of an ecological/natural resource preservation curriculum focusing on traditional methods of nature-usage for use by local schools
- development of an ecological education program for the education of government and private sector officials
- conduct research regarding the cultural and natural monuments in each community

Nature Conservation Plan:

- designation of new national protected area "Oo-Shenaa" encompassing the Tes River delta region (Tuva)
- increase the area of Mongun-Taiga protected area (Tuva)
- develop proposal to designate the Hanhohee mountain range as a strictly protected area (Mongolia)
- development of the Bayan Nuur and Mungut Tsakhir areas as nature preserves (Mongolia)
- creation of a new preserve encompassing the headwaters of the Nariin and Kachik rivers (Tuva)

Tourism Development Plan:

The Uvs Nuur Basin may take a worthy place in the market of ecological tourism, which enjoys growing popularity. The following types of tours are being arranged for tourists: water travel, hiking, horseback riding, mountain climbing and motor travel.

g. Sources and levels of finance

The nature preserves are financed by the respective states; in addition, the profits made from the organized ecological and scientific tourism are also used for financing purposes. Funds are also accrued through the purchase of permits and payment of fines.

h. Sources of expertise and training in conservation and management techniques

Training is conducted at the republic, state and international levels. Training is also conducted by international organizations such as the United Nations Mongolian Biodiversity Project, the U.S. Peace Corps and the World Wide Fund for Nature. In addition, regional

seminars are also held in Southern Siberia.

i. Visitor facilities and statistics

There are no visitors facilities currently established. Thus there are no reliable statistics available. However the number of visitors to the area is increasing every year. Tourists may make their own travel plans; no organized travel services are currently available.

j. Property management plan and statement of objectives

Management plans for Russian and Mongolian parts of the basin was completed in 2000. (Appendix B)

k. Staffing levels (professional, technical, maintenance)

The Coordinators:

(Mongolia) S. Banzragch

(Russia) Prof. V. Bugrovskii — scientific chief. United Scientific Council.

Deputies:

Directors of the Preserves: "Uvs Nuur" — B. Ganbold, "Ubsunur Hollow" — A. Doduk.

Assisting organizations:

Uvs Nuur International Center for Biosphere Research (Tuva)
Siberian Branch of the Russian Academy of Science (Tuva)
Geological and Geo-Ecological Institutes of the Mongolian Academy of Science
International and local research groups
Specialists, Inspectors and Rangers of the nature preserves

5. Factors Affecting the Property

a. Development Pressures (e.g., encroachment, adaptation, agriculture, mining)

During, the last decades one can witness the revival of many ecological traditions and a more careful attitude towards nature; the people dwelling on the territory of the basin restore cult places and revive (ceremonial) rites of worshipping at sacred places. Ecological traditions and customs are studied on the basis of experimental ecological schools (villages - Moron, Khandogeity). The program covers a wide range of questions concerning ecological culture of nomads and a study of patrimonial grounds.

The sacred territories are considered ethnic preserves. Currently these sacred territories are reservations of rare species of plant and animals. The recent move away from traditional patterns of nomadic life and thus also from frequent pasture rotation has resulted in over-grazing and other degradation of land plots near populated areas and watering places.

One more danger is wind and water erosion of arable lands. Safety measures include the discontinuance of ploughing up of new lands, cultivation and improvement of quality of already ploughed up farmlands and a scientific approach to traditional types of nature-usage.

b. Environmental Pressures (e.g., pollution, climate change)

This property can by regarded as an ecologically pure territory due to the absence of mining and processing industries. Periodic climate fluctuations don't cause irreversible damage to the ecosystem's integrity.

c. Natural disasters and preparedness (earthquakes, floods, fires, etc.)

Fires happen in wood and steppe ecosystems. Other disastrous phenomena haven't been

observed so far. Floods bring disasters — sweep bridges and agricultural constructions in valleys of rivers destroy roads. Earthquakes of large force haven't been observed during visible time. Archaeological monuments — barrows and burial places, rock drawings undergo the influence of time, climatic factors, natural processes.

d. Visitor/tourism pressures

At present there is no significant pressure from tourists and visitors to the area. In the future ecological and scientific tourism will be developed.

e. Number of inhabitants within property, buffer zone

The population dwelling on the territory of the UNB:

Tuva - no permanent inhabitants.

Mongolia - 1069 herders. They move from one place to another whole year around.

6. Monitoring

a. Key indicators for measuring state of conservation

1) Safety of landscapes, their biodiversity, landscapes serve as indicators as they are clusters of the Preserves reflecting variety of natural complexes of the property.

2) A great majority of endemic, rare and endangered species of plants and animals live in this basin, thus their protection and allow to monitoring their populations. There are 19 endemic species of plants in the property; 94 rare species, and 51 relict species. Mammals are represented by 22 rare species, reptiles by 4 rare species. (Appendix C)

The monitoring of the state and fluctuations of steppe ecosystems being under influence of natural and anthropogenic factors was started in 1986.

b. Administrative arrangements for monitoring property

An agreement has been made to work together on the monitoring of" the are and to share resources and information with one another. This agreement was signed by representatives of six organizations: the protected areas' directors (Mongolia and Tuva). the director of the hydrometeorological center (Mongolia), the aimag Nature and Environment Department (Mongolia), Chairman of the Nature and Environment Department (Tuva) and the director of the International Uvs Nuur Center for Biosphere Research (Tuva).

Scientific research concerning the complex study of the nature of the property started in 1986 in accordance with the "Experiment Uvs Nuur" program. Every other year scientific symposiums are held where the results of research works are discussed and reviewed; some of the reports are published.

c. Results of previous reporting exercises

For a list of previous publications, refer to section 7.(d).

7. Documentation

a. Photographs, slides and, where available, film/video

Photos of the property contained in the Appendix D.

Collection of slides represented all the main natural complexes of the territory and video materials were included in the package of documents presented to the World Heritage Center in 1995.

b. Copies of property management plans and extracts of other plans relevant to the property

In Mongolia and Tuva the area of the basin currently protected as designated strictly protected areas total 1 068 853,5 ha. The governments of Russia and Mongolia have produced and approved the following documents related to the property (Appendix B):

1. Federal Law of Russian Federation «On especially protected nature territories», 1995.
2. Decree of the Government of the Tyva Republic «On special status of nature-use in the Ubsunur hollow» of 5.09.1994 ? 360.
3. Decree of the Government of Russian Federation «On creation of «The Ubsunur Hollow» state nature preserve» of 24.01.1993 ? 52.
4. Decree of the Government of Russian Federation «On enlargement of «The Ubsunur Hollow» state nature preserve» of 21.04.2000 ? 372.
5. Regulations «On «The Ubsunur Hollow» state nature preserve» of 8.02.1996, approved by the Ministry of environmental protection and nature resources of Russian Federation.
6. Decree of the Government of the Tyva Republic «On creation of protected zone of «The Ubsunur Hollow» state nature preserve and on approvement of its Regulations» of 15.05.1996 ? 201.
7. Management plan of especially protected areas of the Ubsunur hollow, Russian Federation, 04.2000.
8. Decree of the Government of Mongolia «On creation of the «Uvs Nuur» nature preserve» ? 83, 1993.
9. Decree of the Government of Mongolia «On especially protected areas» ? 9, 1996.
10. Decree of the Government of Mongolia "On approvement of boundaries of especially protected areas» ? 26, 1995.
11. Management plan of especially protected areas of the Ubsunur hollow, Mongolia, 04.2000.
12. Resolution of Presidium of the citizen`s representative Hural of the Uvs aimag "On establishment of the Tes River SPA" of 10.01.2003 ? 2.
13. The conservation regime of the Tes River SPA of 10.01.2003.
14. Agreement on science co-operation between State Committee for Ecology of the Tyva Republic (Russian Federation) and Ubsunur Direction of nature protection and environment (Mongolia) of 18.06.1998.
15. Protocol of co-operation of “The Ubsunur Hollow” and “Uvs Nuur” nature preserves of 09.09.2000.

c. Lists of plant and animal species (Appendix C)

1. List of rare, relict and endemic plant species of the Ubsunur hollow.
2. List of rare, relict and endemic bird and mammal species of the Ubsunur hollow.

d. Bibliography

1. Experiment Uvs-Nur. Collection scientific papers, Pushino 1986, 291 p.
2. Uvs-Nuur Basin- the natural model of biosphere. Collection scientific papers, Pushino 1990,554 ?.
3. Uvs-Nuur as an unique test region for biosphere research, Pushino 1991,51 p. (in English).
4. World of Uvs-Nuur Basin scientific-popular album. Pushino 1991, 246 slides, 156 ?., Novosibirsk, 1994.
5. Global change and Uvs-Nuur, International conference, Ulaanbaatar, 1991, 162 ?.

6. Experiment "Uvs-Nur". Collection of selected scientific papers, Pushino, 1993. 430 p. (in English).
7. Methodic of local, regional and global biosphere monitoring, Reports of Third international symposium on International program "Experiment Uvs-Nur", Intellect, Moscow, 1994. 132 p.
8. Global monitoring and Ubs-Nuur basin. Reports of IV International symposium on results of international biosphere monitoring scientific program "Experiment Uvs-Nuur". Moscow, Intellect, 1996.
9. Experiment Uvs-Nuur. 1,2 parts. Collection monograph. Moscow, intellect, 1995.

e. Addresses where inventory, records and archives are held

✍ Uvs Nuur Basin Strictly Protected Areas Administration Center

Director B. Ganbold

Ulaangom, Uvs Aimag, Mongolia

e-mail: uvsnuur@magicnet.mn

✍ "Ubsunur Hollow" Preserve

Director Andrian Doduk

Erzin, Tuva, Russia

✍ Uvs Nuur International Center for Biosphere Research

Director Svetlana Kurbatskaya

Internalionaya 1 I7A, Kyzyl, Tuva, Russia

e-mail: root@umc.tuva.su

✍ Committee of Natural Recourses of Tuva Republic

Moskovkaya 2, Kyzyl, Tuva, Russia

✍ Ministry of Natural Recourses of the Russian Federation

Russia, 123812 Moscow, B. Gruzinskaja 4/6 st.

✍ Geological Institute of the Mongolian Academy of Science

Ulaanbaatar, Mongolia

✍ Ministry of Nature and Environment Minister S. Bayartsogt

Ulaanbaatar, Mongolia

✍ Geo-Ecological Institute of the Mongolian Academy of Sciences

Ulaanbaatar, Mongolia

8. Signature on behalf of the State Party.

RUSSIA

Deputy Minister
State Committee for Environmental
Protection of the Russian Federation

MONGOLIA

Minister
Ministry for Nature and Environment of
Mongolia

APPENDIX A

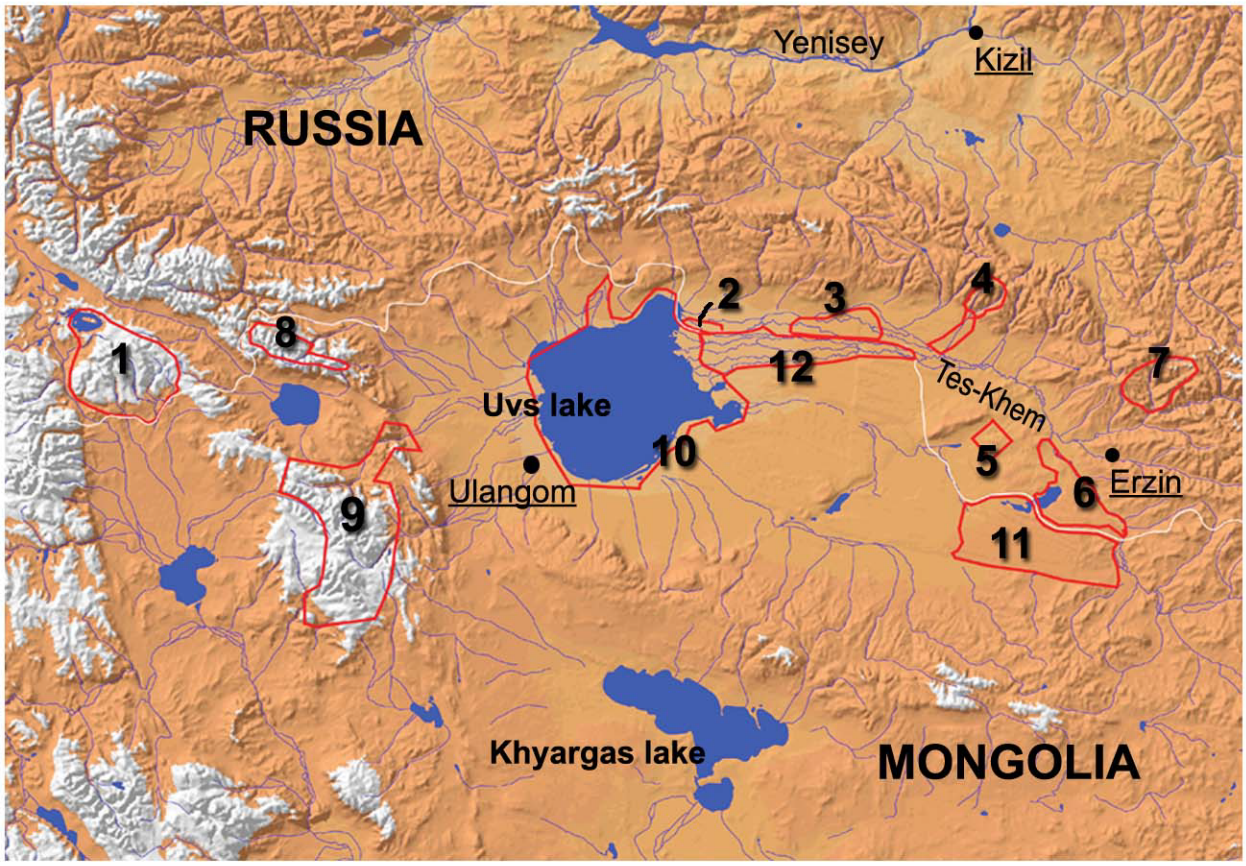
MAPS AND DIAGRAMS

1. Site location on the map of Central Asia
2. Physical-geography map of the Ubsunur basin with marked boundary of the nomination
3. Map of «The Ubsunur Hollow» nature preserve (Russian Federation)
4. Topographic map of the Uvs Nuur basin with marked boundary of the nomination
4. Diagram of «Mongun Taiga» cluster and its buffer zone
5. Diagram of «Aryskannyg» cluster and its buffer zone
6. Diagram of «Jamaalyg» cluster and its buffer zone
7. Diagram of «Tsugeer els» cluster and its buffer zone
8. Diagram of «Ular» cluster and its buffer
9. Ecosystems map of the northern part of Uvs Nuur basin
10. Diagram of the «Uvs Nuur» nature preserve (Mongolia)
11. Diagram of «Tsagan shuvuut» cluster and its buffer zone
12. Diagram of «Turgen» cluster and its buffer zone
13. Diagram of «Uvs Lake» cluster and its buffer zone
14. Diagram of «Altan els» cluster and its buffer zone
15. Ecosystems of «Tsagan shuvuut» cluster
16. Ecosystems of «Turgen» cluster
17. Ecosystems of «Uvs Lake» cluster
18. Ecosystems of «Altan els» cluster
19. Diagram of «Tes River» cluster

Map 1. Site location on the map of Central Asia

- boundaries of the site

Map 2. Physical-geography map of the Uvs Nuur basin with marked boundary of the nomination



The "Ubsunur Hollow" nature preserve (Russia):

1. "Mongun Taiga" cluster
2. "Ubsu-Nur" cluster
3. "Oroku-Shinaa" cluster
4. "Aryskannyg" cluster
5. "Jamaalyg" cluster
6. "Tsugeer els" cluster
7. "Ular" cluster

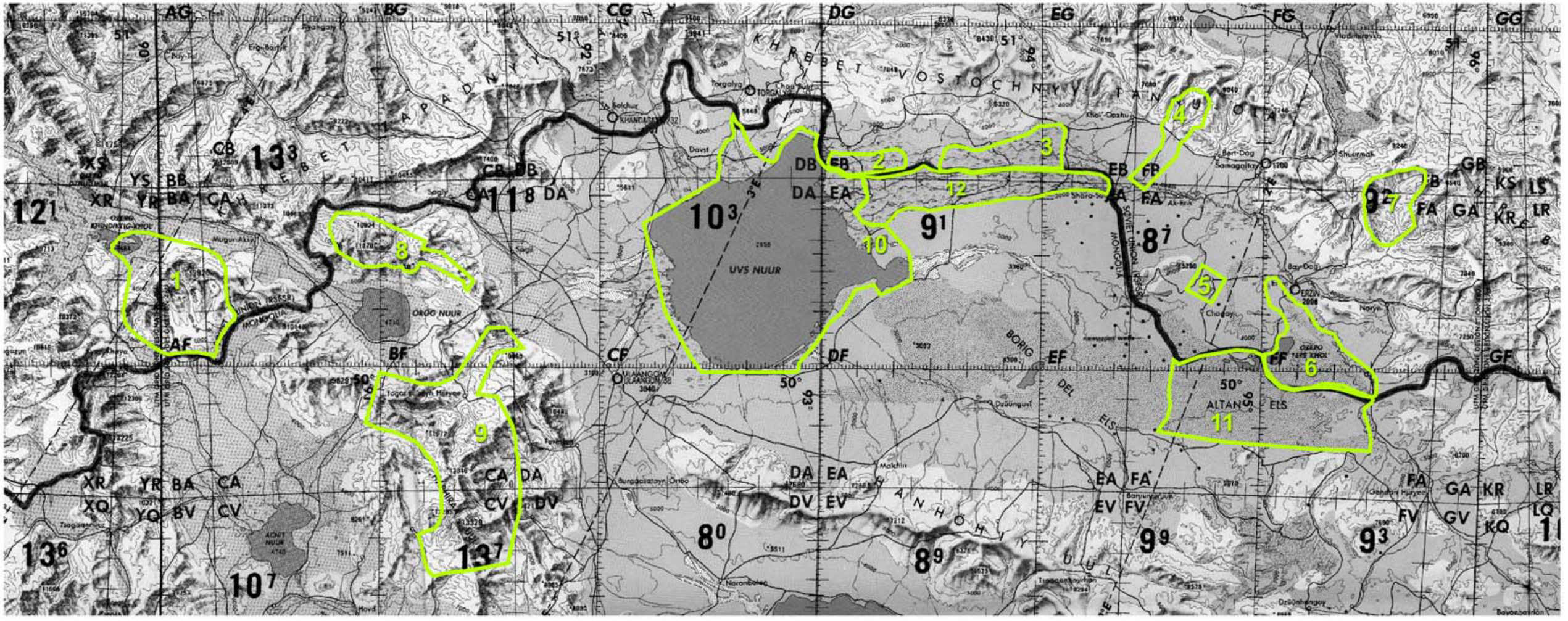
The "Uvs Nuur" nature preserve (Mongolia):

8. "Tsagan shuvuut" cluster
9. "Turgen" cluster
10. "Uvs lake" cluster
11. "Altan els" cluster
12. “Tes River” cluster

Map 3. "The Ubsunur Hollow" nature preserve (Russian Federation)

- boundaries of the preserve

Map 4. Topographic map of the Uvs Nuur basin with marked boundary of the nomination



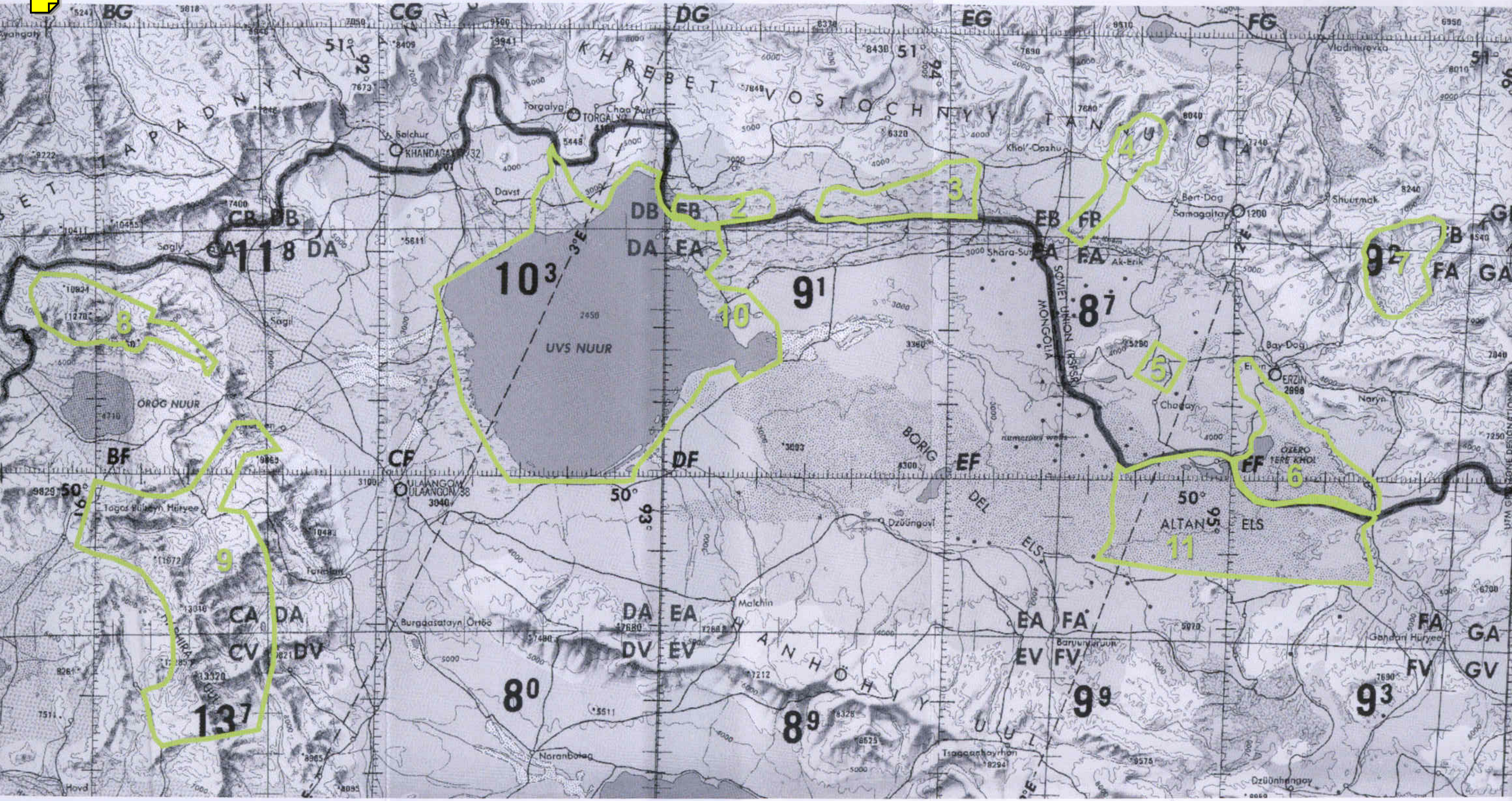
Scale: 1 : 1 000 000

The "Ubsunur Hollow" nature preserve (Russia):

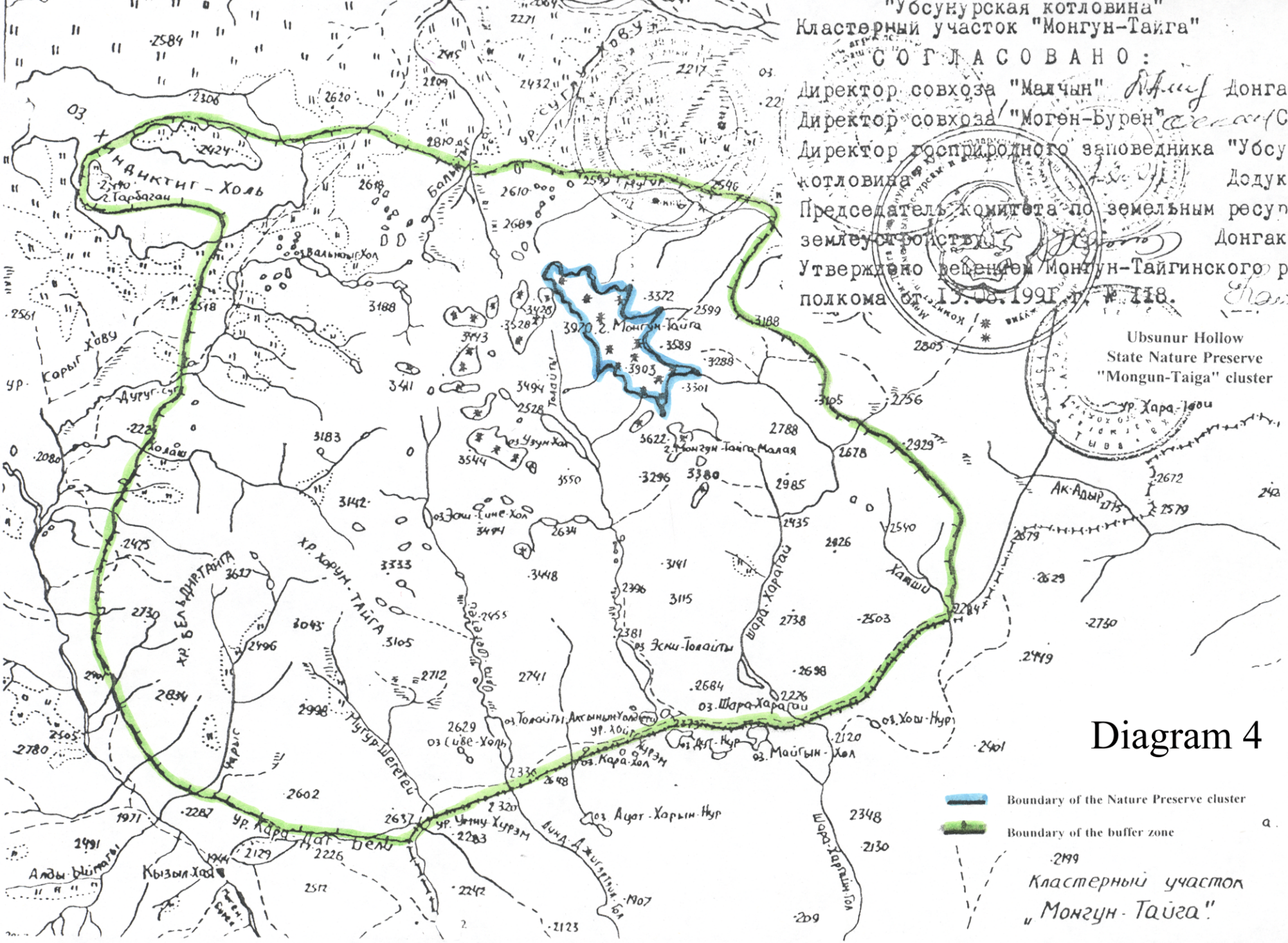
1. "Mongun Taiga" cluster
2. "Ubsu-Nur" cluster
3. "Oroku-Shinaa" cluster
4. "Aryskannyg" cluster
5. "Jamaalyg" cluster
6. "Tsugeer els" cluster
7. "Ular" cluster

The "Uvs Nuur" nature preserve (Mongolia):

8. "Tsagan shuvuut" cluster
9. "Turgen" cluster
10. "Uvs lake" cluster
11. "Altan els" cluster
12. “Tes River” cluster



KHREBET VOSTOCHNYY TANNU OLA
ZAPADNYY
UVS NUUR
ÖRÖG NUUR
BORIG DEL ELS
ALTAN ELS
HANHÖHIY UUL
SOVIET UNION (RSFSR)
MONGOLIA
Torgalyg
Solchur
Davst
Khol'-Ozhu
Bert-Dag
Samagaltay
Shuurmak
Vladimirovka
Shara-Sur
Ak-Erik
Bay-Dag
ERZIN
Naryn
Choduy
OZERO TERE KHOL'
Sagly
Sagil
ULAANGOM
Dzüüngovi
Malchin
Burgaasatayn Örtöö
Baruunturuun
Naranbulag
Tsagaanhayrhan
Dzüünhangay
Gandan Hüryee
Togos Bulagiyn Hüryee
Tarialan
Hovd
1
2
3
4
5
6
7
8
9
10
11
10³
11⁸
9¹
8⁷
9²
8⁰
8⁹
9⁹
9³
13⁷


"Убсунурская котловина"
Кластерный участок "Монгун-Тайга"
С О Г Л А С О В А Н О :
Директор совхоза "Малчын" Донгак А.К.
Директор совхоза "Могэн-Бурен" Саая В.
Директор госприродного заповедника "Убсунурска
котловина" Додук А.Д.
Председатель комитета по земельным ресурсам и
землеустройству Донгак М.Д.
Утверждено решением Монгун-Тайгинского райис-
полкома от 15.08.1991 г. № 118.
Ubsunur Hollow
State Nature Preserve
"Mongun-Taiga" cluster
Diagram 4
Boundary of the Nature Preserve cluster
Boundary of the buffer zone
Кластерный участок
„Монгун-Тайга"

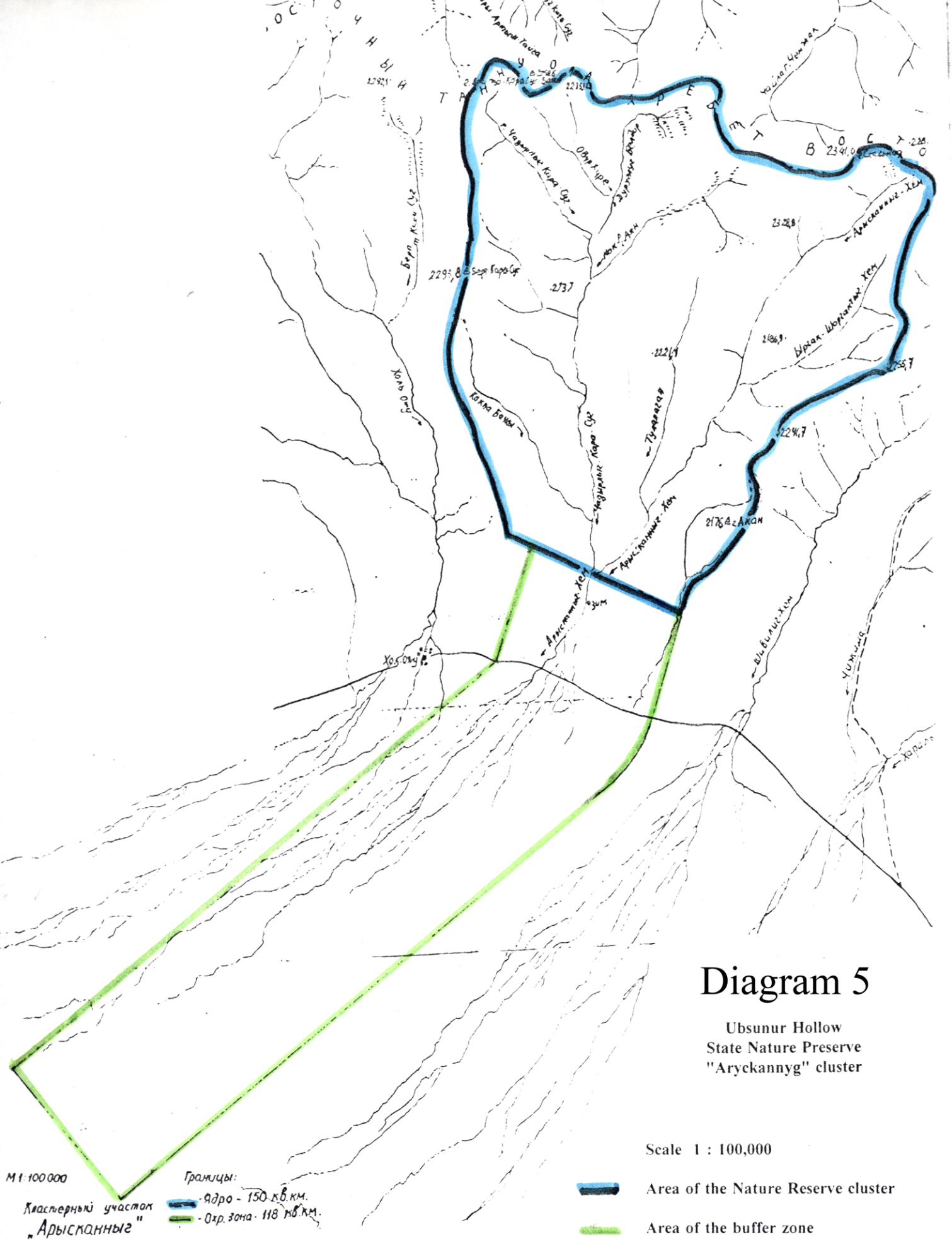


Diagram 5

Ubsunur Hollow
State Nature Preserve
"Aryckannyg" cluster

Scale 1 : 100,000

Area of the Nature Reserve cluster

Area of the buffer zone

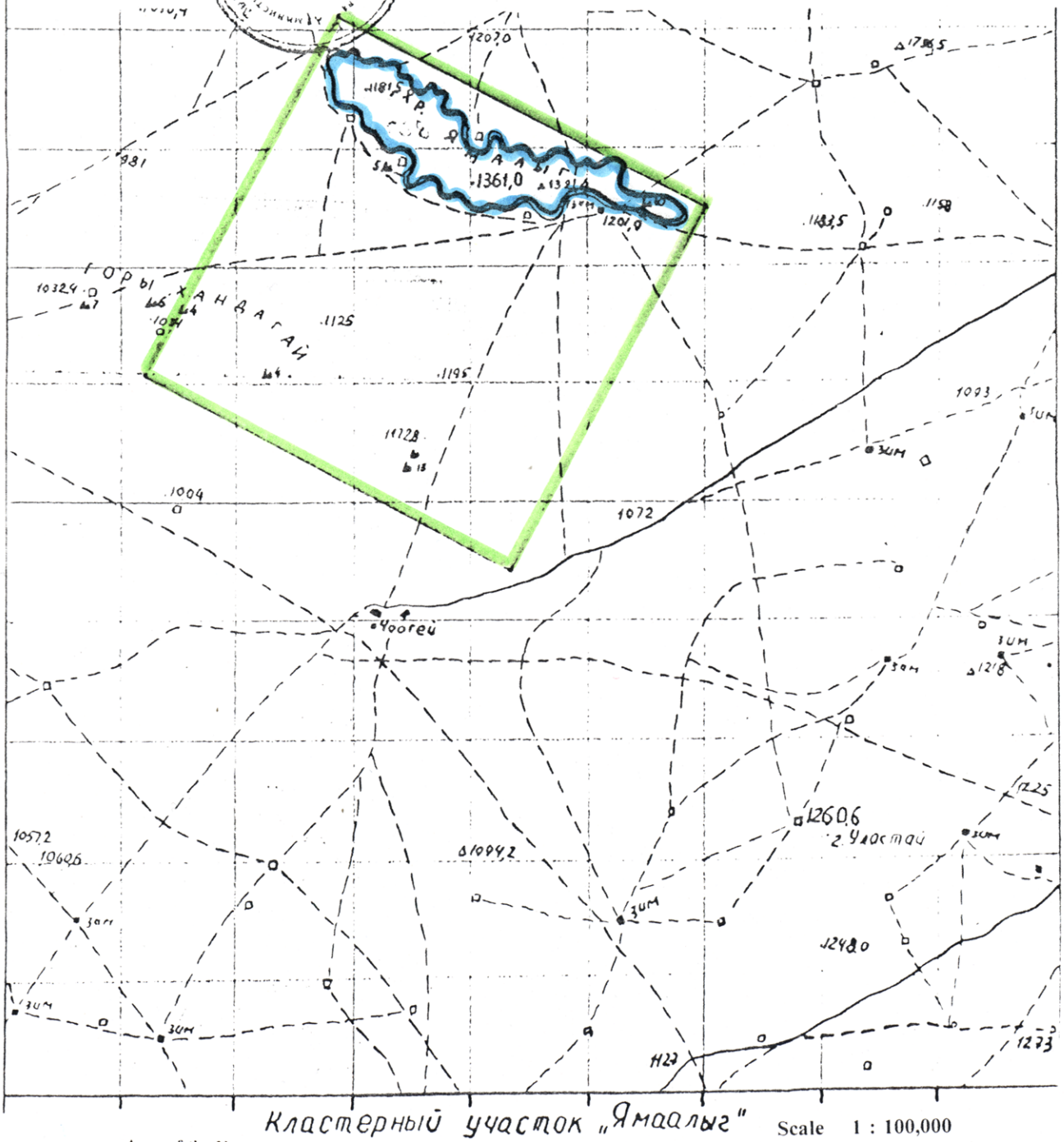
Diagram 6

Ubsunur Hollow
State Nature Preserve
"Yamaalyg" cluster

Госприродный заповедник
"Убсунурская котловина"
Кластерный участок "Ямаалыг"

С О Г Л А С О В А Н О

Директор коллективного предприятия "Новый-Путь":
/ Тулуш А.Ш./
Директор госприродного заповедника "Убсунурская
котловина" /Додук А.Д./
Председатель комитета по земельным ресурсам и
землеустройству /Долмажап В.С./
Утверждено решением Эрзинского Райисполкома
№ 53 от 26.06.92 /Калгахоо Е.К./



Кластерный участок „Ямаалыг" Scale 1 : 100,000

Area of the Nature Preserve cluster - 800 hectares

Area of the buffer zone - 4000 hectares

Diagram 7

Ubsunur Hollow
State Nature Preserve
"Tsugeer Els" cluster

Госприродный заповедник
"Убсунурская котловина"
Кластерный участок "Цугээр Элс"

СОГЛАСОВАНО

Директор коллективного предприятия "им. В.И.Ленина": /Севилбаа Б.Ч./

Директор госприродного заповедника "Убсунурская котловина" /Додук А.Д./

Председатель комитета по земельным ресурсам и землеустроиству /Долмажап В.С./

Утверждено решением Тээлинского Райисполкома № 53 от 26.06.92 /Калгахоо Б.К./

M 1:200000

Границы:

Boundary of the Nature Preserve cluster 49 км²

Boundary of the buffer zone 500 км²

Boundaries

A-B Boundary with the Lenin Collective

B-C Boundary with the Narin Collective

C-D Border with Mongolia

D-A Boundary with the Moren Collective

Scale 1 : 200,000

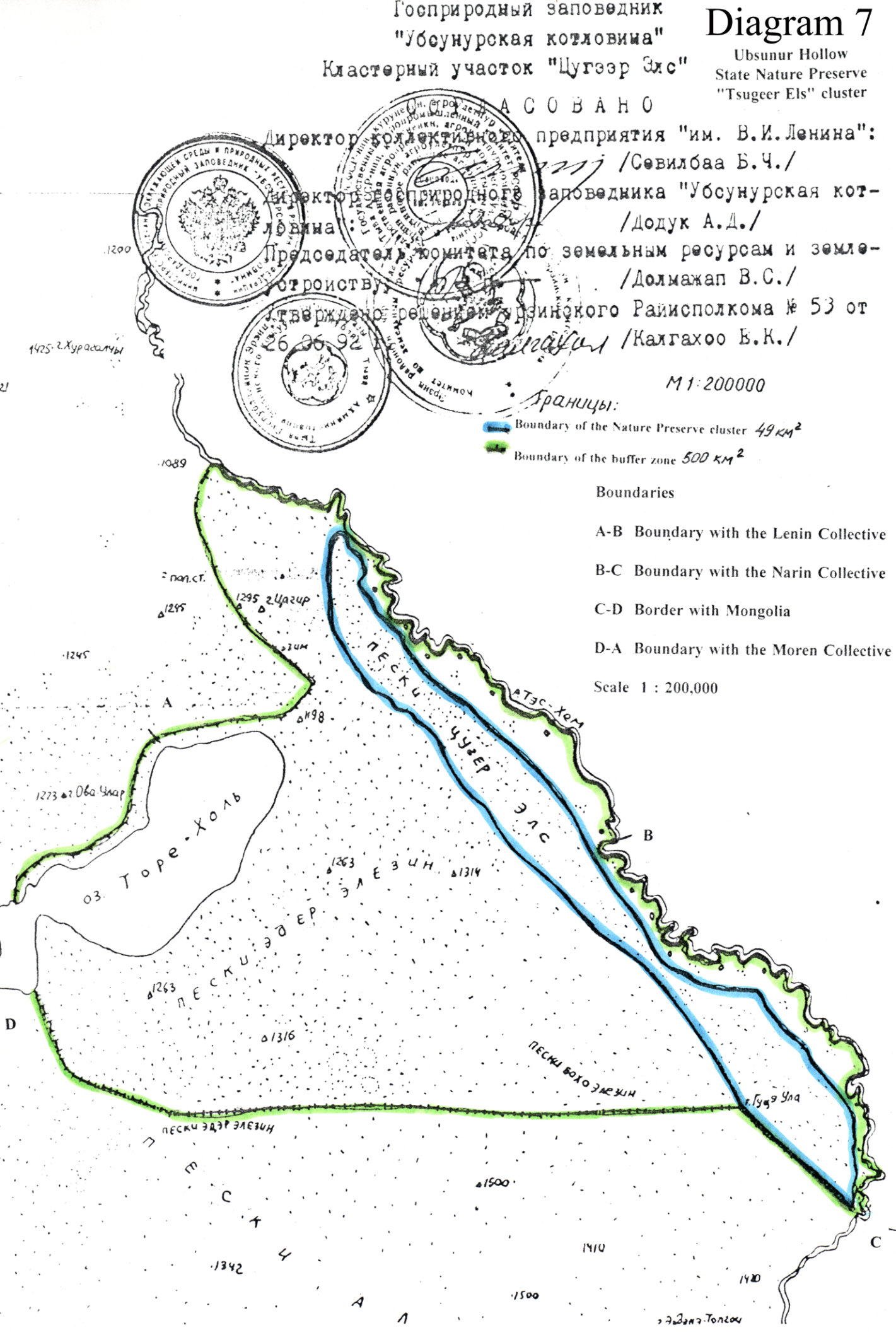


Diagram 8

Ubsunur Hollow
State Nature Preserve
"Ular" cluster

Госприродный заповедник
"Убсунурская котловина"
Кластерный участок "Улар"

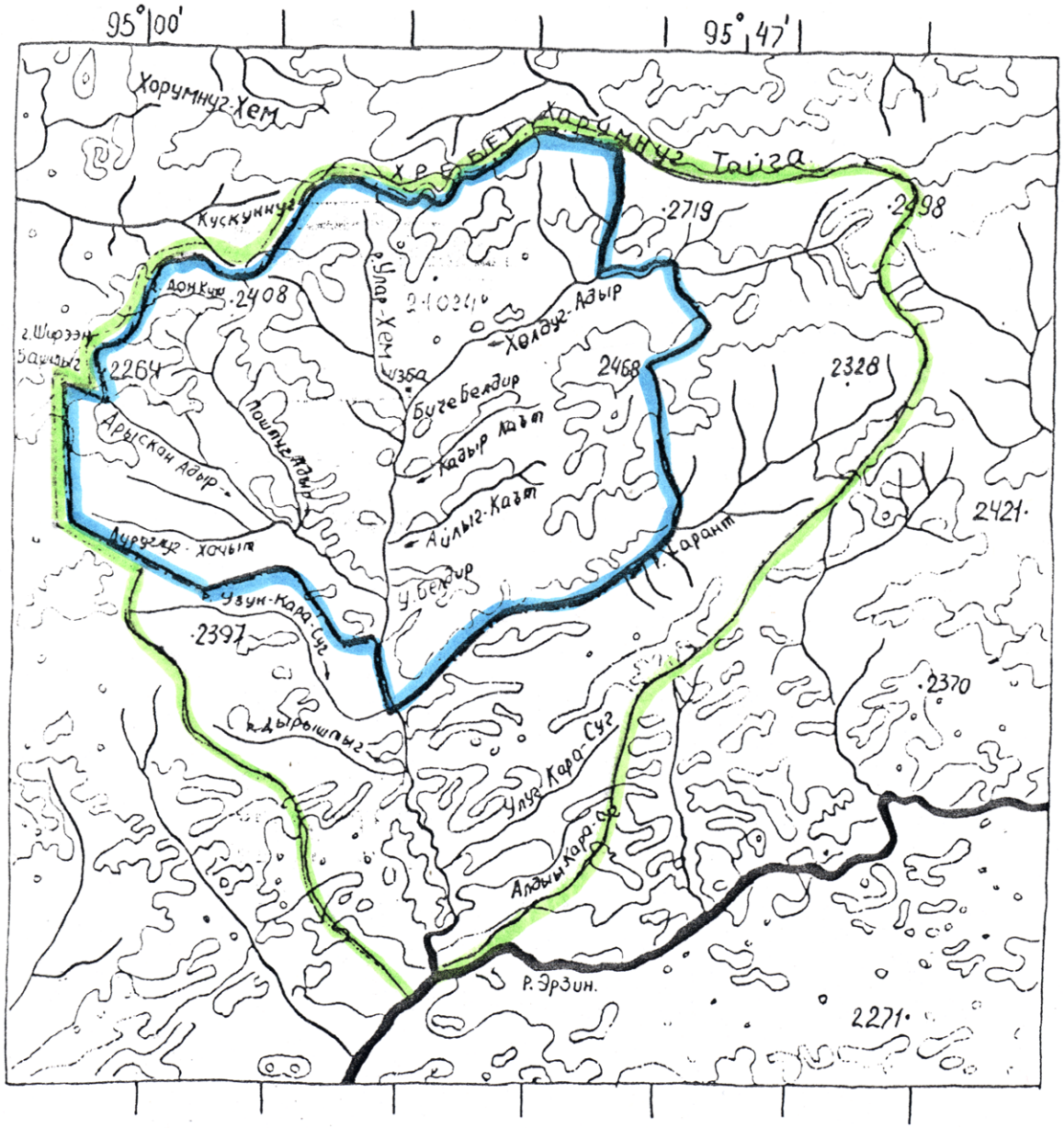
С О Г Л А С О В А Н О

Директор коллективного предприятия "Морен": /Доржу А.К./

Директор госприродного заповедника "Убсунурская котловина": /Додук А.Д./

Председатель комитета по земельным ресурсам и землеустройству: /Долмажап В.С./

Утверждено решением Эрзинского Райисполкома
№ 53 от 26.06.92 г. /Калгахоо Е.К./

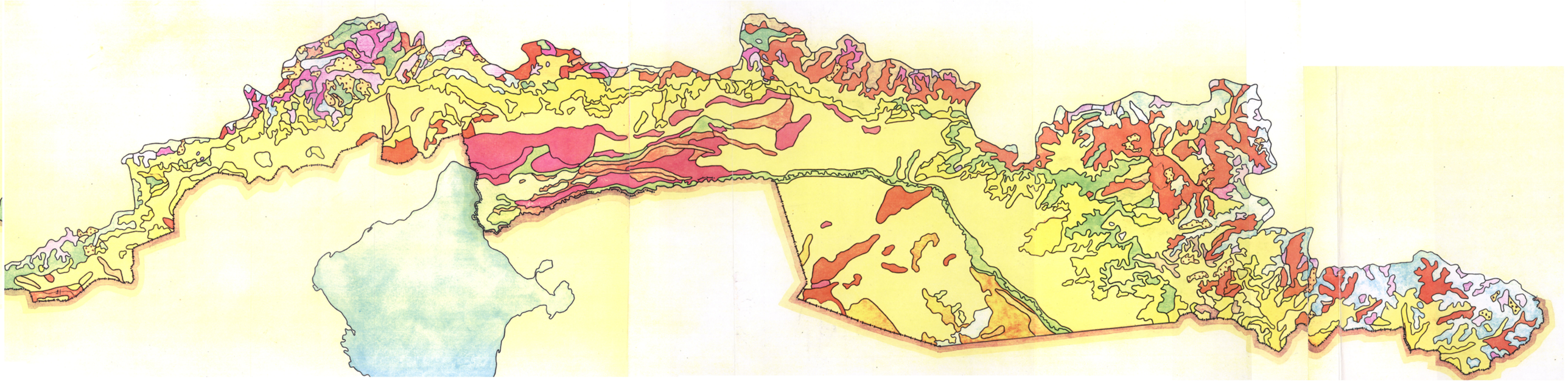


Scale **1 : 200,000** **1cm = 2km**

Boundary of the Nature Preserve cluster — Area of the Nature Preserve cluster - 18,000 hectares

Boundary of the buffer zone — Area of the buffer zone - 20,480 hectares

Map 9. Ecosystems of the northern part of Uvs Nuur basin



RUSSIAN ACADEMY OF SCIENCE • SIBERIAN BRANCH CENTRAL

SIBERIAN BOTANICAL GARDEN

ECOSYSTEM MAP OF THE NORTHERN PART OF UBSU-NUR LAKE BASIN

(WITHIN THE BOARDERS OF TUVA REPUBLIC)

SCALE 1 : 500 000 1995

The authers of special contens: V. P. Sedelnikov, N. B. Ermakov, E. I. Lapshina, A. Ju. Koroljuk, using the materials of A. V. Kuminova, and cooperating with V. M. Khanminchun Technical author T. B. Korabelnikova

LEGEND

HIGH-MOUNTAIN ECOSYSTEMS

1. Tundra and cryophyllus cushion plant communuties *(Potentilla biflora, Rhodiola quadrifida, Saxifraga oppositifolia)* of the stony and cobble ecotopes
2. Dry meadow with *Kobresia myosuroides, Dry as oxyodonta, Cladina stellaris, Cetraria cucullata*
3. Moss-lichen tundra *(Aulacomnium turgidum, Cladina rangiferina, Sajania monstrosa)*
4. Dry dwarf subshrub and shrub communities *(Dry as oxyodonta, Cladina amaurocrea, Cetraria nivalis, Betula rotundifolia)*
5. Moss-low birch thicket tundra *(Betula rotundifolia, Vaccinium vitis-idaea, Hylocomium splendens)*
6. Alpine meadow *(Callianthemum sajanense, Gentiana grandiflora, Sibbaldia procumbens, Festuca kryloviana)*
7. Communities of the high moumtain talus *(Paraquilegia microphylla, Aquilegia borodinii, Rhodiola quadrifida)*

FOREST ECOSYSTEMS

8. Larch and Siberian pine open woodlands at the high limit of the forest *(Larix sibirica, Pinus sibirica, Betula rotundifolia)*
9. Siberian pine and larch true mountain taiga *(Pinus sibirica, Larix sibirica, Vaccinium uliginosum, Hylocomium splendens)*

10. Cryophyte grass-moss larch forests *(Larix sibirica, Carex amgunensis, Rhytidium rugosum)* combined with petrophyte steppe communities on the southern slopes

11. Xeromesophyte grass larch forests *(Larix sibirica, Artemisia tanacetifolia, Carex pediformis, Aster alpinus, Poa sibirica combined* with steppe communities on the southern slopes

STEPPE ECOSYSTEMS

12. Sedge-grass meadow steppe *(Carex pediformis, C. kirilovii, Helictotrichon hookeri, Iris ruthenica, Pulsatilla patens, Bupleurum multinerve)* coupled with xeromesophyte grass larch (Larix sibirica) forests on the northern slopes

13. Herb bunchgrass steppes *(Stipa capillata, Helictotrichon desertorum, Carex pediformis)*

14. Dry low bunchgrass and wormwood steppes *(Stipa krylovii, Koeleria cristata, Festuca valesiaca, Artemisia frigida)*

15. Bunch grass and semishrub desert-like steppes *(Stipa glareosa, Cleistogenes squarrosa, Nanaphyton erinaceum, Kochia prostrate.)*

16. Cryophyte high-mountain steppes *(Festuca lenensis, F. tschujensis, Ptilagrostis mongolica, Kobresia filifolia, Artemisia depauperata)*

17. Petrophyte grass-wormwood *(Stipa orientalis, S. glareosa, Artemisia santolinifolia, A. frigida)* and shrub (Caragana pygmaea) steppes

18. Sandy feather-grass *(Stipa krylovii)* and forb *(Festuca valesiaca, Carex korschinskyi, Potentilla acaulis)* steppes

19. Drift sandy communities *(Hedysarum fruticosum, Oxytropis tragacanthoides, Thymus serpillum)*

ECOSYSTEMS OF THE RIVER VALLEYS

20. Larch-willow-poplar *(Populus laurifolia, Larix sibirica, Salix ledebouriana, Caragana arborescens)* woodlands combined with petrophyte steppe communities

21. Brushwoods *(Caragana spinosa, Hippophae rhamnoides)* combined with small-bunchgrass steppes on the low dry hills

22. Sedge swamp medows *(Carex inervis, Equisetum palustre, E. fluviatile)* with willow shrubs

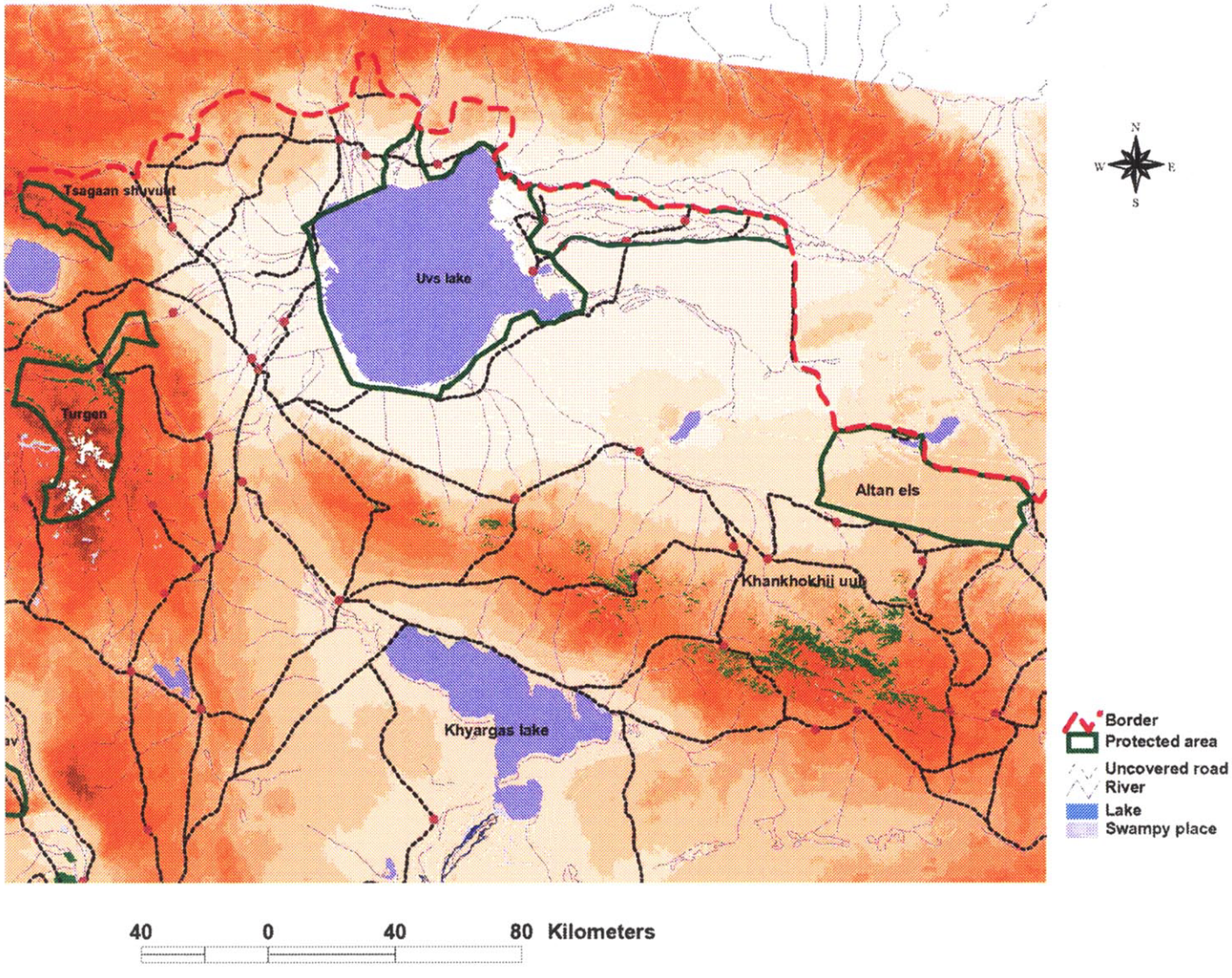
23. Reedy *(Phragmites australis, Typha angustifolia, Scirpus tabernaemontani)* flood-plain communities

24. Salt medows *(Ley-mus paboanus, Achnatherum splendens)*

25. Salt steppes *(Leymus chinensis, Achnatherum splendens, Artemisia frigida)*

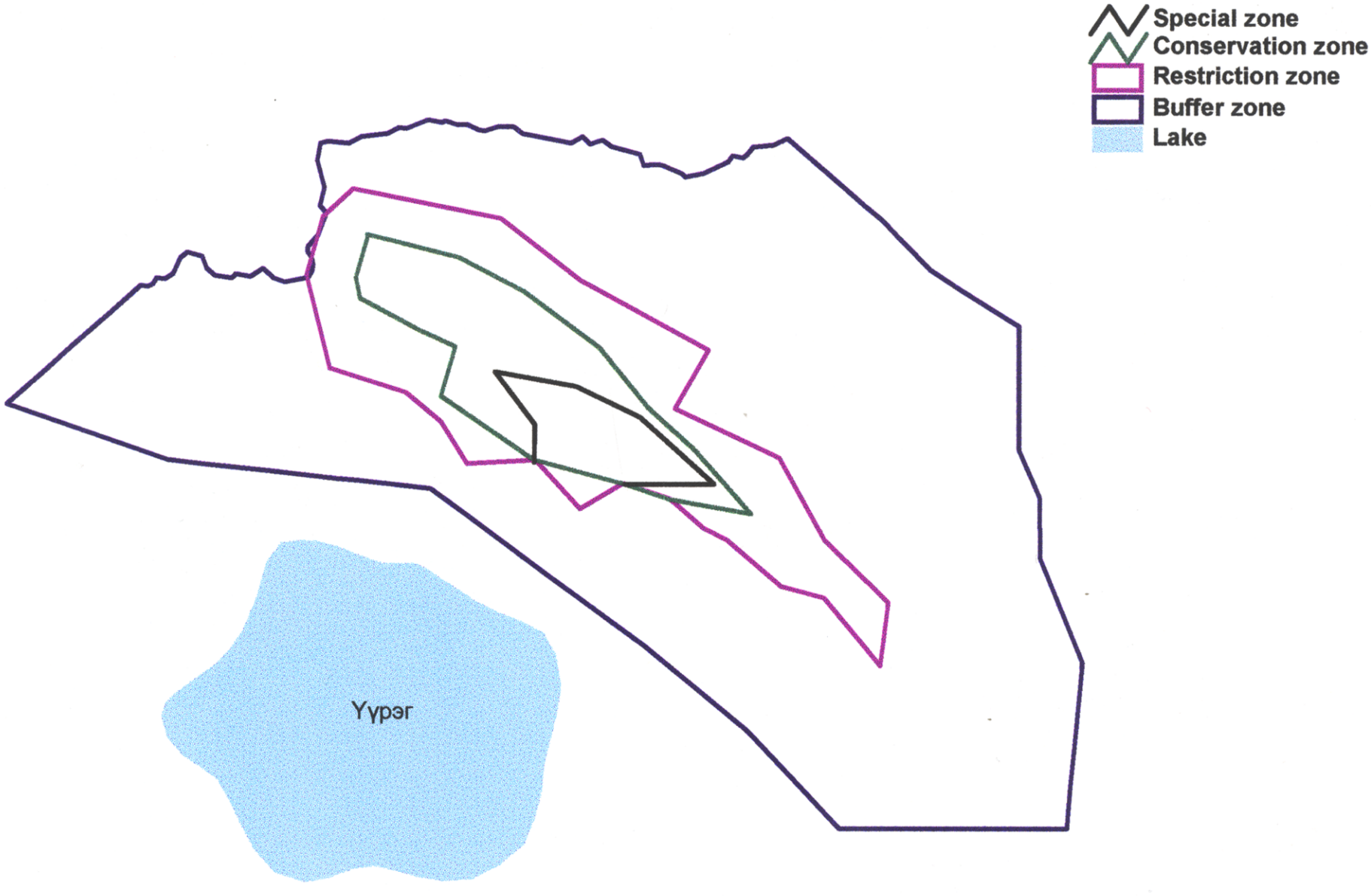
26. Halophyte communities of solontchaks *(Triglochin maritima, Hordeum brevisubulatum)*

Diagram10


Tsagaan shuvuut
Uvs lake
Turgen
Altan els
Khankhokhii uul
Khyargas lake
N
W
E
S
Border
Protected area
Uncovered road
River
Lake
Swampy place
40
0
40
80 Kilometers

Tsagaan shuvuut

Diagram 11



Turgen

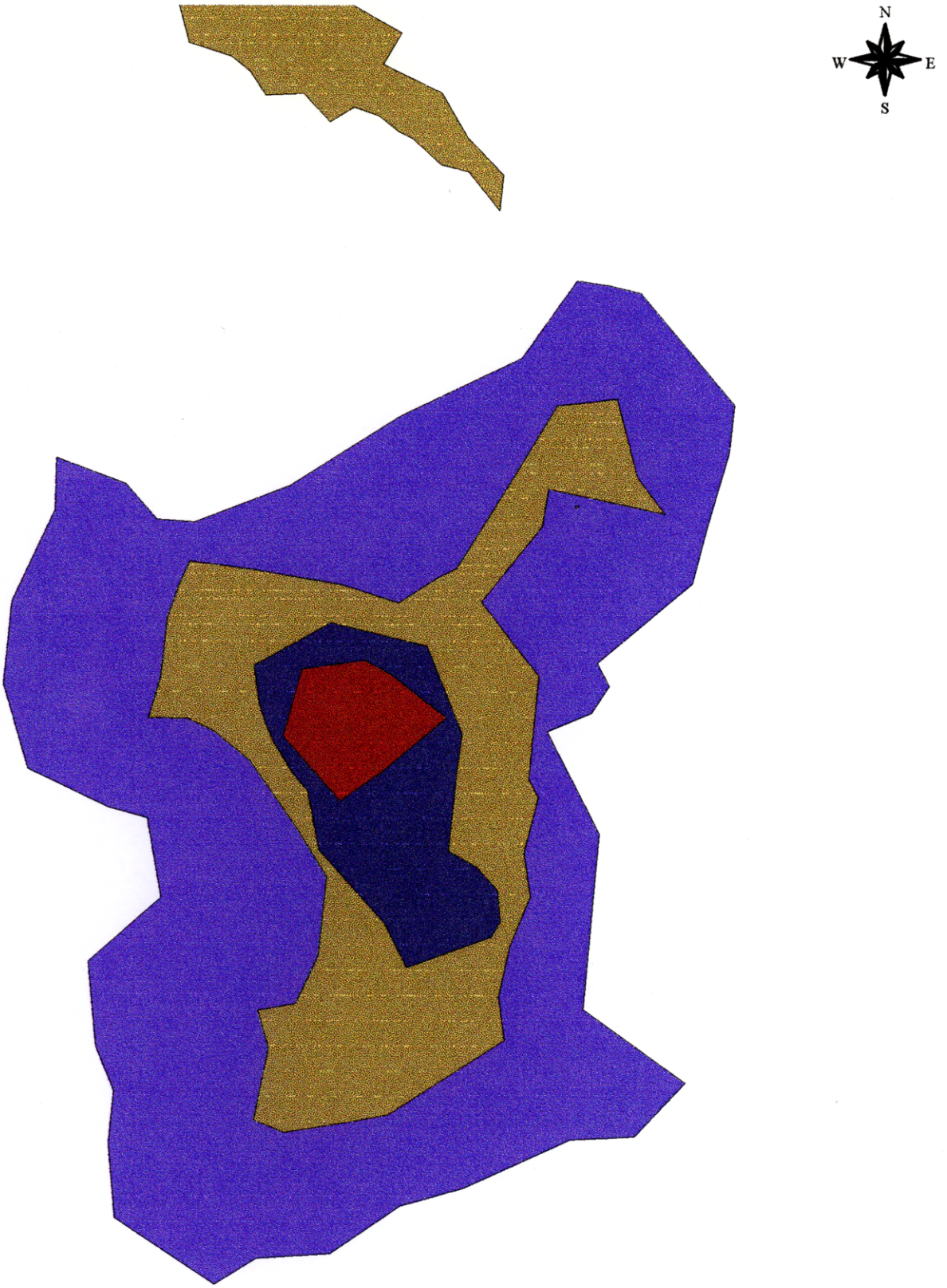


Diagram 12

Special zone
Conservation zone
Restriction zone
Buffer zone

Uvs Lake

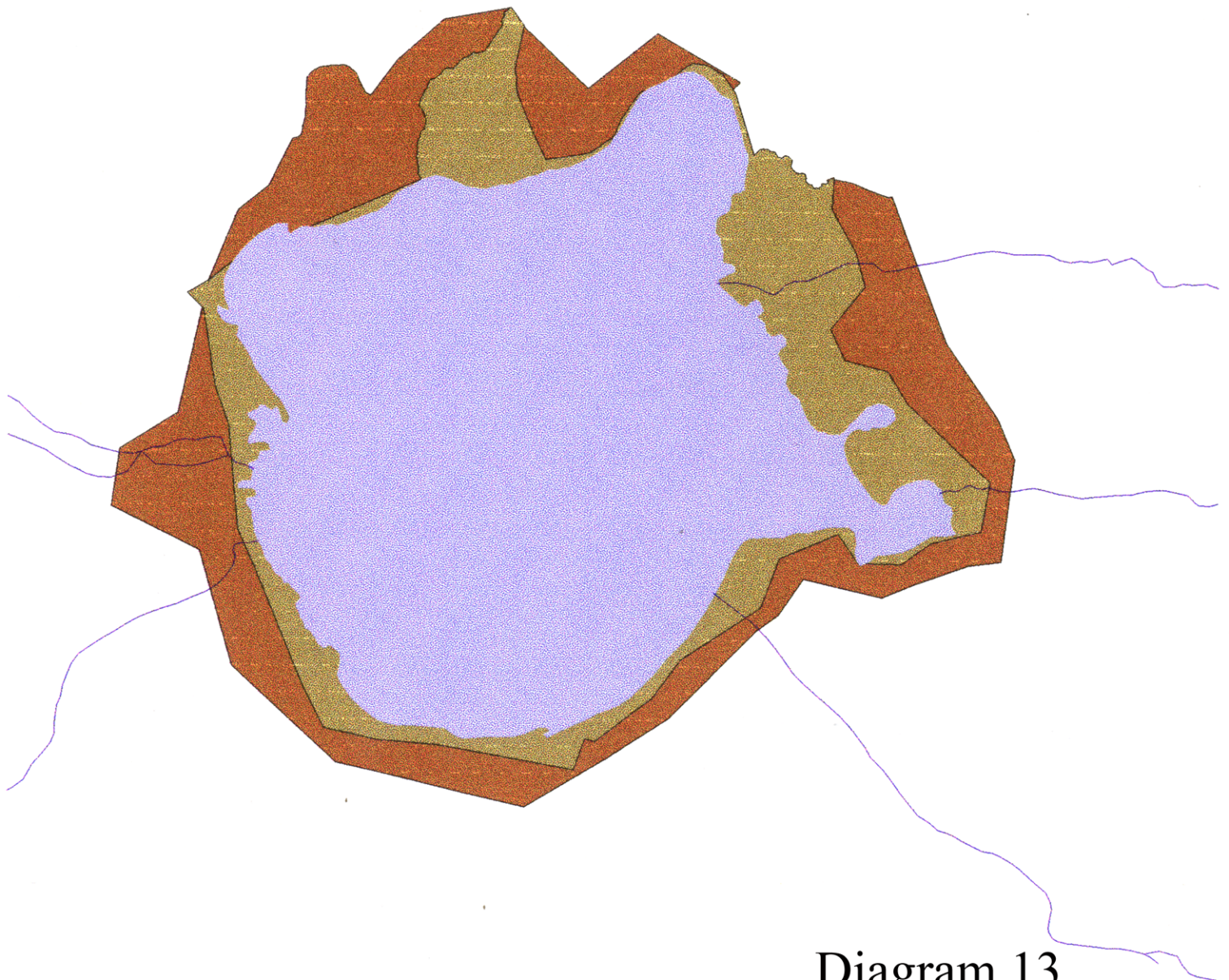
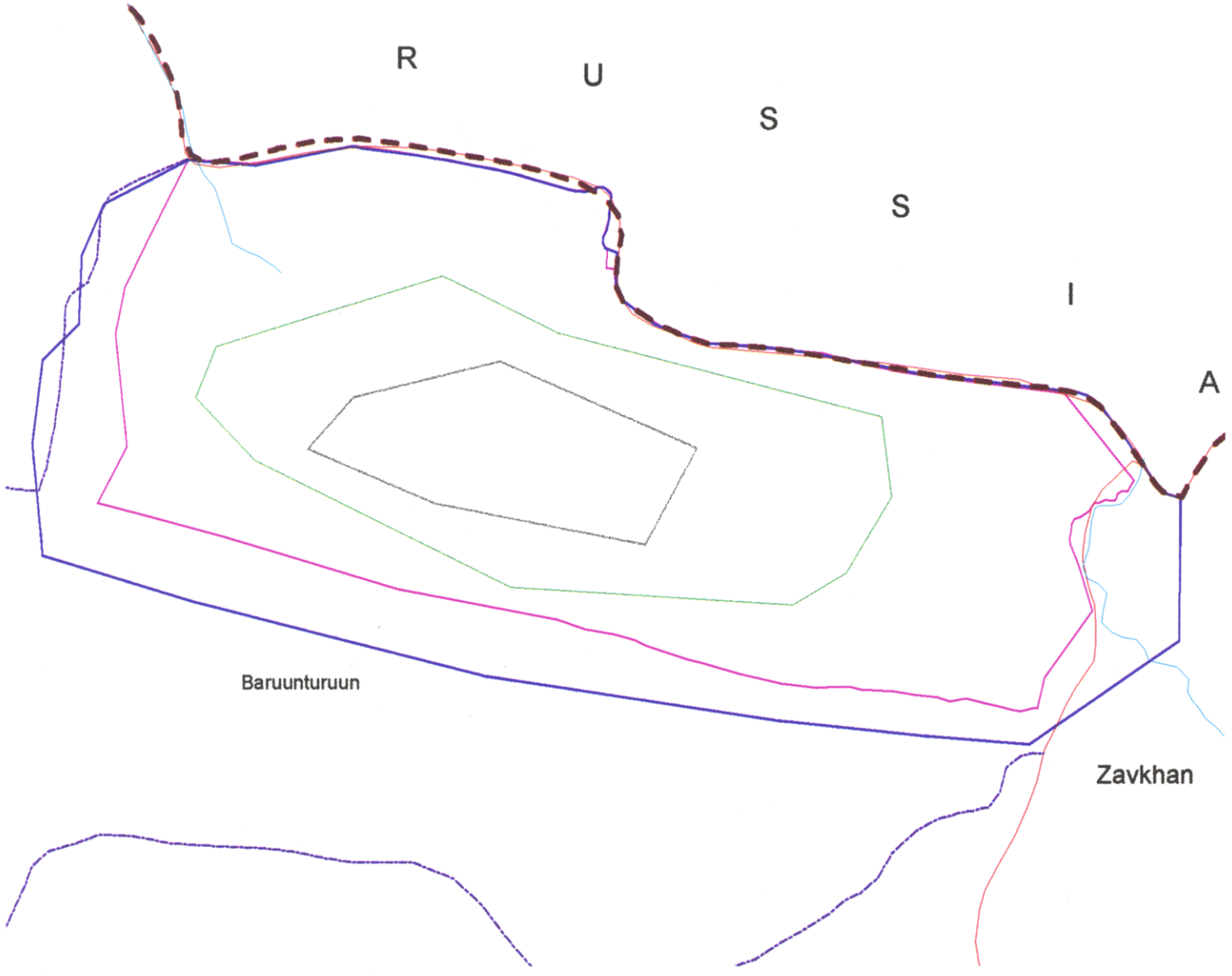


Diagram 13

River
Lake
Rectriction zone
Buffer zone

Protected area "Altan-Els"



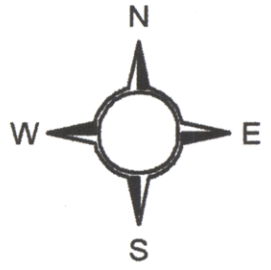
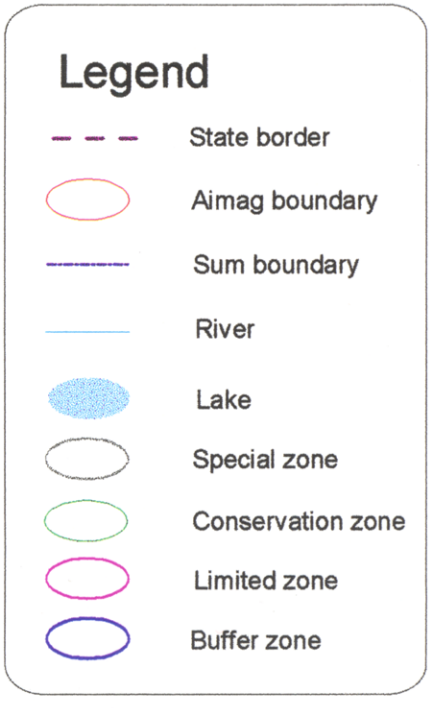
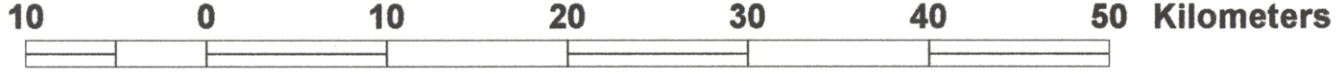


Diagram 14





Ecosystem of "Tsagaanshuvuut uul"

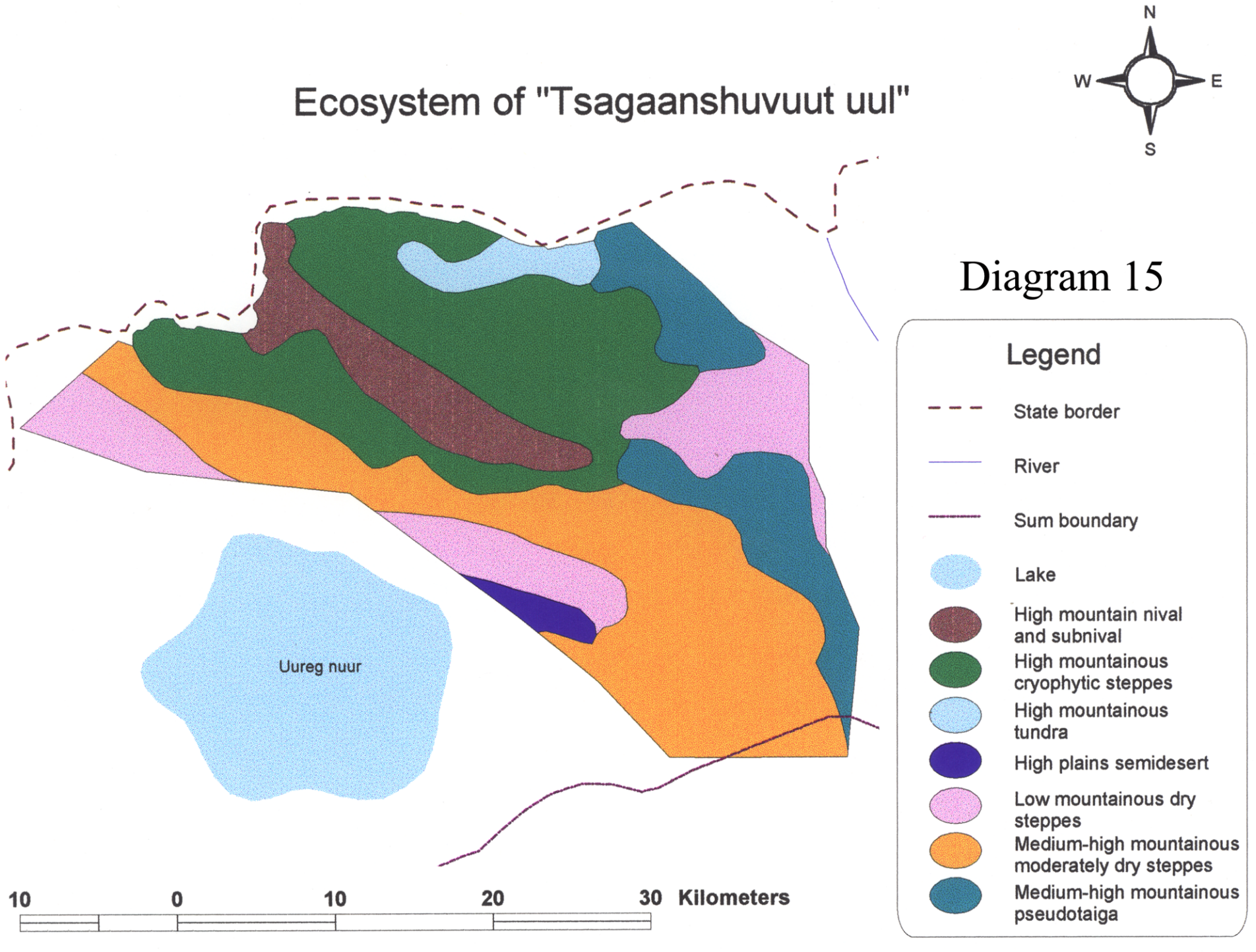


Diagram 15

Legend

- State border
- River
- Sum boundary
- Lake
- High mountain nival and subnival
- High mountainous cryophytic steppes
- High mountainous tundra
- High plains semidesert
- Low mountainous dry steppes
- Medium-high mountainous moderately dry steppes
- Medium-high mountainous pseudotaiga

Ecosystem of "Turgen uul"

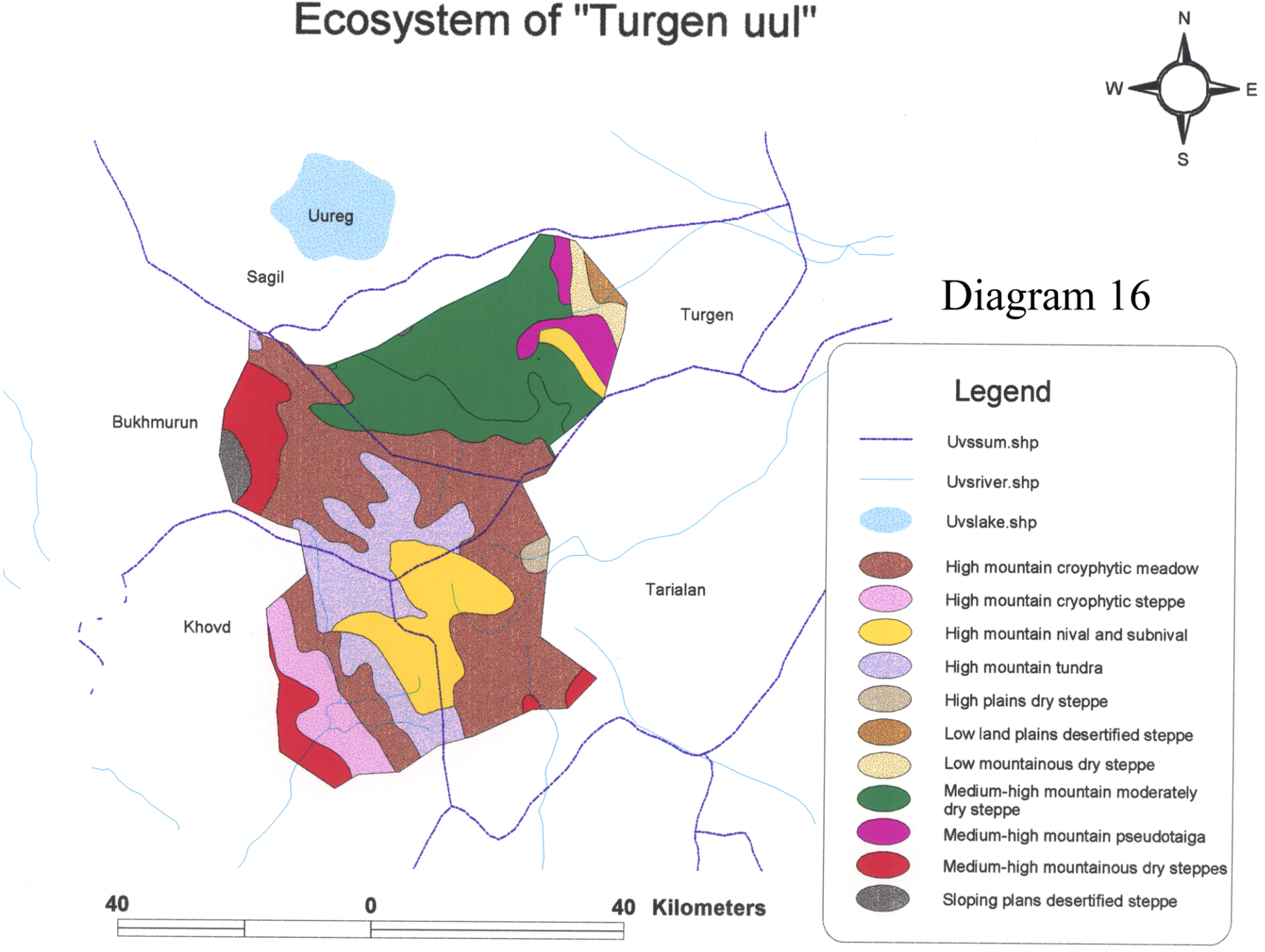


Diagram 16

Ecosystem of "Uvs nuur"

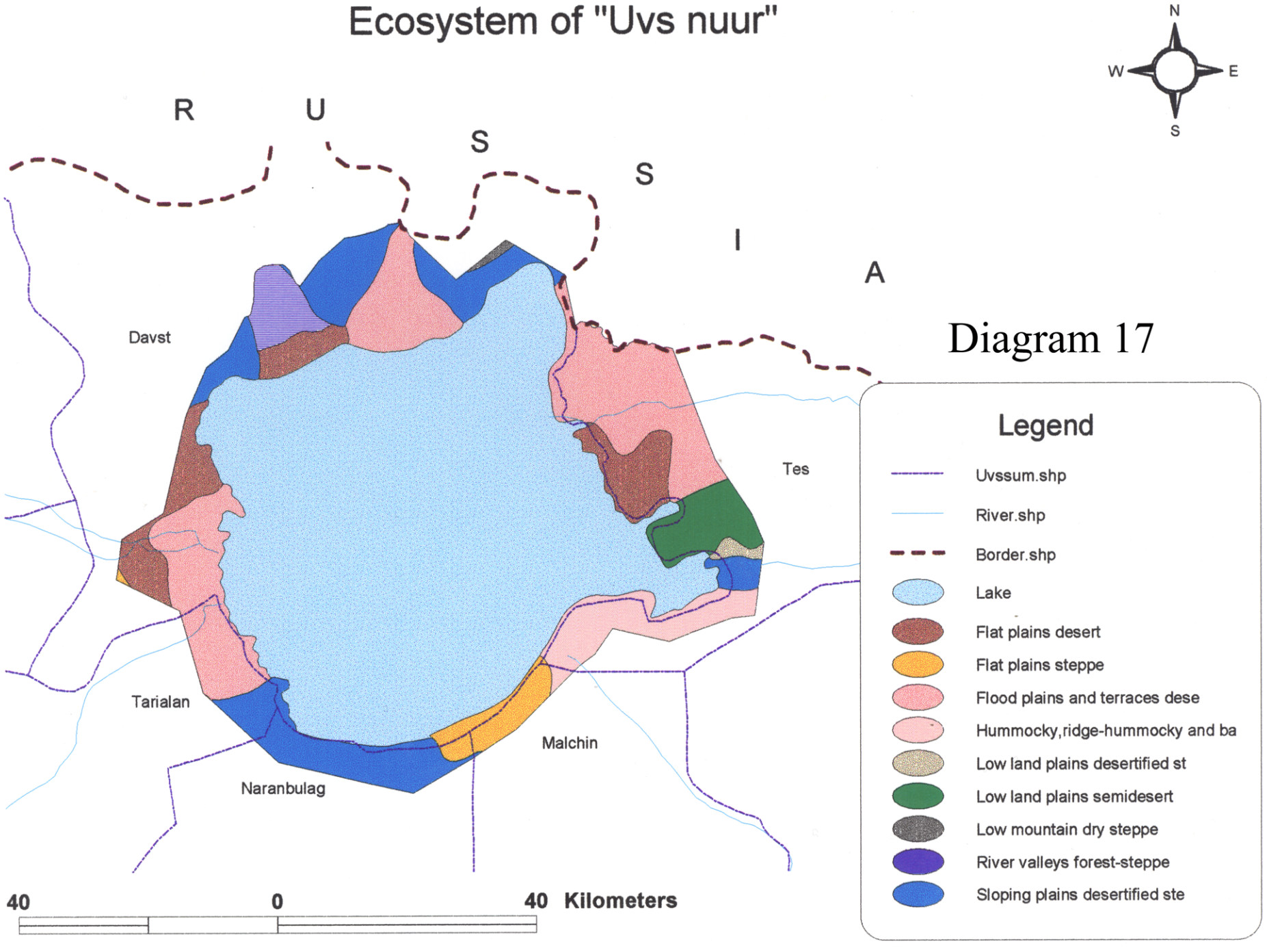


Diagram 17

Ecosystem of "Altan-Els"

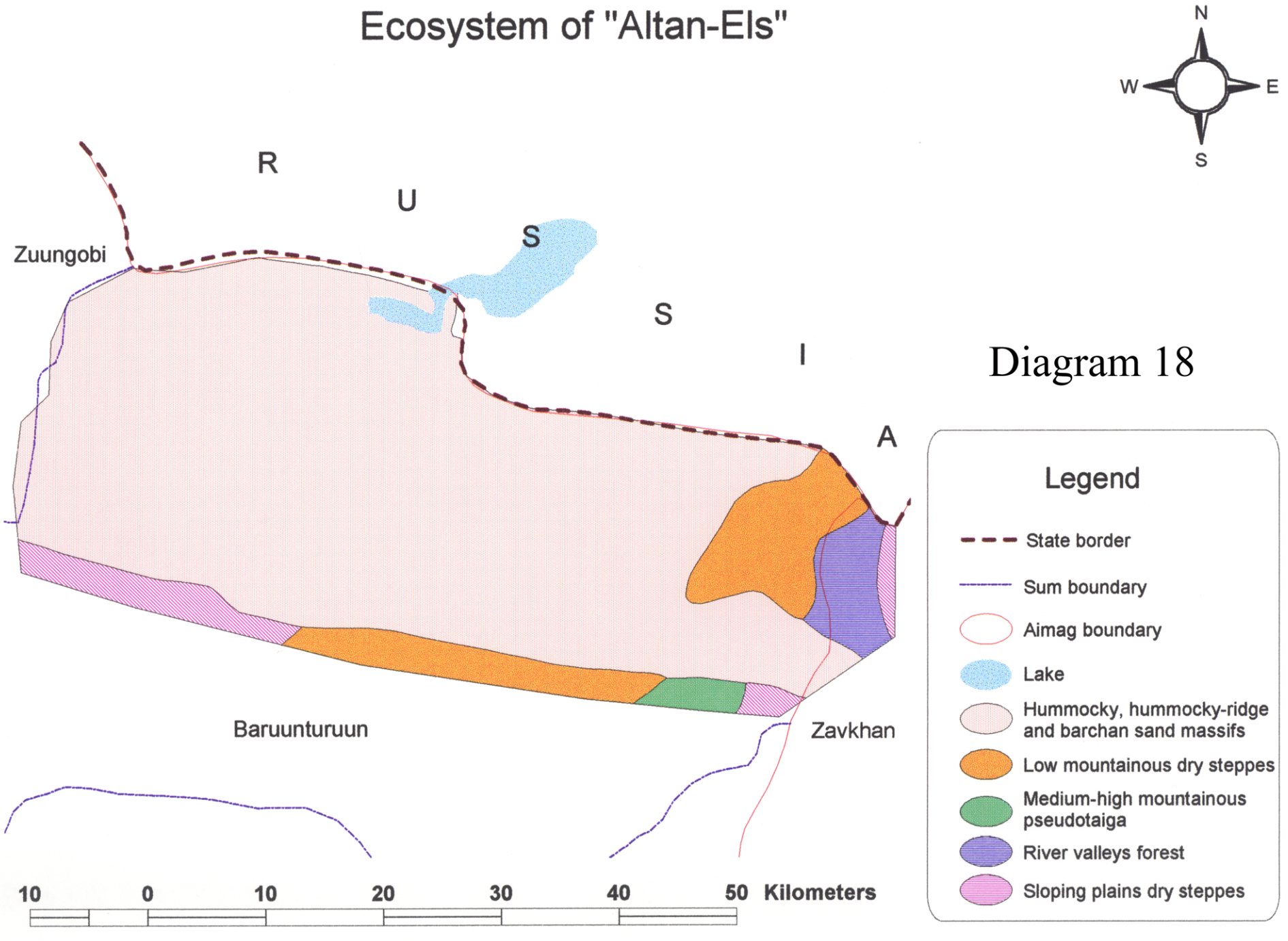
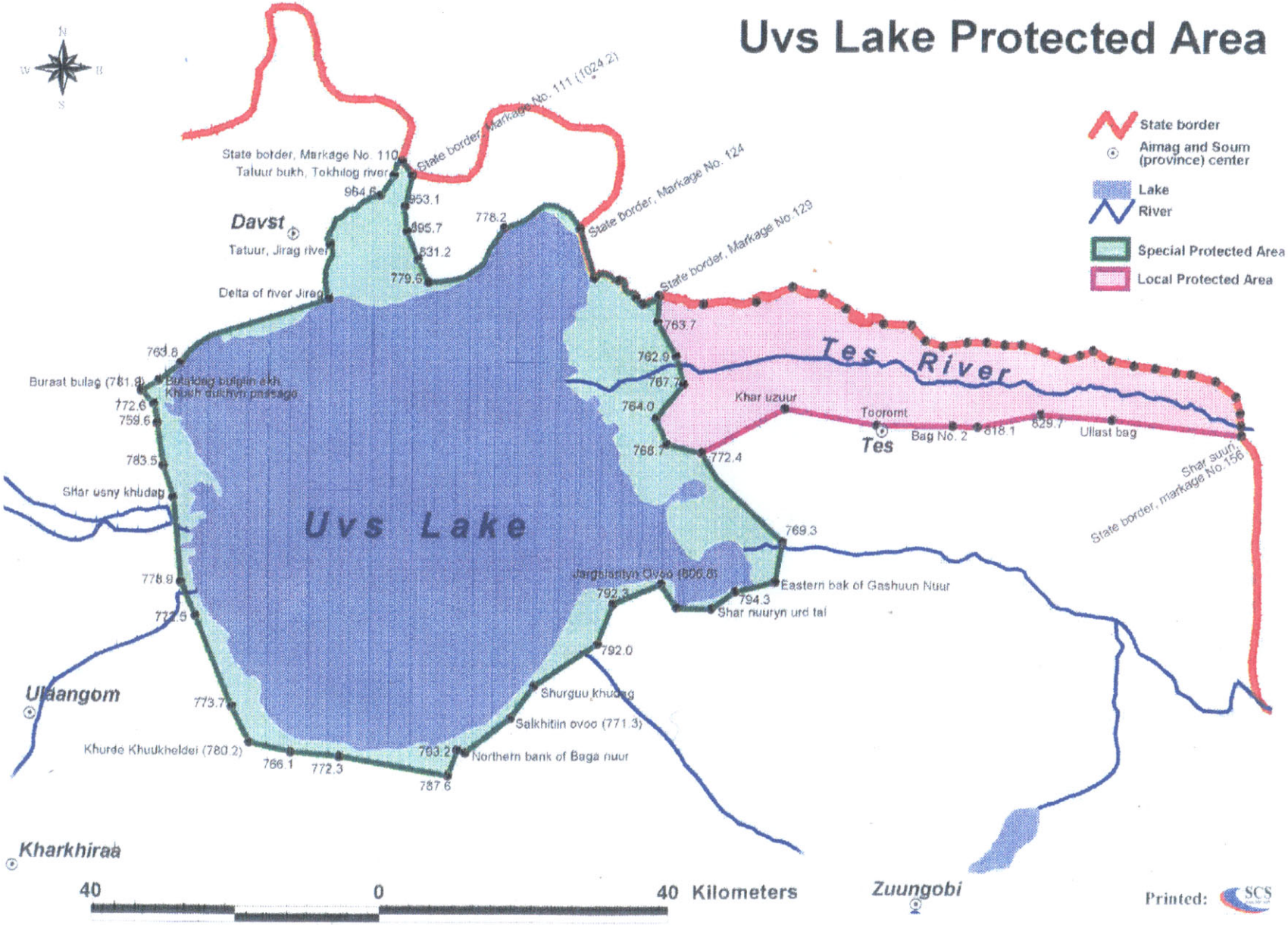


Diagram 18


Uvs Lake Protected Area
State border
Aimag and Soum (province) center
Lake
River
Special Protected Area
Local Protected Area
State border, Markage No. 111 (1024.2)
State border, Markage No. 110
Taluur bukh, Tokhilog river
964.6
953.1
778.2
State border, Markage No. 124
Davst
Tatuur, Jirag river
795.7
831.2
779.6
State border, Markage No. 129
Delta of river Jirag
763.8
Buraat bulag (781.8)
Buraldeg buigiin ekh
Khaich dukhyn passage
772.6
759.6
783.5
Shar usny khudag
763.7
762.9
767.7
764.0
766.7
772.4
Tes River
Khar uzuur
Tooromt
Tes
Bag No. 2
818.1
829.7
Ullast bag
Shar suurin
State border, markage No. 156
Uvs Lake
769.3
Jargalsaityn Ovoo (806.8)
792.3
794.3
Eastern bak of Gashuun Nuur
Shar nuuryn urd tal
778.9
772.5
792.0
Ulaangom
773.7
Shurguu khudag
Salkhitiin ovoo (771.3)
Khurde Khuukheldei (780.2)
766.1
772.3
793.2
Northern bank of Baga nuur
787.6
Kharkhiraa
40
0
40 Kilometers
Zuungobi
Printed:
SCS

APPENDIX B

ORDERS AND DECREES

1. Abstract from the Federal Law of Russian Federation «On especially protected nature territories», 1995.
2. Decree of the Government of the Tyva Republic «On special status of nature-use in the Ubsunur hollow» of 5.09.1994 ? 360.
3. Decree of the Government of Russian Federation «On creation of «The Ubsunur Hollow» state nature preserve» of 24.01.1993 ? 52.
4. Decree of the Government of Russian Federation «On enlargement of «The Ubsunur Hollow» state nature preserve» of 21.04.2000 ? 372.
5. Regulations «On «The Ubsunur Hollow» state nature preserve» of 8.02.1996, approved by the Ministry of environmental protection and nature resources of Russian Federation.
6. Management plan of especially protected areas of the Ubsunur hollow, Russian Federation, 04.2000.
7. Decree of the Government of Mongolia «On creation of the «Uvs Nuur» nature preserve» ? 83, 1993.
8. Management plan of especially protected areas of the Ubsunur hollow, Mongolia, 04.2000.
9. Resolution of Presidium of the citizen`s representative Hural of the Uvs aimag "On establishment of the Tes River SPA" of 10.01.2003 ? 2.
10. The conservation regime of the Tes River SPA of 10.01.2003.
11. Agreement on science co-operation between State Committee for Ecology of the Tyva Republic (Russian Federation) and Ubsunur Direction of nature protection and environment (Mongolia) of 18.06.1998.
12. Protocol of co-operation of “The Ubsunur Hollow” and “Uvs Nuur” nature preserves of 09.09.2000.

ON SPECIALLY PROTECTED NATURAL AREAS

The Federal Law of the Russian Federation dated March 14, 1995

Specially protected natural areas are defined as terrestrial and aquatic areas including atmospheric spaces above them, hosting natural complexes and objects presenting outstanding value for the environmental protection, science, culture , as well as for recreation and human health rehabilitation and thus are entirely or partially exempt for economic activity by virtue of the decision made by governmental bodies and are subject to regimen of special protection.

Specially protected natural areas are considered to be objects of national heritage.

1. State Natural Preserves (Ubsunur Hollow State Natural Biosphere Preserve):

Article 6.

1. Specially protected natural complexes and objects (natural sites, aquatories, subsurface, flora and fauna) possessing an outstanding environmental and educational, scientific and nature protection values being samples of natural environments, typical or rare landscapes, sites of genetic resource conservation for wildlife flora and fauna are to be completely withdrawn from economic activities within the areas of the State National Preserves.

The State Natural Preserves are institutions of nature protection, scientific research and environmental education, aimed at preservation and research of the natural mechanism of the processes and phenomena, genetic resource of the flora and fauna, individual wildlife species and plant and animal communities, as well as typical and unique environmental systems.

Article 9.

1. An activity, contradictory to the objectives of the State Natural Preserve, the regime of special protection set forth by the provision on the above mentioned Preserve is prohibited within it’s grounds.

Introduction of any alive species into the grounds of the State Natural Preserve aimed at the acclimatization of the aforementioned species is prohibited.

2. The grounds of the State Natural Preserves allow for the following undertakings and activities intended to:

a) Preserve the natural condition of the wildlife complexes, including rehabilitation and prevention of changes to occur in the natural complexes and their components resulting from human impacts;
b) maintain the conditions securing sanitary and fire safety;
c) prevent the conditions capable of causing natural disasters dangerous for human life and settlements;
d) implement environmental monitoring;
e) carry out research and investigation tasks;
f) promote environmental education and awareness;
g) implement overseeing and controlling functions.

Article 10. State Natural Biosphere Preserves

1. The State Natural Preserves, which are included in an international system of biosphere Preserves, realising global ecological monitoring have status of the State Natural Biosphere Preserves.

2. Biosphere polygon territories, including those with differentiated condition of the special guards and functioning can be joined to territories of state natural biosphere Preserves with the purposes of realisation of scientific researches, ecological monitoring, and also for approbation and introduction of rational nature management methods, not destroying environment and not exhausting biological resources.

Article 11.

2. State Nature Preserves use the following financial assets at their discretion and according to the existing procedure:

- income of scientific and nature protection activities, advertising and publishing, as well as other activities non-contradictory to the purposes of the State Natural Preserves;
- payments in compensation of damage caused to natural complexes and objects, located within the grounds of the State Natural Preserves;
- revenue from the sale of legitimately expropriated poaching implements and the products resulting from illegal use if the natural resources
- free donations and charity contributions.

ТЫВА РЕСПУБЛИКАНЫН ЧАЗААНЫН

ДОКТААЛЫ

Government of Republic of Tuva

RESOLUTION # 360

of September 5, 1994

City of Kyzyl

On Enacting the Regulation on the Special Status of the Conservation of the Ubsunur Hollow as a Natural Heritage Site of the Republic of Tuva and as a World Heritage Site

The government of the Republic of Tuva resolved:

1. To enact the Regulation on the Special Status of the Conservation of the Ubsunur Hollow as a natural heritage site of the Republic of Tuva and a world natural heritage site (See attached)

2. To bind the Republican State Committee for Land Resources and Land Utilization to produce a 1:500000 map of the Ubsunur Hollow and a 1:25000 map of the clusters of the "Ubsunur Hollow" nature preserve.

3. To bind the Republican Ministry of Internal Affairs, Ministry of Environment Protection and Natural Resources to undertake necessary measures to ensure the special status of conservation of the Ubsunur Hollow.

4. To bind the Republican Ministry of Environment Protection and Natural Resources, Ministry of Agriculture and Conservation, Ministry of Culture, Cinematography and Tourism, State Committee for Forestry, State Committee for Land Resources and Land Utilization, Committee for Geology and Mineral Resources Utilization, Administrations of the Aerzin, Teskhem, Oviur, Mongoon-Tayguin Kozhuuns to take for guidance and fulfillment of the regulations of the present Regulation on the Special Status of the Conservation of the Ubsunur Hollow.

Undersigned:

PRESIDENT

Sh. Oorzhak

APPROVED by the
Resolution # 360 of the
Government of the
Republic of Tuva on
September 5,1994

REGULATION

on the Special Status of the Conservation of the Ubsunur Hollow as a Natural Heritage Site of the Republic of Tuva and as a World Heritage Site

The present Disposition is enacted to realize the Resolution #211 of June 6, 1994, of the Government of the Republic of Tuva "On Inscribing the Ubsunur Hollow in the UNESCO World Heritage List"

1. GENERAL PROVISIONS

1.1 The Ubsunur Hollow is the unique natural, cultural and historic site of the Republic of Tuva deserving of being inscribed in the UNESCO World Heritage List. The preservation of the Ubsunur Hollow is the duty of the Tuva people by their successors and the mankind.

1.2 As a natural site the Ubsunur Hollow represents a natural bioenvironmental laboratory with local and extraordinarily distinct character of biospheric processes due to which it includes almost all natural zones of the Earth, such as desert, step, forests, tundra, eternal ice. There is a small inner sea - the Ubsu-Nur Lake - and an inner system of rivers flowing in this sea.

The Ubsunur Hollow is a biosphere in miniature. It can serve as a standard for monitoring variations in the biosphere of the entire planet caused by secular climatic changes and technogenic factors.

The nature of the Ubsunur Hollow has been preserved due to the traditional pasture farming lifestyle of the local population that formed in the deep past and still prevails. So, the Ubsunur Hollow has not been affected by the civilization development.

Mountain chains and Central Asian anticyclone to a considerable extent protect the Ubsunur Hollow from industrial pollutants.

1.3 The Ubsunur Hollow retains monuments of an outstanding cultural and historic significance which represent the entire history of the mankind starting from the Old Stone Age. All numerous peoples either inhabited or passed the Hollow left various relics such as stone and metal implements, ancient grave-mounds, steles, cave drawings and inscriptions. Represented are all times of the human life, all stages of the mankind's development. These monuments must be preserved and engaged in cultural and scientific activities.

2. TRADITIONAL FORMS OF ECONOMY

2.1 Comprehensively upheld are the traditional types of pasture farming with local breeds of cattle.

2.2 Arable farming is permitted on strictly limited territories. It is prohibited to enlarge ploughlands; ploughing is permitted under firm reasoning.

2.3 Plantation and olitory farming is permitted on limited areas under firm reasoning.

3. FAUNA PRESERVATION

3.1 All types of commercial and sport hunting and fishing are strictly prohibited.

3.2 Shooting, entrapment of birds, animals and insects as well as catching fish for scientific purposes are prohibited. In exceptional cases the administration of the Ubsunur Hollow nature preserve may permit the catching of singular samples of insects for the purpose o Г species definition.

3.3 All types of small arms belonging to the residents and non-residents entering the territory of the Ubsunur Hollow are subject to registration at the local law enforcement bodies.

3.4 Shooting for sanitary purposes, anti-plague measures and other types of selective killing of animals must be well-reasoned and requires a joint permission of the Ministry of Environmental Protection an Natural Resources of the Republic of Tuva and the local administration as well as obligatory consultations with the International Biospheric Nature Preserve "Ubsunur Hollow".

3.5 Border Guards are strictly prohibited to use arms for hunting purposes.

3.6 Comprehensively upheld is the re-naturalization of wild animals both for the re-creation of the historically formed animality and for the preservation of biological diversity on the planet.

4. FLORA PRESERVATION

4.1 Commercial gathering of medicinal and all other types of plants is strictly prohibited.

4.2 Picking of berries, mushrooms, nuts and other types of vegetive nutrition is permitted to local residents for their own consumption only.

4.3 Collection of plants for scientific purposes is prohibited. In exceptional cases the administration of the Ubsunur Hollow nature preserve may permit picking of singular samples of plants for the definition of new species.

4.4 Commercial felling is prohibited. Limited felling for the needs of local residents is made under permission of the local administration and the State Committee for Forestry of the Republic of Tuva, as well as obligatory consultation with the International Biospheric Nature Preserve "Ubsunur Hollow".

4.5 In accordance with the traditions of the Tuva people and taking into accounts that trees 100 and more years old will get reproduced during the lifetime of neither the present nor the next generation, such trees are declared as relict and are subject to conservation to be ensured by the local administration. Felling of or causing damage to such trees are strictly prohibited.

5. LANDSCAPE PRESERVATION

5.1 The flow in of campers-out to popular vacation places like those of lakes Tere-Khol, Dus-Khol and Bai-Khol is being limited, campers-out are obliged to clean up the territory before departure.

5.2 Sporadic motor transport flow through the step must be limited, parallel roads causing damage to landscapes reduced.

5.3 Causing damage to natural sites, such as picturesque rocks, logan stones, springs etc. is strictly prohibited.

6. PRESERVATION OF CULTURAL AND HISTORIC MONUMENTS AND LANDSCAPE

6.1 Causing damage to cultural and historic monuments and landscapes regardless of the purpose is strictly prohibited.

6.2 Penetration into and disassembling of ancient grave-mounds and tombs for the construction of living, public or industrial/farm buildings is prohibited.

6.3 Collection and taking out of implements of the Stone Age for scientific purposes is prohibited.

6.4 Excavation of grave-mounds and ancient tombs for all purposes including scientific ones is prohibited.

6.5 Causing damage to sacred and cultural places is prohibited.

7. LIMITATION OF MINING

7.1 Any mining and extraction of mineral resources are prohibited. The only exception is the traditional salt extraction near the Tortalyg Settlement.

8. PROHIBITION OF HEAVY INDUSTRIES

8.1 Construction of enterprises of heavy, metallurgical and chemical industries as well as any industrial activity affecting environment are prohibited.

9. TOURISM PROMOTION

9.1 Comprehensively upheld is the promotion of organized tourism with simultaneous development of the necessary infrastructure and taking measures against possible damage to environment.

9.2 The flow in of campers-out to the territory of the Ubsunur Hollow is being limited.

RUSSIAN FEDERATION GOVERNMENT

RESOLUTION

of 24 January 1993 #52
Moscow

On establishment in the Republic of Tuva of Nature Preserve “Ubsunur Hollow” of the Ministry of Environmental Protection and Natural Resources of the Russian Federation

With a view to conservation and study of unique natural complexes of the Ubsunur Hollow, the Government of the Russian Federation resolves to:

1. approve the proposal of the Government of the Republic of Tuva coordinated with the Russian Federation Ministry of Environmental Protection and Natural Resources concerning creation of a State Nature Preserve, Ubsunur Hollow, in the Erzinsky, Tes-Khemsky and Mongun-Taiginsky Districts, with the total area of 39,640 hectars and land allotment executed based on resolutions of local Councils of People’s Deputies;

2. (and orders) the Government of the Republic of Tuva in cooperation with the Ministry of Environmental protection and Natural Resources of the Russian Federation to specify the borders of State Nature Preserve “Ubsunur Hollow”.

Viktor Tchernomyrdin
Prime Minister
Government of the Russian Federation

The Government of the Republic of Tyva

RESOLUTION
of 29th November 1999
#1091
Kyzyl

On Expansion of the territory of the State Biosphere Nature Preserve, 'the Ubsunur Hollow'.

In pursuance of Section 19 of Resolution of the Russian Federation Government, dated 16th September 1999 #1045 'On Measures for Stabilization of Social and Economic Situation in the Republic of Tyva and Creation of Conditions for Sustainable Growth of Revenues to the Republican Budget, the Government of the Republic of Tyva resolves:

1. to accept the proposal of the Republic of Tyva State Committee for Environmental Protection, the Ubsunur International Center for Biosphere Research of the Republic of Tyva, the Siberian Department of the Russian Academy of Sciences and the administration of State Biosphere Nature Preserve 'The Ubsunur Hollow' to expand the territory of the aforementioned nature preserve in the lands of the Mongun-Tayginsky, Bay-Tayginsky, Ovyursky, Tes-Khemsky and Sut-Kholsky kozhuuns with the total area of 283,558.4 ha and the allotment of land being based on decisions of the local government.
2. to ask the State Committee for Environmental Protection of the Russian Federation to expand the territory of State Biosphere Nature Preserve 'The Ubsunur Hollow' in the lands of the Mongun-Tayginsky, Bay-Tayginsky, Ovyursky, Tes-Khemsky and Sut-Kholsky kozhuuns.
3. to ask the Supreme Khural of the Re[public of Tyva for permission to expand the territory of State Biosphere Nature Preserve 'The Ubsunur Hollow'.
4. to appoint the Chair of the Republic of Tyva State Committee for Environmental Protection, Mr. S. Ondar, official representative at the discussion of the above issue in the Supreme Khural of the Republic of Tyva.

Signed: S. Oorzhak

RUSSIAN FEDERATION
GOVERNMENT

RESOLUTION

of 21st April 2000
#372

Moscow

On Expansion of the territory of the State Biosphere Nature Preserve, 'the Ubsunur Hollow'.

The Government of the Russian Federation hereby resolves:

to accept the proposal of the Government of the Republic of Tyva and the State Committee for Environmental Protection of the Russian Federation, accommodated with all federal authorities concerned, to expand the territory of the State Biosphere Nature Preserve, the Ubsunur Hollow, by adding to its territory lands with the total area of 283,558.4ha in the Republic of Tyva, including 14,950ha in the Mongun-Tayginsky region, 122,451ha in the Bay-Tayginsky region, 4,490ha in the Ovyursky region, 28,750ha in the Tes-Khemsky region and 112,917.4ha Sut-Kholsky region;

and orders the State Committee for Environmental Protection of the Russian Federation in association with the Russian Federation State Committee for Land Policy and the Government of the Republic of Tyva, to take all necessary measures connected with the expansion of the aforementioned nature preserve.

Signed: V. Putin
Chairman of the Russian Federation Government.

Appendix 1
to Resolution of
the Government of
the Republic of Tyva
dated 29th November 1999 #1091

LIST

of land users whose lands are to be allotted to expand the clusters of the State Biosphere Nature Preserve, 'The Ubsunur Hollow'.

#	Name of administrative district	Name of land user			Total area (ha)
		Collective farms, state farms and etc.	State property lands	Forest districts of the State Forest Fund	
1	Mongun-Tayginsky region Expansion of the Mongun-Taiga cluster	Morgen-Buren state farm, 464ha	14,486ha	-	14,950
2	Bay-Tayginsky region Project of a new cluster, 'Kora-Khol'	-	112.307ha	Bay-Tayginsky forest district of the Barun-Khemchiksky forestry enterprise 10,144ha	122.451
3	Ovyursky region Project of a new cluster, 'Ubsu-Nur'	Collective enterprise Ak-Chyraa	Basin of lake Ubsu-Nur 400ha	-	4,490
4	Tes-Khemsky region Project of a new cluster, 'Oruku-Shinaa'	Collective enterprise Oo-Shynaa 23,809ha	-	Tes-Khemsky forest district of the Tes-Khemsky forestry enterprise 4,941ha	28,750
5	Sut-Kholsky region Project of a new cluster, 'Khan-Deer'	-	-	Sut-Kholsky forest district of the Chadansky forestry enterprise 112,917.4ha	112,917.4
Total:		28,363ha	127,193ha	128,002.4ha	**283,558.4**

Confirmed by
the Vice-Minister
of environment and nature resources
of Russian Federation,
A.M.Amirkhanov.
February, 8, 1996
Signed and sealed

REGULATIONS
OF THE STATE NATURE PRESERVE
"THE UBSUNUR HOLLOW"

1. Main principles

1.1. The State nature preserve "The Ubsunur hollow" is an environmental, scientific research and educative institution, which is aimed to conservation of typical and unique, dry and marsh-tundra, mountain-taiga, highland, dry-steppe and desert natural ecosystems in their natural condition, preservation of historical-cultural and natural monuments of the "Ubsunur hollow" with the total combination of their components, and also to study natural processes and phenomenon and working out scientific basis for conservation and reproduction of nature complexes of Central Asia and South-Eastern Siberia.

1.2. Especially protected nature complexes and objects within the territory of the state nature preserve "The Ubsunur hollow" (land, water, bowels of the earth, flora and fauna), which have environmental, scientific, educational significance as specimen of natural environment, typical or rare landscapes, places of conservation of flora and fauna genetic fund, are completely withdrawn from managerial use.

1.3. Land, water, bowels of the earth, flora and fauna within the territory of the state nature preserve "The Ubsunur hollow" are given in use (possession) to the state nature preserve.

1.4. Property of the state nature preserve "The Ubsunur hollow" is the federal property.

1.5. Buildings, constructions and other real estate objects are assigned to the state nature preserve exercising rights of operative management.

1.6. Any withdrawal or other discontinuation of rights for lands or other nature resources, which belong to the state nature preserve, is prohibited.

1.7. Nature resources and real estate of the state nature preserve "The Ubsunur hollow" are completely withdrawn from use (cannot be alienated and be given to other persons in other ways).

2. Objects of the state nature preserve "The Ubsunur hollow"

The state nature preserve "The Ubsunur hollow" is obliged to:

- ppreserve biodiversity and support the natural condition of protected natural complexes and objects;
- carry out ecological monitoring, also by keeping Nature Chronicle;
- carry out scientific research;
- assist in education of science personnel and environmental specialists;
- propagate ecological knowledge;
- take part in the State Ecological Expertise of construction and reconstruction projects and also of expanding of managerial objects, their arrangement and development schemes within the given region.

6. Regime of special protection of the territory of the state nature preserve “The Ubsunur hollow”

6.1. Within the territory of the state nature preserve “The Ubsunur hollow” are prohibited:

- main use cuts, galipot and woody syrup extraction, medicinal herbs and raw materials collection, and also any other means of forest-use, with the exception of cases, foreseen by the present regulations;
- activities, which change the hydrological regime of nature complexes;
- prospecting works and minerals extraction, disturbing soil cover, geological exposures;
- introduction of live organisms with aim of their acclimatization;
- haymaking, cattle grazing, placing beehives and apiaries, collecting and storing up wild-growing fruits, berries, mushrooms, nuts, seeds, flowers and other ways of flora use, with the exception of cases, foreseen by the present regulations;
- construction and arrangement of industrial and agricultural factories and their separate objects, construction of buildings, roads, railways, laying electric wires and other communication facilities, with the exception of needs of the preserve;
- crafting, sportive and amateur hunting, fishing and any other ways of fauna use, with the exception of cases, foreseen by the present regulations;
- using chemicals as fertilizers, insecticides, herbicides and for regulating animal population size;
- gathering collections and other materials, with the exception of scientific research in the preserve, foreseen by the thematic and plans of scientific research;
- driving domestic animals through the lands of the preserve, with the exception of cases, foreseen by the present regulations;
- staying, passing and driving through within the territory of the preserve for unauthorized persons and auto-/mototransport, with the exception of cases, foreseen by the present regulations;
- flying over the territory of the preserve lower than 2000 m height for planes and helicopters, with the exception of security needs and forest fires;
- any other activity, which contradicts the objects of the state nature preserve “The Ubsunur hollow” and the protective regime of its territory.

6.2. “Yamalyg” cluster plot is organized as a cultural, historical and natural monument, with the aim of conservation of ancient burials, burial-mounds, stone stands from Turk, Scythian and other periods and of Yamalyg ridge itself.

Within the territory of the “Yamalyg” cluster plot, as an exception, it is permitted:

- cattle grazing for the local land-users;
- tourist groups staying, with the permission of the administration of the preserve.

Beside regime restrictions, foreseen by the present regulations, within the territory of the “Yamalyg” cluster plot it is prohibited:

- excavations, moving stones of burial-mounds, damaging stone stands and rock writings;

6.3. Within the territory of the state nature preserve “The Ubsunur hollow” are permitted the following measures and activities, which are aimed to:

- conservation of nature complexes, restoration and prevention of changes in nature complexes and their components as a result of human activity;
- supporting conditions, which provide sanitary and fire security;
- carrying out ecological monitoring;
- carrying out ecology-educative activities;
- executing supervision and controlling functions.

6.4. Within the preserve special plots can be selected, where any intervention into nature processes is prohibited.

Size of these plots is defined from the necessity of conserving the whole complex in its natural state.

6.5. On specially selected plots of partial managing, which do not include especially valuable ecological systems and objects of “The Ubsunur hollow”, can be permitted:

- organizing subsidiary agricultural farms for providing stuff of the preserve with food-products;
- grazing cattle, which belong to the preserve and its stuff, within the radius of 300 m from the cordon on “Ular” and “Aryskannyg” plots;
- keeping the domestic animals, belonging to the stuff of the preserve, during wintering on the ppreserved plot “Tsuger-Els” within 200 m from the border of the preserve;
- purveying firewood, commercial wood for providing the needs of the preserve within “Ular” and “Aryskannyg” plots in the fixed order;
- collecting mushrooms, nuts, berries for the workers of the preserve for individual needs (without the right of trading) in volumes and within the plots, defined by annex #2;
- organization and arranging ecological tours and excursions, allocation of nature museums, including open air expositions.

6.6. Hunting (catching) animals for scientific and regulation needs within the territory of the state nature preserve “The Ubsunur hollow” is permitted only with the resolution of Ministry of Environment and Nature Resources of Russian Federation.

6.7. Persons and authorities, not appearing to be the stuff of the preserve, are permitted to stay within the territory of the state nature preserve “The Ubsunur hollow” only with the resolution of Ministry of Environment or the direction of the preserve.

6.8. Basing on resolutions of the Tyva Republic Government, within territories, bordering the plots of the state nature preserve “The Ubsunur hollow”, protective zones with limited regime of nature-use are created.

Regime of the protective zone of the state nature preserve is defined by the Tyva Republic Government.

7. Organization of protection of the state nature preserve “The Ubsunur hollow”.

7.1. Protection of the state nature preserve “The Ubsunur hollow” is carried out by special guard inspection. Inspection workers (state inspectors) are included into the staff of the state nature preserve.

7.2. Director and first vice-director of the preserve and head of the guard execute the rights of head state inspectors of the preserve.

7.3. The rights of state guarding inspectors of the preserve can be given to workers of the preserve, which do not turn to be inspectors according to their position. Giving the above rights can be executed with the agreement of the worker according to his written application by the order of the director of the preserve.

7.4. Public inspections, formed by environmental committees and public environmental organizations, can also be engaged in protection of the preserve.

7.5. State inspectors guarding the state nature preserve “The Ubsunur hollow”, according to the legislation of Russian Federation have the right to:

a) check any person within the territory of the preserve, if he has the admission for staying on the above territory;
b) check documents, providing the right for nature-use or other activity within the territory of the preserve;
c) apprehend persons within the territory of the preserve and its protective zone, which violate the legislation of Russian Federation on especially protected nature territories, and to deliver violators to the law-protection bodies;
d) call materials of persons, guilty in violation the existing regime of the state nature preserve, to administrative account;
e) repossess from the violators of the legislation of Russian Federation on especially protected nature territories production and tools of illegal nature-use, transport and corresponding documents;
f) scour transport and private belongings of persons and authorities, which do not have permission for staying within the territory of the preserve;
g) freely attend any objects within the territory of the state nature preserve and its protective zone to check observing of the demands of the legislation of Russian Federation on especially protected nature territories;
h) hold up managing or other activity, not corresponding to the special protection regime of the state nature preserve “The Ubsunur hollow” and its protective zone;
i) make photos, video- and audio records of activity of persons and authorities, violating environmental legislation and the fixed regime of especially protected nature territories.

Head and vice-head state inspectors are also given rights to:

- prohibit managing or other activity, not corresponding with the fixed regime of the state nature preserve “The Ubsunur hollow” and its protective zone;
- exact fines for violating the legislation of Russian Federation on especially protected nature territories;
- render suits to natural and juridical persons for exacting for the benefit of the state nature preserve “The Ubsunur hollow”, to satisfy damage made to natural complexes and objects of the preserve and its protective zone as a result of violation of the fixed regime;
  In cases, foreseen by the present legislation, to draw documents proving violation of the legislation of Russian Federation on especially protected nature territories, to law-protection bodies.

7.6. State inspectors guarding the state nature preserve also have rights of the state forest guard authorities and other specially empowered bodies of Russian Federation to environmental protection.

7.7. State inspectors guarding the state nature preserve in line of duty have right to use special means in the stated order: handcuffs, rubber clubs, tear-gas, transport forcing devices, trained dogs.

7.8. State inspectors guarding the state nature preserve “The Ubsunur hollow” are allowed to carry official firearms on duty.

Rules of buying, keeping and using official firearms are defined by the existing legislation.

7.9. State inspectors guarding the state nature preserve are provided with armored waistcoats and other means of self-protection.

7.10. State inspectors guarding the state nature preserve are to be insured at the preserve’s expense.

7.11. Damage made in line of duty to property of state inspectors guarding the nature preserve, and to persons, which had been given rights of state inspectors, is repaid at the expense of the preserve or Ministry of Environment of Russian Federation.

In this case the direction of the preserve has right to render suit to person or organization responsible for this damage.

7.12. In the case of death on duty of state inspector guarding the state nature preserve, or person, which had been given rights of state inspector, his family is paid his salary during the next 5 years, and after this period it is paid pension in order, stated by the existing legislation.

8. Scientific research activity in the state nature preserve “The Ubsunur hollow”.

8.1. Scientific research activity in the preserve is aimed to work out the scientific basis for conservation and restoration of populations of rare and disappearing species of animals and plants, to the long-term watching the dynamics of nature processes for appraising and outlook of the ecological state of nature complexes of the “Ubsunur hollow”.

8.2. Scientific research activity in the state nature preserve “The Ubsunur hollow” is carried out by:

- preserve’s staff according to scientific research plans;
- scientific research bodies and higher schools of the corresponding profile, according to arrangement, on the basis of general programs, agreed with Ministry of Environment of Russian Federation;

8.3. Organization and straight leadership of scientific research in the preserve is executed by the Vice-Director for scientific work, which is appointed by Ministry of Environment and nature resources of Russian Federation and is the first Vice-Director of the preserve.

8.4. State nature preserve “The Ubsunur hollow” creates Science Council. Its principles and complement is confirmed by the Ministry of Environment of Russian Federation.

8.5. State nature preserve “The Ubsunur hollow” creates and keeps scientific funds.

State nature preserve “The Ubsunur hollow” has right to publish science issues.

9. Financial activity and management of the state nature preserve “The Ubsunur hollow”.

9.1. State nature preserve executes activity, which does not contradict its goals and the stated regime.

9.2. All means, received by the preserve from scientific, environment, advertising, publishing, educative or other activity, or as donations from enterprises, institutions, international and foreign organizations and private persons, are own means of the preserve, and are used independently.

9.3. State nature preserve “The Ubsunur hollow” carries out external economic activity in the order stated by the existing legislation.

9.4. Plans of measures for executing the goals of the preserve and volume of budget financing are defined by Ministry of Environment and nature resources of Russian Federation.

Basin of Ubsu-Nur (Uvs Nuur) Ubsunur Hollow
(Tyva Republic – Russia)

MANAGEMENT PLAN

Prepared by:

Ubsunur International Center for Biospheric Research

S.S. Kurbatskaya – Director

State Committee for Environmental Protection of Tyva Republic

Ondar S.O. – Chairman

Oorzhak A.Ch. - Specialist

State Nature Biospheric Sanctuary
"Ubsunur Hollow"

Kynyraa M.M. – Deputy Director for Science

Administrsation for Protected Areas of the Russain Federation

Stepanitskyi V.B. – Chief

State Committee for Environmental Protection
of the Russian Federation

Danilov-Danilian V.V. – Chairman

April 2000

TABLE OF CONTENTS

1. INTRODUCTION 4

1.1. EXECUTIVE SUMMARY OF UBSUNUR AREA INFORMATION – BASIN OF UBSU- NUR LAKE (UVS-NUUR) (UBSUNUR HOLLOW, TYVA REPUBLIC, RUSSIA) 4
1.2. MAIN OBJECTIVES 5
1.3. LEGISLATION CONCERNING THE UBSUNUR HOLLOW AND "UBSUNUR HOLLOW" SANCTUARY 6

2. CONTEMPORARY ENVIRONMENTAL SITUATION AND SOCIO-ECONOMIC DEVELOPMENT. 7

2.1. NATURAL CONDITIONS. 7
2.1.1. GEOGRAPHICAL POSITION AND BOUNDARIES. 7
2.1.2. ZONES WITHIN THE ADMINISTERED AREA 8
2.1.3. CLIMATE AND WEATHER CHANGES 9
2.1.4. TECTONICS AND GEOLOGICAL STRUCTURE. RELIEF. MINERAL RESOURCES. 10
2.1.5. HYDROLOGY AND HYDROGRAPHY 12
2.1.6. SOIL COVER 13
2.1.7. FLORA AND VEGETATION. 15
2.1.8. FAUNA 17
2.1.9. NATURAL FEATURES 20
2.2. SOCIO-ECONOMIC SITUATION AND DEVELOPMENT 21
2.2.1. ADMINISTRATIVE AND ECONOMIC UNITS. 22
2.2.2. POPULATION AND SOCIAL SITUATION 22
2.2.3. AGRICULTURE AND PRODUCTIVITY RATE 23
2.2.4. PUBLIC HEALTH AND EDUCATION 23
2.2.5. DEVELOPMENT OF TOURISM AND HISTORICAL AND CULTURAL MONUMENTS. 24
2.2.6. INFRASTRUCTURE 25
2.2.7. DEVELOPMENT STRATEGY 25

3. PRESENT ENVIRONMENTAL CONDITION, CONSERVATION AND MANAGEMENT. 25

3.1. THE HISTORY OF ESTABLISHMENT OF SPECIALLY PROTECTED NATURAL AREAS IN UBSUNUR HOLLOW. 25
3.2. UBSUNUR INTERNATIONAL CENTRE FOR BIOSPHERIC RESEARCH WITH TYVA REPUBLIC AND SIBERIAN BRANCH OF THE RUSSIAN ACADEMY OF SCIENCE. BIOSPHERIC SANCTUARY "UBSUNUR HOLLOW". 27
3.3. ENVIRONMENTAL PROTECTION AND MONITORING 27
3.4. ENVIRONMENTAL EDUCATION ACTIVITIES. 27
3.4.1. ALONG THE LINES OF GOSCOMECOLOGY OF TYVA REPUBLIC 28
3.4.2. BIOSPHERIC SANCTUARY 28
3.4.3. UBSUNUR INTERNATIONAL CENTER 28
3.4.4. ENVIRONMENTAL EDUCATION AND UPBRINGING IN THE STATE UNIVERSITY OF TYVA AND REGIONAL SCHOOLS. 28
3.5. STUDIES AND RESEARCH OF UBSUNUR HOLLOW 28
3.6. DEVELOPMENT OF TOURISM 30
3.7. INTERNATIONAL RELATIONS AND CO-OPERATION 30

4. ANALYSES OF ENVIRONMENTAL SITUATION AND MANAGEMENT 30

4.1. EXPLANATIONS AND MAIN SITE OF UBSUNUR HOLLOW (UBS-NUR LAKE BASIN) 30
4.2. THE THREAT AND PRESSURE. 31
4.2.1. FACTORS POSING THREAT FOR BIOLOGICAL SPECIES IN UBSUNUR HOLLOW. 31
4.2.1.1. Existing threats for of animal population. 31
- Human residence within the administered area, concentration around watering ponds and concentration of wintering camps in the river valleys can put pressure on certain species and induce their extinction; 31
4.2.1.2. Threat for plant species 32
4.2.2. THE NEED FOR UBSUNUR HOLLOW PROTECTED AREA MANAGEMENT 32
4.2.2.1. Insufficient utilization of pastures 32
4.2.2.2. Lack of rational land use 32
4.2.2.3. Obstacles of nature conservation and monitoring 33
4.2.2.4. Obstacles in the area research and studies 33
4.2.2.5. Obstacles for environmental education of the general public 33
4.2.2.6. Obstacles for tourism development 33
4.2.2.7. Obstacles for transboundary co-operation with Mongolia 33
4.2.2.8. Financial difficulties 33
4.3. IMMEDIATE TASKS AND TRENDS OF PROTECTED AREA MANAGEMENT 34
4.3.1. TASKS AND TRENDS FOR CONSERVATION OF BIODIVERSITY 34
4.3.1.1. Conservation of fauna 34
4.3.1.2. Conservation of flora. 34
4.3.2. IMMEDIATE TASKS OF ADMINISTRATION FOR PROTECTED AREAS. 34
4.3.2.1. Sustainable use of pastures 34
4.3.2.2. Conservation strengthening and studies 34
4.3.2.3. Strengthening of scientific research and monitoring 35
4.3.2.4. Strengthening of environmental education 35
4.3.2.5. Development of tourism 35
4.3.2.6. Development of tourism 35
4.3.2.7. Financial situation 35

1. INTRODUCTION

1.1. Executive summary of Ubsunur area information – basin of Ubsu- Nur Lake (Uvs-Nuur) (Ubsunur Hollow, Tyva Republic, Russia)

Location: South of Tyva Republic, Russia
Total area: 2,670,000 hectares
The highest point: 3976 m above the sea level (Mount Mongun-Taiga)
The lowest point: 759 m above the sea level (Ubsunur Lake water edge)

Components – kozhuuns:
1. Erzinsky, including the following sanctuary clusters: "Ular", "Tsugeer Els", "Yamaalyg".
2. Tes-Khemsky, including the following sanctuary clusters: "Aryskannyg", "Oruku-Shynaa".
3. Ovursky, including the sanctuary cluster: "Ubsu-Nur".
4. Mongoon-Taiginsky, including the following sanctuary clusters: "Big Mongoon-Taiga", "Smaller Mongoon-Taiga", "Tsagaan-Shibetu".

Natural zones and belts: all main natural zones and belts of the Central Asia.

Population: 35,100 people
Settlements: 21 rural administrations, 202 individual arat peasant farms

Economics: Traditional pastoral animal husbandry

Main objectives: Support and conservation of natural ecosystems, rare and endangered biological species; development and support of sustainable rational use of natural resources and pastures.

Organizations and projects supporting the Sanctuary and scientific studies in the Ubsu-Nur Lake basin: the projects "Snow leopard", "Agrali", "Manul", supported by WWF, universities and institutes of the Siberian Branch of the Russian Academy of Science (SB RAS), foreign scientists, Ubsunur International Center for Biospheric Research.

1.2. Main objectives

Main objectives of present management plan for protected area of the "Ubsunur Lake Basin (Uvs Nuur)"nomination are as follows:

- management plan is to guide and regulate (control) the resource management of the protected areas, as well as the land use and development of opportunities, required for further development of present territory;
- management plan combines the activities aimed the development of the entire area;
- management plan includes actions aimed at identification of the budget and personnel requirements for the implementation of the plan;
- management plan accounts for various measures aimed at acquiring the understanding and support on behalf of general public and governmental officials necessary in order to for secure the appropriate financing;
- management plan accounts for education and training of the management staff, in order to secure continuity and consistency of the process of personnel movement;
- management plan shall afford flexibility, be adaptable to modifications resulting from new information and alternating situation;
- management plan envisions development of environmental and scientific tourism in the Hollow;
- management plan foresees development of scientific research studies of the conditions of natural and anthropogenic landscapes, of their alteration under the impact of various factors, including plans for improvement of anthropogenic landscapes, arrangement of environmental monitoring of ecosystems and establishment of traditional land use pattern;
- management plan envisions measures for social development of the region and arrangement of public health study;
- management plan envisions enhancement of environmental awareness of school student and adult public;
- management plan envisions development of tourism (hiking, boating, horseback, automobile, cycling, mountain skiing and mountain climbing, environmental and health enhancement tourism);
- management plan takes into consideration the need for specific management and design plan adapted to mountain areas described with high biophysical heterogeneity (vertical zoning) and dynamic natural processes (tectonic activity, weathering, deflation).

1.3. Legislation concerning the Ubsunur Hollow and "Ubsunur Hollow" sanctuary

Ubsunur Hollow and the basin of Lake Ubsunur (Uvs Nuur) was selected by specialists as probation ground for comprehensive studies of natural systems with employment of aerospace (satellite) information, field research and mathematical modeling. It was selected due to its remoteness from industrial centers, negligible transformation by human impact and existence of traditional pasturing land use pattern within the area.

The Ubsunur Hollow was identified as probation ground due to its limited size and characteristics intrinsic for natural biospheric laboratory. The program was named "Ubsunur experiment" and united the specialists in many areas: biologists, geographers, soil scientists, mathematicians, information system specialists, historians, medical specialists and economists from various institutes of the Russian Academy of Sciences, as well as universities and scientists worldwide.

Main regulatory documents, stipulating the activities taking place in Ubsunur Hollow area as follows:

1. Substantiation of Ubsunur International Center for biospheric research, resolution of the Government of Tyva Republic №139, April 1991.
2. Ubsunur International Center for biospheric research is under the patronage of the Siberian Branch of the Russian Academy of Science (SB RAS) and the Government of Tyva Republic. Joint resolution of the SB RAS and the TR Government №49/315, February 1993.
3. Establishment of the State Nature Sanctuary "Ubsunur Hollow", resolution of the Government of the Russian Federation № 52, January 1993.
4. Approved "Statement of special status of restricted land use in Ubsunur Hollow" №360, September 1994.
5. Approval of biospheric status of the sanctuary "Ubsunur Hollow" as a part of world-wide biospheric sanctuary Network at the Bureau of ICC MAB, November 1997.
6. Establishment of protective zone of biospheric nature sanctuary "Ubsunur Hollow" and approval of a corresponding provision. Resolution of the Tyva Republic Government № 201, May 1996.
7. Resolution of the Government of Tyva Republic dated December 6, 1998 №825 "On the scheme for development and establishment of specially prot4cted areas in Tyva Republic for the period up to 2005 year".
8. On enlargement of the area of state nature biospheric sanctuary "Ubsunur Hollow". Resolution of the Government of Tyva Republic № 1091, November 1999.
9. On amendment to the resolution of the Government of Tyva Republic dated November 29, 1999 № 1091 "On enlargement of the land area of the state nature biospheric sanctuary "Ubsunur Hollow". Resolution of the Government of Tyva Republic № 1217, December 1999.
10. On approval of the enlargement of the land area of the state nature biospheric sanctuary "Ubsunur Hollow". Resolution of the Supreme Khural of Tyva Republic №435, December 1999.
11. Statute of Tyva Republic "On protection of natural environment". Adopted by Supreme Khural of Tyva Republic in 1993.
12. Statute of Tyva Republic "On specially protected natural areas". Adopted by Supreme Khural of Tyva Republic in October 1996.

13. Statute of Tyva Republic “On animal world”. Adopted buy Supreme Khural of Tyva Republic, November 1997.

2. Contemporary environmental situation and socio-economic development.

2.1. Natural conditions.

2.1.1. Geographical position and boundaries.

The basin of Ubsunur (Uvs Nuur) Lake or Ubsunur Hollow is situated in the area where Tyva (south-east Russia) borders on Mongolia (between 48^{o} 55’ and 51^{o} 9’ northern latitude and 90^{o} and 98^{o} 50’ eastern longitude). The area is surrounded by mountains and the watershed ridges range from 2,200m to 4,000m in altitude. It is a blind drainage hollow with a small, salty, "interior sea" on its bottom - Lake Ubsunur or "Uvs Nuur" in Mongolian. The water level lies at an altitude of 759m. The lake collects all of the water running down from the adjacent mountains.
The northern, north eastern and north-west boundary of the hollow area stretches along the watershed ridges of the East and west Tannu-Ola, the Sengilen high plateau. At the west the Hollow is adjoined by mountain massif of Mongoon-Taiga reaching 3976 m above the sea level. Southern boundaries stretch along the state borders of Russia and Mongolia uniting the physical geographical depression of Ubsunur Hollow.
The Basin of Ubsu-Nur (Uvs Nuur) is situated in the centre of Asian continent. It belongs to the Hollow of the same name, which is the intermountain depression of Alati- Sayan or Central Asian mountain belt. The hollow emerged at the junction of the sub-latitudinal ranges of Togtokhyin-Shil, Khan-Khykheia, and Buinai-Nuru (at the south of West and East Tannu-Ola, Khormhug-Taiga and Selingen (in the north) and a sub-latitudinal range of Tsaagan-Shibetu, complicated by an uplift of Turgen-Ula massif (in the west). The diamond-like shaped sub-latitudinal depression of the Ubsunur Lake river basin is restricted by an indistinct east limit and stretches for only about 550 km at a width of 100 to 150 km. Almost plain-like bottom of this depression extends for only 300 km and reaches the width of 120 km. In the east the latter depression is shaped as a dissected mountain-and-valley terrain.
The height of the hollow bottom and its morphology differs between the east and west and provides an obvious evidence of the inclination towards the west. Its the place where the lowest part of the hollow with the bitter salty lake Ubusnur (Uvs Nuur) occupying an area of 3350 square km is situated. Inclined plains located at about 1000-1300 m above the sea level surround the lake, and a flat plain in the lower reaches of Hariin-Gol and Tesiin-Gol rivers is situated at 770-1000 m level. Further to the east the surface is elevated up to 1400-1500 m and is described by undulating and hummocky topography typical for eolian processes and residual mountain massifs. Past the valley of Tesiin-Gol river with the river bed located at 1195 –1035 m and crossing the depression along the north-eastern direction the hollow bottom attains substantial dissection appearing as hill-and-mountain terrain with the altitudes of 1700-1900m and further up to 2000-2200 m with relative elevations of about 200-300 m (up to 500 m). Attention is captured by Tesiin-Gol river valley appearing as wondering along the uplifts and across the separating them depressions.
The overall morphological description of Ubsunur hollow allows to suppose a complicated history of evolution and presence of various causes for development of such an intermountain and in some places middle mountain hollow. It is evidenced by

intricate contour of Ubsu-Nur Lake basin with numerous unevenly sized branches and presence of peripheral and internal uplifts with differing orientation, varying distribution of swamps and smaller lakes, and specific dislocation of loose sand massifs.

2.1.2. Zones within the administered area

Ubsunur Hollow represents the administered area within the Russian territory of Ubsu-Nur lake basin.
Ubsunur Hollow is an integral natural system constituting a closed basin surrounded by the mountains. Closure of the basin preconditions the local character of the biospheric processes, such as atmospheric circulation in the hollow named as “hollow effect”. It conditions vertical landscape zones and presence in the hollow of all natural zones typical for Central Asia as well as high diversity of ecosystems. Co-existence of these zones within a small area of the hollow appears as a unique phenomenon. Location on the junction of boreal and arid contributes to high biodiversity of the flora and fauna, specific regularities of shaping processes and makes it possible to view the hollow as a refuge for biospheric genetic stock.
The sanctuary clusters reflect variety of landscapes in the hollow. The formers were selected based on landscape principal, where each cluster stands for a certain type. Ubsunur hollow is an integral natural system, a closed basin surrounded by the mountains. Closure of the basin preconditions the local character of the biospheric processes, such as atmospheric circulation in the hollow named as “hollow effect”. It conditions vertical landscape zones and presence in the hollow of all natural zones typical for Central Asia as well as high diversity of ecosystems. Co-existence of these zones within a small area of the hollow appears as a unique phenomenon. Location on the junction of boreal and arid contributes to high biodiversity of the flora and fauna, specific regularities of shaping processes and makes it possible to view the hollow as a refuge for biospheric genetic stock, a landscape with its biodiversity, terrain shape and soil cover. This way, we discuss conservation not of an individual type or species, but of an entire natural complex of a certain landscape.
The administered area is subdivided into three parts: nuclear, buffer (protected) sanctuary zones and area with restricted land use (Table 1).

Nuclear zones

They represent landscapes of high mountain tundra and taiga (“Ular”, partially “Tsagaan-Shibet”), high mountain glacier zone (“Big Mongoon-Taiga”), high mountain steppes (tge”Samller and Big Mongoon-Taiga”), mountain forests and steppes (“Aryskannyg”), steppes (“Yamaalyg”) and semi-deserts (“Tsugeer-Els”), flood plain and delta systems (“Ubsu-Nur”) and “Oruku-Shynaa”) and natural historical, archaeological complex (“Yamaalyg”).
The nucleus provides for protection and conservation of various landscape types. In the nuclear zones it is allowed to carry out scientific observations and research of rare and endangered plant and animal species and ecosystem status. Withdrawal of species or shooting animals in the unclear centres of the clusters is prohibited.

Buffer zones

These are also protected areas. In the buffer zones it is permitted to carry out scientific observations, build structures and special facilities for the purposes of scientific research work to be carried out for conservational objectives. The area of protective zone is not withdrawn from land use, it is allowed to conduct economic activities causing not harm to the natural systems of the sanctuary. For the purposes of increasing the numbers of endangered plant and animal species the sanctuary together with land users implements biotechnical measures. Visitation for the purposes of enhancing environmental awareness is allowed. Monitoring of the human impact on ecosystems, conservation and facilitation of traditional land use is established in the buffer zones.

Areas of restricted land use

On the basis of resolution of the Government of Tyva Republic "On special status of land use in Ubsunur Hollow", the restricted land use zone envisions:

- to use every opportunity to encourage traditional pasturing animal husbandry aimed at local breeding;
- agriculture within strictly designated plots only as of the natural systems in the area are very sensitive;
- all kinds of commercial and sort hunting are strictly forbidden, except for specifically set for these areas on the basis of the permission of the administration;
- infliction of damage upon the historical and cultural monuments, collection and withdrawal of withdrawal of Stone Age artefacts, digging at burial mound locations, inflicting damage on sacred and religious places;
- encouragement of organised tourism;
- construction of heavy, chemical and metallurgical industry facilities;
- all mineral developments are prohibited, except for traditional salt development in the vicinity of Torgalyg settlement.

2.1.3. Climate and weather changes

Climatic conditions of Ubsunur Hollow are determined by its position in the centre of a huge continent, in the Central Asia. During the entire year continental air masses are dominant over the hollow, and it belongs to a warmer and drier climatic zone. A powerful anticyclone the winter in Ubsunur Hollow is the most severe in Mongolia and Tyva. For instance, a minimal temperature of –55.6^{o}C is registered at meteorological post of Dzun-Gobi in some years.

The hollow experiences the most significant on Earth sharp contrasts of the annual and daily temperatures, the minimum quantity of precipitation with apparent summer maximum, sustainable and long winters with heavy frosts without thaw periods, and hot summers.

Substantial daily amplitudes usually take place during the transitional seasons, particularly in spring. Contrary to winter, highly changeable weather over short periods of time is typical for transitional seasons and summer.

Average monthly air temperature in January are about 32-35 ^{o}C below zero, average daily air temperature crosses 0 ^{o}C in the second half of October and April. This way, the cold period lasts for 205-225 days. July is the warmest month of the year and and average temperature of July is +20-22 ^{o}C.

Vegetative season, being a season with average daily temperature over 10 ^{o}C lasts since the first decade in May till the third decade in September. Over this period the

total active temperature with 80% probability exceed 2000 °. Duration of this period is 125-145 days. Total solar radiation amounts to 130Kcal per square centimetre of horizontal surface. It is as mush as the surface is getting in the areas of Odessa, the Crimea and the North Caucasus. The total hours of solar radiance amount to 2600-2700 h, which makes 50-75 %.

Annual precipitation is 150-200mm, with 70-80% during the warm period. Evaporation per year exceeds the annual precipitation by 4-5 times.

Climatic fluctuation trends. Meteorological regime of a give territory or point is subject to substantial changes in different years. For instance, average monthly temperature in January in Ulangome was –39.4 °C, in Erzin –38.4 °C in 1969, while in 1965 in Ulangome the temperature was up to –27.7 °C, and in Erzin up to –29.0 °C. Analysis of climatic characteristics of Ubsunur Hollow for the period since 1940s to 1990s revealed 6-7 year cycles. For instance since the 1940s to the middle of 1950s a tendency for temperature drop has been noted. Further on an interchange of tendencies is noticed, and since the end of 1960s the climate becomes more stable, while beginning 1980s the average annual temperatures show a tendency for climate warming.

Internal atmospheric circulation in the hollow is one of the acute traits of this depression.

Climatic conditions of Ubsunur hollow are determined not only by its geographical position in the centre of the Asian continent, but also by the fact that the hollow is a closed basin surrounded by mountain ridges. Closure of the basin predetermines the local nature of atmospheric processes in the hollow, which produces the "hollow effect". The latter effect determines vertical belts of landscapes. The essence of hollow effect is comprised by the fact that from the strongly heated bottom the air rises along the bottom of the hollow towards the periphery and reaches the mountain tops, while all the contained moisture condenses. The moisture is blown out of the hollow, away from the valley bottom by breezes and that leads to drying up of the hollow bottom and excessive moisturising of its mountain frame. This kind atmospheric circulation inside the hollow redistributes the precipitation across the hollow very unevenly and is the reason for neighbour-like situation of steppe, desert and taiga landscapes within the short distances in the hollow.

2.1.4. Tectonics and geological structure. Relief. Mineral resources.

The geological block of Ubsunur Hollow contours and of the basin of feeding rivers is described by ancient development history lasting from Precambrian to Cainozoic and definite trend towards formation of continental type of Earth crust.

The east and south-east parts of the basin and its folded borders pertain to the most ancient period being Precambrian folding, comprised by strongly metamorphic amphibolitic rock facies (gneiss, ferrous quartzite, graphite containing marble, garnet-mica slates) in the lower part and overlain by rocks of different composition and extent of metamorphism, such as quartsofeldspathic slates, quartzite and marble.

The formations adjacent to the outcrops of Precambrian structures comprise the structural formation complexes belonging to geosynclinal-oceanic stage of evolution of the area in the Early Cambrian. At that stage a marginal oceanic area was situated in the contours of Tannuol'skaya and Khankhukhiiskaya zones. By the beginning of the Silurian a geosynclinal period accompanied by geoanticlinal rise of Sengilen upland was completed, the latter occurred with a powerful impulse of final granitoidal magmatism.

Ordovician-Silurian stage is defined by presence of residual marine basins in the intermountain depressions and destructive troughs.
By Devonian formation of overthrust-folded structures and transformation of oceanic crust into continental was concluded. The continental stage was accompanied by powerful basitandasite-dacite volcanic activity of central and fracture type volcanoes situated within the contours of troughs, as well as by intensive synorogenic granitoid magmatism through high number of fractures.
During the Eifelian time the west and north-west flank of the considered geological block experienced a marine transgression related with accumulation of terrigenous-slate and shaly-carbonaceous-carbonate formations, containing Brachiopods, corals and Bryozoa. The following orogeny decreased the surface area of shallow marine basin, and in the conditions of arid climate drift sediments were accumulated in the appeared lagoons (Tsaagan-Schibettu-Tannuol'sky evaporite basin), Khuregechinskoye and Megen-Bulakskoye gypsum-anhydrite accumulation and Sagil'skoye and Duskholskoye halite deposits were formed.
The Carboniferous time in general is the epoch of further stabilisation of Ubsunur geological block and adjacent structural elements in the conditions of continental regime. At the same time, activation of tectonic and magma activity took place in the south –west part of the area (Kharkhirinsky block). It was conditioned by powerful geosynclinal folding processes taking place in the Mongolian arch and Ider-Selengen zone, where a cover of basalt trachyliparites was present as part of Carboniferous deposits. The Carboniferous is completed by accumulation of coal-bearing coarse clastic molasse and set up of sub-alkaline granite massifs in the early Permian.
Triassic is the time of tectonic stabilisation of this geological block. The tectonic and magma activity is resumed in the zones of the junction of rigid blocks only in early Jurassic. Resumed mountain forming processes determined emergence of vast swampy intermountain depressions and hollows, where accumulation of coal-bearing molasses was taking place at that time (Kharkhirinsky, Karchiunsky, Ulug-Khemsky and other coal accumulation basins). Geochemical specialisation of Mesozoic structural formation complex appears through domination of components of mantle origin present in the nodes of conjunction of deep faults (mercury, antimony, arsenic, cobalt, silver, etc.).
Cainozoic deposits of Ubsunur Hollow provide a non-conforming cover for all the older stratified and intrusive structures. The lacustrine clays, sands, silts and marlstones with hyppurite fauna of Miocene age are revealed by the sides of river valleys and ravines dissecting the alluvial benches of the present-day environment. Based on drilling and electric probing data, the thickness of Miocene deposits in the north-west part of the hollow reaches 900 m, south from the town of Ulangom the thickness is 500 m, in the area of Shara-Nur it is about 600 m and in the deeply submersed parts it can be down to 2000 m.
Among the fractures, the meridianally stretched (Tsaagan-Shibetu-Kharkhirinsky), latitudinal (Tannuolsky and Kharkhirinsky), north-eastern (Ubsu-Nur-byi-Khemsky) and north-western (Shapshalsky and Gurasangolsky) systems are dominant. The diamond-shaped Ubsunur-Naringol geological block with a long north-eastern strike axis is described by the highest tectonic activity. It is limited by the Agardagskaya zone fault system in the south-east, by Southern Tannuolsky fault in the north, by south-western extension of Ubsunur-Byikhemsky fault in the north-west and by the west end of Khenkhukhesky fault in the south. Ubsunur-Naringolsky geological block is a microplate with its northern flank submerging at rate increasing over the last 20 years (0.4-2.0 cm/year), while the southern flank is uprising along the Khirgusnursky

overthrust. Multiple earthquakes (Khangaiskoye, Uregnurskoye, West-Tannuolskoye) provide evidences of present day tectonic activity of the block. The last earthquake happened November 16,1990 with epicentre in the vicinity of Southern Torgalyk and 6 point intensity based on 12 point scale. Also, mobility of the block is emphasised by the river capture (Nariin-Gol, Duzherchi), ground water backing at the north bank of Ubsunur Lake.

This way, the area of Ubsunur hollow (depression) and its folded borders make up a unique region with long history of evolution and a series of geodynamic situations, facilitating progressing consolidation of the Earth crust. Development of various types of endogenous ore-forming processes and endogenous mineralization was taking place in the situation of evolution and changing geological dynamic regimes. Ferrous quartzites (Mugurskoye filed), kyanite-sillimanite alum slate ore field (Erzinskoye, rare earth metallic pegmatite of Khussiin-Gol and Kachik) and phosphorite of Sengilen upland represent the most ancient type of ore formation, as well as marble, granitoid, ceramic pegmatite, which can be used as facing and decorating materials. The chrome-iron ore field (Agardagskoye) and complex pyrite field (mountain pass in the Eastern Tannu-Ola) were formed during the early Cambrian metal orogeny time. Devonian is noted by a remarkable variety of endogenous minerals: copper-molybdenum (Despen), tantalum-niobium (Ulug-Tanzek), lithium (Sengilen), radioactive (West Tannu-Ola), gold-and-silver (Kharkhira), mercury (Tsagaan-Shibetu), as well as halite (Dus-Dag, Sagil), gypsum (Khuregechi) and lead-and-zinc ore (Solchur). The buried alluvial placer deposits of titanic iron ore (ilmenite), rutile, monazite, platinum and gold ore (Tarlashkyn, Haryn), tin ore (Kargy, Khusiin-Gol) and jade (Ular) were formed in Cainozoic. The commercial operation of these large-scale (if considered necessary) tantalum-niobium, lithium, silversulphosaltic, gold and platinum ore sites requires serious environmental and economic evaluations and expert reviews.

2.1.5. Hydrology and hydrography

The basin of Ubsunur belongs to one of barely researched hydrological regions. The high mountain areas appear as feeding zones of the Ubsu-Nur Lake. This is the place where main river discharge is formed. The river network density ranges from 0.01 to 0.03 km/km^2, with lowering altitude the river network density continuously decreases and in the foothills is about 0.01 km/km^2. The Tess and Kharkhiraa rivers are the most prolific water-bearing tributaries of Ubsunur Lake.

The snow and rain feeding is typical for all the rivers of the basin except for Kharkhiraa, which is fed mostly by waters of springs. The level and regime of these rivers flowing into Ubsunur Lake are highly dependent on the climatic situation of the year. All rivers, except for Kharkhiraa and Tess freeze to the very bottom in winter. At the Borsho and Turgen the maximum levels of the year are attained during the flood period, while at Barun-Turun, Kholu, Erzin the maximum levels are correlated with the pouring rains and summer snow melting. The discharge of Tess River with its mixed feeding pattern is also highly dependent on precipitation.

Fluctuations of Ubsunur Lake water level are negligible, the average perennial level amplitude accounts for 102 cm, with maximum amplitudes of 296 cm. Retrospectively, the lake water level was slowly decreased until 1982 and became to increase in 1983. The level of water in Ubsunur Lake follows the precipitation curve with a delay of 1 year.

the catchment area of Ubsu-Nur with the total area of 71,000 km^2 stretches west to east, and water area of the Lake is 3,300 km^2. The Lake is the final destination of discharge and is situated in the lowest part of western part of the hollow.
Many rivers feeding the Ubsunur Lake and flowing down the Khan-Khulkhei ridge and northern ranges of Tannu-Ola further on disperse their beds, so that no surface flow reaches the Lake.
He largest water artery of Ubsu-Nur Lake basin is the Tess River with a total area of catchment basin of 29,000 km^2 , total length about 770 km. The length of the river within Tyva Republic is 375 km.
Nariin-Gol River is the second largest tributary of the lake, which collects fresh groundwater in the central part of the hollow. The average annual discharge of the Tess is about 30-40 m^3/s, of Erzin River it is 20-25 m^3/s, for average and small rivers its ranges from 0.82 (Borsho) to 14.9 m^3/s (Bayan-Ul). The river waters of Ubsu-Nur basin are slightly mineralized with hydrocarbonates and calcium.
The discharge to Ubsunur basin is lagerly formed by atmospheric precipitation in the mountains and melting glaciers.
The smaller lakes of Ubsunur basin are situated in the mountain taiga and desert-steppe landscapes.
Two Kara-Khol lakes are located in the area. One of them is situated in the mountain-taiga zone of the Eastern Tannu-Ola, at a 1700 m altitude, where the river Khoil-Oozhu begins its flow. The lake is eutrophic, with flowing water. Another lake Kara-Khol begins in the offset of Khormnug-Taiga ridge. Its is also an eutrophic mountain taiga water body. Both lakes are used as watering places for summer pasturing.
In the eastern desert-steppe part of Ubsunur hollow the area with Tore-Khol, Dus-Khol, Bai-Khol and Shara-Hur lakes is situated. Al lakes are enclosed and salty, except for the largest and biggest of them Lake Tor-Khol.
Tore-Khol is enclosed lake, but has no large tributaries. It is fed by ground springs. Tore-Khole lays amidst a vast sandy massif representing the north offset of Borig-Deg, its total water area is about 100 km^2 at 1148 m altitude with average depth of 6-8 m and down to 40 m at the neck. Productivity of the lake is low, it is used as watering pond for cattle in summer, has high aesthetic qualities, presents a recreational site for people and a natural monument and part of the buffer zone of the sanctuary.
The freshwater lake Bayan-Nur with a water area of 30 km^2 and maximum depth of 15 m lays at 931 m above see level in the mountain steppe belt. On of the sources of Nariin-Gol River begins there. The lake is fed by powerful spring water outfall.

2.1.6. Soil cover

Soil cover, comprised by a wide selection of soil types reflects large variety of natural conditions in the hollow.
The Ubsunur Hollow being an intermountain depression constitutes a complex structure, where the vertical pressure gradient and internal atmospheric circulation, the latter redistributing moisture in the hollow, together form explicit zonality not only in the mountain borders, but also on the hollow bottom. The soil zones change one another very quickly, at a very short distance, and that attributes its own provincial traits to the hollow. The latter ones are expressed in the structure of vegetation, the numbers and quantity of soil fauna, soil properties and biogeochemistry of macro and microelements.
Among the most general traits of the basin soils some are worth mentioning. All soils are highly skeletal and rubbly, with light texture, fairly good microaggregation, the

soil profiles are well washed from gypsum and soluble salts (except for hydromorphic alluvial valley and delta soils, as well as those of lacustrine valleys), with domination of farinose calcareous growth, with a shortened humus profile and high mobility of humus.

Mountain and foothill soils

The mountain ranges, which frame the hollow, are stretched latitudinally and that leads to high contrast of microclimatic conditions in the framework of vertical belt zonlity. In general, the mountain ranges are described by complex structure of the soil cover, the former related to migration and inversion of natural belts, as well as to some of them wedging out or dropping out in specific circumstances along with simultaneously emerging signs of xeromorphism, the latter representing provincial traits of the region. Also, vividness of vertical belts is not always the same and it varies from one range to another depending not only on altitudes alone, but also on overall bioclimatic features.

Following the vertical belts the soils types are:

1. Mountain tundra

The top parts of the ridges are occupied by mountain tundra landscapes. The mountain tundra belt is situated at an altitude higher than 2000 m. According to humidification, they are subdivided into:

mountain tundra sod soils, formed in the situation of afforded flushing regime and containing 8-10% of humus;

mountain tundra humus soils, formed in the situation of variable extent of soil water stagnation resulting from terrain conditions or poor rock permeability.

2. Mountain taiga and mountain meadow soils.

Below the tundra a belt of mountain taiga is situated. On the slopes of southern exposition the mountain taiga belt is shortened and begins at 1700-1800 m. The following soils types represent the mountain-taiga-and-woods belt:

mountain taiga frozen soils occupy the upper part of the taiga belt with cedar-larch forests with moss-lichen soil cover and contain 6-8% of humus;

mountain taiga frozen peaty-humic-gley soils are formed in depressions of relief, along the upper parts of shaded slopes. Moss-peaty litter covering these soils fulfills insolating function;

mountain forest frozen acid humic soils are formed in sharply continental climate under the pseudotaiga larch forests.

mountain sod taiga deeply frozen soils occupy the lower part of mountain taiga belt under the light xerophytic larch taiga. Organic matter contained amounts to 8-14%.

3. Mountain meadows.

Mountain meadows are spread out both in the high mountain belt, below tundra or in combination with it, where they occupy the warmer slopes, and in the medium mountains, in combination with taiga landscapes or instead of them in cases of sub-arid types of vertical zonality. The ranges of altitudes, at which the deeply freezing mountain meadow soils are formed, appear to be quite embracing: from 1900-2000 m at the northern slopes of Selingen to 3000m on the southern of Mongolian Altai and Mongoon-Taiga.

A sharp changeover to the steppes, conditioning peculiar structure of the soil cover, is typical for the lower boundary of the taiga soils. It is here that the slope exposition is implied so vividly: the taiga soils are correlated with relatively cold northern slopes, while the southern slopes are taken by steppe landscapes and *mountain chernozem*

and *mountain chestnut soils*. A sharp changeover from *sod taiga soils* to *steppe* ones should also be noted.
The *chernozem soils* are scattered fragmentally amidst the mountain steppe landscapes and are usually correlated to northern and in lesser extent to western slopes, as well as to flattened detrital fans. *Farinose calcareous chernozem* soil type is the most frequently encountered. Its is largely spread out at the northern slopes of Khan-Khukhei Ridge beneath the mountain forest belt. The *mountain meadow soils* are formed in wide intermountain depressions and valleys, but provided spatial coverage is negligible. The latter soils are enriched with humus; its content reaches 6-10%.

4. Mountain chestnut soils.

The mountain chestnut soils form a continuos and major vertical belt at all the mountain ridges surrounding the hollow. At Tannu-Ola and Mongoon-Taiga these soils can be spread from the foothills up to the high mountain belt. Vegetation ranges from dry steppe with mountain meadow herbage to desert-like xerophilous phytocoenoses. Nevertheless, due to higher elevations, the mountain chestnut soils are formed in milder continental conditions compared to the bottom of the hollow.

Soils of intermountain Ubsunur hollow.

The vertical zonality in the hollow is expressed as secular structure, elongated along the west-east axis.
The most arid desert soils are encountered at the hollow bottom: these are ***chestnut, sandy and brown desert- steppe soils***.
Brown desert-steppe soils are spread out in the western and a narrow stripe of the northwestern part of the hollow. The topsoil can be described as ligneous with rock debris and brown iron crust of desert, vegetation is thinned out and amounts only to 30-40% cover; humus content is 1-2%.
The belt of light chestnut soils (860-940 m above the sea level) is situated above the desert-steppe soils. Unlike the brown steppe-desert soils, the profile of light chestnut has not explicit porous surface crust or smooth brown coloration of the soil mass.
Chestnut soils are the background soil type of the intermountain depressions. They occupy the vast foothill plains and steppe-like riverine and lacustrine terraces at 900m to 1100 m; the humus content constitutes 1,5-3%.
At the beginning of slope fans on the southern side the chestnut soils change over to dark chestnut ones, creating a stripe of 50 m to 1500 m width. Along with the same amount of heat as the rest of the hollow, the latter stripe receives better humidification due to increased runoff from the mountains. The herbage here is higher and denser. Soil fauna actively populates this area of life concentration. It is the area where main human activities are concentrated as well. Organic matter content is 3-5%.
Dark chestnut soils merge with mountain chernozem and meadow steppe chernozem at the fans of northern slopes of Khan-Khukhei and Turgen-Ula Ridges.
This way the vertical circular belts are clearly explicated in the soil cover of the hollow.

2.1.7. Flora and vegetation.

Some 552 species with Asian areas of distribution are registered in the flora Ubsunur hollow, among then 299 are widespread in the Asia. The species with narrowed areas

of distribution restricted by the mountains of Southern Siberia, Northern Mongolia and some penetrating the North of Middle Asia are of the most interest. Such species amount to 234 items in the flora of Ubsunur Hollow. Among the latter, 164 species are widely spread in the mountains of South Siberia (Dauria, Altai-Sayan region), East Khazakstan, Middle and Central Asia. The other 70 species make up a group of endemic of Altai-Sayan region and Mongolia. Only five of them are truly Ubsunur endemic species (Astrogalus polozhinae, Juncus salsuginous subsp. Tuvinicum, Stipa barhanica, Asragalus tuvinicus, Zygophyllum pterocaprum, subsp. Tuvinicum).

The flora of Ubsunur Hollow hosts the relicts of various ages.

Tertiary relicts are represented by edificators of desert and dry steppe plant communities, such as, sparrow saltwort, multirooted onion, Bunge's pea shrub, desert gypsophila, prostrate summer cypress, Siberian larch and Siberian spruce, which form gallery forests on the floodplain of Haryn River, as well as Halocnemum, European winter-fat, Altai onion and others.

Glacial relicts include: Siberian saxifrage, feathery pea shrub, thoroughwax, beard gentian, prostrated gentian, Siberian patrinia, sandal-leaved wormwood, Siberian whitlow grass, scaly meadow grass.

Pleistocene relicts include: prairie spear grass, rock jasmine, Siberian feather-grass, Altai oatgrass, prickly saxifrage, prostrated pennycress

The *glacial relicts* enlist more then seven species; the group of *periglacial steppe relicts* is quite numerous.

Vegetation of Ubsunur hollow follows the vertical zonality laws. The stony moss-lichen, shrub and herbaceous mountain tundras dominate in the vegetation cover. The areas of moderate humidification with good drainage and mountain meadow soils are occupied by subalpine and alpine meadows. The high mountain meadows do not form a solid belt. Large areas in the lower part of the high mountain belt are occupied by subalpine shrubs, such as dwarf birch and high mountain light forest. The dwarf birch forests (yerniks) are mainly composed by ground birch, northern willow, Krylov's willow, rhododendron, juniper and feathery pea shrub.

The mountain taiga belt is described by clear domination of cedar and larch forests with well developed moss soil cover. Among the edificators the Siberian cedar, Siberian larch and Dahurian larch should be mentioned.

The forested steppe belt with its typical meadow steppes is occupying the flat oval hill tops and gentle upper slopes in the range of 900-1600 m above sea level do not form a continuous belt. Specific trait of the belt is close neighbourhood of forest and steppe within a short distance.

The steppe belt unites the interfluve spaces dominated by steppe phytocoenoses and embraces both flat and undulated foothill areas. The small bunchgrass true steppes can be distinguished, as they occupy an interim position between the extremely arid desert steppes and more humid large bunchgrass true steppes. The sheep's fescue, June grass, Cleistogenes, Krylov's feather grass and firm sedge appear as biocenose edificator.

Large bunchgrass steppes occupy less area compared to small bunchgrass ones, and the formers are concentrated at the periphery of the hollow and at the foothill elements of terrain. The feather grass, desert oat grass, sedge and other species appear as edificators. The true shrub steppes of Ubsunur hollow are represented by two formations: pea shrub small bunchgrass and pea shrub large bunchgrass. Dwarf pea shrub and environmentally more mesophytic Bunge's pea shrub stand for edificators.

Desert steppes are widespread in Tyva, in the hollow they are concentrated on river terraces, along the gently sloping fans in the foothills, and stony southern slopes of the

hills. These are very arid communities within the steppe belt, they are described by low and sparse herbage. The phytocenoses appear as combinations of contacting bunchgrasses, the sprawled shouts of sagebrush, astragalus, cinquefoil, vitex, onions and other plants are evenly spread on the surface of stony soil. The environmental range is solidly dominated by xeropetrophytes (up to 70%). Geographical analyses of the flora revealed clear domination of Central Asian species.
Aside from steppe phytocenoses the vegetable cover includes intrazonal communities, such as meadow, halophytic, psammophytic, forest (cottonwood) and shrub (sea buckthorn) formations in along the riverbeds in the valleys and on the islands.
The flora of Ubsunur hollow accounts for 14 species registered in the Red List of Tyva Republic, 1 species enlisted in the Red Book of the Russian Federation. Out of 14 species 8 are rare and endanger ones; 12 species are considered rare (Table 2).
Use. Floral components: aromatic onion, bear's onion, Altain onion are used as spices.
Cedar nuts, wild berries and mushrooms are procured in the forests. Negligible quantities of larch are used for construction of rural housing.
Local population in negligible quantities procures medicinal plants. There is no commercial procurement.

2.1.8. Fauna

The faun of Ubsunur hollow, just like its flora, accounts for quite a n umber of endemic species. (Table 3)

Mammals

Among the mammals group 5 rare and endangered species are noted, 7 rare species and other 8 species are listed in the Red Data Book of the Russian Federation. And 2 species are listed in the Red Data Book of IUCN, these are dhole (Cuon alpinus (Pallas, 1811) and snow leopard (Uncia uncia (Schreber, 1776).
Among extremely are species Asiatic ibex, argali or Marco Polo's sheep, dzeren (black-tailed or Mongolian gazelle) are noted (Table 4).

Birds

Taxonomic list of Ubsunur hollow birds (V.I. Zabelin, 1993) lists 359 species encountered in the hollow. Among them 42 species are listed in the Red Data Book of the Russian Federation and 3 species are listed in IUCN Red Data Book. These are white-tailed sea eagle, hooded crane and peregrine falcon (Table 5).

Reptiles

There are four isolated populations of reptiles: (Phrynocephalus versocolor Strauch), (Eremias multiocellata unter, 1973), (Elapha dione Pollas) and (Eremias przewalskii Strauch).
Among 20 rare beetle species encountered in Ubsunur hollow 16 species are endemic.

Commercially important animals.

Mammals

Maral (Cervus), roe deer (Capreolus), marmots (Marmota) and wild boar (Sus) are the most important among animals for hunting of the local population. Their meat is used for food. Marmots are hunted for the diet qualities of their meat, as well as for fat, which is considered medicinal by the local people and is in high demand.
The meat of ibex (Capra), elk (Alces) and reindeer (Ranqifer) is hunted to a lesser extent in smaller quantities.
Musk deer is largely hunted for its musk gland used as medicine in Tibet and in perfumery industry.
The raw furs are procured by locals through hunting squirrel (Seiurus), sable (Martes), lynx (Felis lunx), fox (Vulpes), wolf (Canis), bear (Urus), ermine (Mustela ermines) Siberian weasel (M. sibiricus), wolverine (Gulo) and muskrat (Ondatra zilethica).
Among the total of 74 mammal species of Ubsunur the local population uses sixteen

Birds

Tuvinians, constituting indigenous population of Ubsunur hollow, barely utilize the game bird resources of the hollow. Incidentally Altai snow cock (Tetraogallius) and partridge (Lagopus) are hunted not for food, but for medicinal qualities of their meet.
The resources of feathery game in the hollow are considerable both in terms of numbers and variety of species. A meaningful quantity of game birds, such as 27 species of geese (Anseriformes) , 11 species of Gallinaceae (Galliformes), 7 species of pigeons (Columbiformes) could be procured here.

Fish
Commercial fishes of Ubsunur hollow are represented by the following species:

1. Order of Salmonifirmes, Mongolian grayling (Thamallus brevirostrus) is indigenous species widespread in a limited basin of Khindiktig-Khol Lake, tributaries of Mogen-Buren River and some other. Commercial stock is barely utilized. The annual production rate does not exceed 3-5 tonnes of grayling while the permissible production rate is 25-35 tons.

2. From the suborder of Esocoidei, the pike (Esoxlucius) is a species acclimatized in Ter-Khol lake. The stock islimitedand fully utilized. Annual fishing is carried out by fisherman crews from the town of Kyzyl and annul catch is 13-15 tons.

3. From Cyprinoidei, the Altai carp (Ozelenciscus potanini) a very numerous aboriginal species. The stock is used negligibly and irregularly, the catch is 5-10 tons per year. That is litter fish with poor nutritional qualities. The overall permissible catch amounts to 100 tons per year. For utilization of this raw resource it is necessary to establish its processing, such as canning process.

Vertebrates of Ubsunur hollow

Mammalia

1. Insectivora are represented by 4 steppe, taiga and water landscape species.

    1. Long-eared hedgehog - Ernaceus auritus – common
    2. Common shrew – Sorex arancus – common
    3. Sorex caecutiens – rare

4. Eurasian shrew - Neomus todiens – rare

2. Chiroptera are represented by 4 species. Due to unfavorable continental climate and absence of shelters the numbers of animals are not high.

    1. Moustachy bat – Myotis mystacinus – rare
    2. Water bat – Myotis daulentonii – common
    3. Long-eared bat – Plecotus auritus – rare
    4. Northern bat – Eptesicus nilgonni – rare

3. Lagomorfa are represented by 5 species:

    Two Lepus species include Alpine hare (Lepus timidus) and tolai-hare (L.Tolay) and 3 species of haymakers (Ochotonidae): northern haymaker (Ochotona alpina), Mongolian haymaker (O. Prieei) and Dahuran haymaker (O. daurica).

4. Rodentia are represented by 32 species.

    The big rodents are represented by marmots (Marmota), such as Mongolian bobak (Marmota sibirica) and gray marmot (M. baibacina). Muskrat (Ondatra zibethica) is an acclimatized species.
    Small rodents are represented by:
    1) Central Asian desert species are represented by hamsters (Phodopus): (Ph. Robovskii) and (Ph. Campbelli); jerboa: hairy-legged jeboa (Dipus saqita) and five-toed pigmy jerboa (Cardiocranius) and voles: northern mole vole (Ellobiustalpinus), flat-skelled vole (Alticola strelzovi) and [гоби-алтайская п.] (A. Baraleschip).
    2) Boreal and taiga species: red-breasted mouse (Clethrionomys), gray lemming (Myopus schisticolor) and common field mouse (Apodemus).

5. Carnivira – 18 species.

Among the canine these are wolf (Canis lupus), dhole (cuon alpinus), red fox (Vulpes vulpes) and corsac fox (V. carsac). Felidae are represented by lynx (Felis lunx), Manul (Felis manul), snow leopard (Uncia uncia); bear (Urus arctos).
Small predators are sable (Martes zibbelina), marbled polecat (Vormela perequsna), ermine (Mustela ermines) and wolverine (Gulo gulo).

6. Artiodactula – 9 species

The high mountain animals are represented by the following species: in the mountain tundra habitats it is reindeer (Ranqifer tarandus lennicus), in the alpine belt it is Argali (Ovis ammon), on the cliffs it is Siberian ibex (Capra sibirica).
In the taiga forest and floofplain forests these are wild boar (Sus serofa), musk deer (Moschus moschiferus); roe deer (Careolus capreolus) and maral (Cervus elaphus).
Twenty five – thirty years ago large herds of dzeren (Cazella qutturosa) populated the desert and steppe part of the hollow.

Reptiles
Suborder of lizards (Sauria) is represented by 5 species:

1) Central Asian desert: a) (Eremias przewalskii tuvinicus) is an endemic subspecies with a narrowed distribution area;
2) (E. Multiocellata lannikowi) is an endemic subspecies with limited numbers.
3) (Phrynocephalus versicolor kulagini) is a common widespread species.

Taiga Siberian species:
Sand lizard (Lacerta agilis) is an exceptionally rare species.
Common lizard (L. Vivipara) is a common type within corresponding biotopes.

Suborder of serpents (Serpentes) accounts for 3 species.

1. (Tlaphe agilis) is an exceptionally rare species.
2. Mocassin snake (Aghistrodon halys) is a rare species of open stony biotopes.
3. Adder (Vipera berus) is an exceptionally rare species along the slopes of Sengilen and Tannu-Ola ridges.

Fish – please see the section on "Commercial fishes", where almost all the fish species are listed with the exception of Ubsunur loach, which is abundant in all the rivers of the hollow, but has no commercial value.

Birds
In Ubsunur hollow 368 bird species are noted. Among them 37 are listed in the Red Data Book of Russian (Table 5).

1. Loons (Gaviiformes) – 2 species
2. Grebes (Podicipedoformes) – 4 species
3. Totimplate birds (Pelicaneformes) – 2 species
4. Storks (Ciconiformes) – 6 species
5. Geese (Anseriformes) – 31 species
6. Falcons (Falconiformes) – 33 species
7. (Galliformes) –13 species
8. Cranes (Gruiformes) – 14 species
9. Shorebirds (Charadriiformes) – 65 species
10. Pigeons (Columbiformes) – 7 species
11. Owls (Striqiformes) – 7 species
12. Hoopoes (Upupifromes) – 2 species
13. Woodpeckers (Picifirmes) – 7 species
14. Cuckoos (Cuculiformes) – 2 species
15. Hightjars (Carimulgiformes) – 3 species
16. Swifts (Apodiformes) – 3 species
17. Sparrows (Passeriformes) – 114 species

2.1.9. Natural features

Geographical position of Ubsunur hollow on the junction of Siberian taiga and Central Asian desert preconditioned the contrasts of living and inanimate nature. High glacial mountain peaks, Siberian taiga and arid deserts and semideserts, sandy massifs with their typical relief can be found here. The hot climate and weathering have created intricately shape residual mountains, which make one think of prehistoric animals. The cold mountain lakes and transparent lakes with sandy beaches are close

neighbours, the large and small salty lakes are numerous in the intermountain depressions. Among the most distinctive traits the following can be mentioned:

1. The snowline at the Mongoon-Taiga mountian (3976 m) is positioned at about 2700 m. The glacial peak sparkles in the sun around the year. It is the only glacial peak in the south of Russia. The climbing difficulty attracts many mountaineers, including those from foreign countries. The headwaters of Kargy and Mogen-Buren Rivers are situated here.
2. The residual undulating elevated plain in the eastern part of the hollow within the limits of Erzensky and Tes-Khemsky kozhuuns. The remnants of ancient mountains attract glances to their intricately shaped cliffs and landscapes, presenting a mini-picture of the environment of the mountain ranges surrounding the intermountain depression.

2.1 The residual mount Onchalaan (1364 m) is one of the key monitoring clusters in the hollow. It's landscapes form vertical mini-zones. There is a little lake in the intermountain depression in the foothills. The complex imitates natural features of the entire Ubsu-Nur hollow.

2.2 The residual mountain Yamaalyg (1421 m) is the nuclear zone of the cluster. It is composed by Precambrian pinky-red granites and granitoids. Due to weathering, the ancient peaks have attained various unusual forms. The southern part has many cosy "inlets" occupied by the shepherd winter camps. The mountain is attractive not only to present day people, but also was attractive for ancient residents of the hollow. Over 350 burial mounds of various historical epochs surround it. The north-eastern sides of cliffs bear Palaeolithic drawings done in red paint, very well preserved till our days.

3. The Lake Tere-Khol is situated on the Russian-Mongolian border, in the midst of sandy massif Eder-Elezin; it is a fresh clear lake with sandy bottom. The water area is about 100 square km, the lake altitude is 1148 m above the sea level. The lake is non-contaminated. Its average depth is 20 m, at the neck it reaches 40 m. It is the favourite recreational site of local population.
4. The surroundings of Irbitei and Kadyi Rivers, situated on the southern slope of the Eastern Tannu-Ola are represented by stony mountain steppes dissected by deep canyons. The are of a lot of interest in terms of geology, environment and esthetical value. This place could be a tour objective.
5. The Selingen uplift (2000 – 3200 m) constitutes ancient grey mountains comprised by blue-grey marble dolomites and other strongly metamorphic sandstones, attractive due to interesting weathered shapes, structure, parti-coloured marble cliffs and beautiful light larch forests with rich grass cover.
6. The White Khaiyrakan (1900 m) appears as a separately standing mountain of Selingen uplift, blue-white in colour, with four merlons of the same marbled dolomite and other limestones at the top, which makes them very vivid on the background of dark middle mountain terrain. Local residents had long considered Khaiyrakan sacred and had always protected it. The are unwritten roles of behaviour in sacred places like that, which are always followed by people. Water mineralised with hydrocarbonates comes down the mountain. Local residents name the water "arzhan" (healing spring), it is helpful for people with gastrointestinal condition.

2.2. Socio-economic situation and development

2.2.1. Administrative and economic units.

The Ubsu-Nur Lake basin in the Tyva part is shared between 4 administrative territorial units (Kozhuuns) of the Tyva Republic (Table 6). The north boundaries of kozhuuns are coincident with water divides of the mountains and southern are coincident with the Russian-Mongolian border. The latter divides the basin into the Russian and Mongolian parts of the hollow.

The Tyva part of Ubsu-Nur hollow accounts for 21 rural settlements, among which 4 villages appear as regional (kozhuun) centers of Mongoon-Taiginskt, Ovursky, Tes-Khemsky and Erzinsky kozhuuns. Each kozhuun is subdivided into sumons and the symons in terns are comprised by collective farms (kolkhozes), soviet farms (sovkhozes), collective enterprises, associations and arat peasant businesses (Tables 6 and 7). The villages represent administrative centres of kozhuuns, where the rural administration, local khural (type of parliament), educational, cultural and medical centres and industrial facilities are situated.

The chairman of kozhuun administration is elected by the people and approved by local khural. Kozhuuns have their representatives in the Supreme Khural of Tyva Republic, while representatives have of the Center, being representatives of the Presidents of Tyva Republic are in each kozhuun. The kozhuun centres are connected to the city of Kyzyl, the capital of the republic, by asphalt automobile roads. The distances form centres to Kyzyl vary from 170 to 520 km.

2.2.2. Population and social situation

35,100 people populate the territory of four kozhuuns. The animal breeders lead nomadic life, and live in felt jurts. Services to population are provided in kozhuun centres, there are bakeries, repair shops, shops, canteens, hospitals, drugstores, schools, libraries and cultural centres. The population of settlements is united into kolkhozes. Aside from them, there are 202 individual arat peasant economies. The main business type is distant pasture cattle breeding.

With the end of large-scale collective farm economy the arats (local peasants) were on the crossroad of social problems for a long time. The market economy attitude is difficult to get used to. And th4e collective farms could not exist without governmental support.

Due to difficulties in the sale of agricultural product, local residents are basically left without any income. Cattle is the main source of living. It is used both for subsistence and for sale. In relation to that, the total number of cattle has decreased by 150-200 thousand heads compared to the beginning of 1990s.

Traditional land use, the rotational pasture animal breeding envisions strict rotation of pastures between the seasons of the year. With the emergence of individual arat peasant economies both the number grazing moves per year and the distance of migration have decreased substantially. The pastures are now used for a long period of time. Herders make only one move per year and only for a short distance. The latter creates concentration of people and animals within limited areas in the vicinity of water sources, which leads to trampling of pastures around the camps and loss of most valuable fodder grasses in the pastoral phytocenoses. New scientific approaches making use of progressive experience of traditional land use need to be developed.

Due to extinction of large-scale farms and destruction of water wells, the remote pastures are not used any more, particularly in the vicinity of Mongolian border. Also, the growing number of cattle theft cases on the border has made the herders leave these traditional pastures and move deeper into internal Tyvinian territory towards the

southern slopes of East Tannu –Ola Ridge. That's why the population and cattle are now concentrated in the internal river valleys. This problem urges solution at Federal level.

2.2.3. Agriculture and productivity rate

Animal breeding

The total number of cattle heads within the area of nomination accounts for some 362,756 heads (Table 7). The cattle breeding is the main source of living for the population. The cattle meat is food and commercial product. Aside from meat, wool, down, animal skins and fells, milk, sour milk products and butter are also produced. The cattle products are sold to the state, individuals and business people.

Animal husbandry production and cattle productivity as of 1999 are given in the table below (in tons).

Kozhuun names	Production, tons			Productivity, kg
	Cattle sale	Milk	Sheep wool	Average milk yield per cow
Erzin	243.4	16.4	14.0	400
Tes-Khem	214.0	8.8	12.5	209
Ovur	322.5	-	24.5	-
Mongoon-Taiga	378.5	-	12.3	-

Problems in animal breeding

With the traditional nomadic lifestyle the life of shepherds and condition of the cattle significantly depend on natural conditions. The cattle dies from lack of fodder related to draught or abundant snowfalls in winter, as well as from infections. In 1999 the biggest loss of cattle was noted in Mon-Taiga kozhuun, it turned out to be 7.6 times (2,467 heads) more than usual, for goat and sheep it was 2.9 times (2,020 heads) average. The second largest loss of cattle was observed in Ovur kozhuun, where over 1000 cattle capita were lost (5,945 heads). The latter causes further down draw of the population living standard and crate a serious socio-economic problem.

Agriculture

The agriculture is poorly developed in the considered area. The land use scheme is presented in Table 8. The land is owned by the state and leased by collective enterprises and individuals.

The total area of agricultural lands is 1,238,697 ha, among which 1,0276,006 ha or 97% of land area are pastures. The arable lands constitute 1%, where barley, oat, millet and fodder grasses are sown. The cops are not high, about 0.4-0.8 ton per ha. Presently the most part of arable lands is subject to light wind erosion. The saline lands constitute negligible area within the administered land area.

2.2.4. Public health and education

Public health

Over the last years the public health level has decreased considerably. The living standard has dropped, nutrition has deteriorated, while medications, on the contrary, have become expensive and unaffordable for rural residents and shepherds.

The number of cases of cold generated diseases, such as pneumonia, tuberculosis, cardiac and nephritic deficiency has increased. Morbidity of children due to meningococcus infection and acute intestinal infections and of youth due to tuberculosis has increased. The rate of syphilis is raising, in Tes-Khemsky kozhuun it is 10% higher than in the rest of the Republic.

Education

There are 21 schools in the area of nomination, among them five in Erzin, 8 in Tes-Khem, 6 in Ovur and 2 in Mongoon-Taiga. In many schools children have to split in two shifts to be able to attend, as there is not enough room. The teachers' salary payments miss the deadlines. Regardless of socio-economic and everyday life difficulties there have been no strikes among the schoolteachers.

Rural teachers are great enthusiasts of the study of their surroundings, of environmental education and broadening overall environmental awareness of the general public. Three schools have been assign the status of experimental schools, they are situated in the villages of Moren, Khandagaity and Erzin. In these schools environmental education programmes making use of traditions of Central Asian nations are carried out with the guidance of L.K. Arakchaa, professor of Tyva State University. The bases of environmental education and awareness is laid by such notions as native land, caring attitude towards environment, by studying traditional environmental culture of nomadic nations and rehabilitation of traditional cultural ceremonies and sacred areas. Sacred areas are presently functioning as ethnic sanctuaries, they appear as refugees for rare plant and animal species.

2.2.5. Development of tourism and historical and cultural monuments.

Unique natural features, presence of historical, cultural and archaeological monuments, traditional nomadic lifestyle with its ethnographic peculiarities and traditional crafts provide plenty of opportunity for development of various types of tourism in the hollow, such as 1) environmental, 2) ethnic environmental; 3) scientific.

Scientific tourism can be subdivided as observations and photographing of birds, small mammals, beetles, plants, natural features and archaeological monuments.

The tourism can make use of multiple routs with duration of trips varying from 4 days to 3 weeks. Means of travel: 1) vehicles; 2) walking; 3) horseback riding; 4) cycling; 5) mountain peak climbing; 6) introduction to ethnic lifestyle.

Ubsunur International Centre for Biospheric Research and biospheric sanctuary in co-operation with Goscomecology of Tyva Republic have developed various routes going through the territory of Tyva and Mongolia, in particular, and of the Altai-Sayan environmental region as a whole.

Presently the amateur tourism is in the development stage, while the tourist industry is just coming into being. The Institute of Geography of the Russian Academy of Science together with Greenpeace Russia have carried out an expedition along the potential routes and elaborated a pattern for development of tourism in the hollow. Being a historical and cultural heritage site the hollow retains multiple burial mounds and fields, deer stones, vertical memorial plates, human stone effigies, rock paintings (petroglyphs) and ancient human camps. Professor V.V> Bugrovsky has guided creation of inventory of some 15,000 burial mounds. The "Yamaalyg" cluster should be noted in particular. The residual mount of Yamaalyg is surrounded by compact burial are accounting for some 350 fields.

Being a natural monument, the hollow is distinguished by unique natural variety of landscapes, contrasts, abundance of lake, etc.

2.2.6. Infrastructure

The south-east and west parts of Republic are connected with the capital by good quality motor roads. Two types of earth roads, the automobile and cartage roads exist within the hollow. The four wheel drive vehicles used to be the main means of transportation in the hollow. Due to increasing price of gasoline over the recent years the animal –drawn transport is lagerly used.

The khozhuun centres are connected to the capital by power lines, radio and telephone lines. TV is accessible at all locations, even at herder camps.

2.2.7. Development strategy

Development of pastoral cattle breeding. In order to continue this farming trend it is necessary to have its socio-economic basis established. The former basis of state collective farms is non-existent anymore. Arats have trouble getting used to new market economy. The state support is absent or negligible.

Kozhuun administrations make efforts to establish local crafts, support arat economies and living standard. But without substantial investments the efforts are left on paper. Due to weakening of machine and equipment park and low purchasing capacity of the population remote herders caps and arat economies receive virtually no services.

It is necessary to make serious steps for socio-economic development of rural population, to develop traditional land use methods, facilitate pasture rotation and fix land areas with the family groups.

Inscription of the area into the List of World Natural and Cultural Heritage Sites of UNESCO may be able to facilitate further socio-economic development of the region.

3. Present environmental condition, conservation and management.

3.1. The history of establishment of specially protected natural areas in Ubsunur hollow.

Since 1984 the area of Ubsunur hollow and basin of Ubsu-Nur Lake became an arena of biospheric research carried out in the framework of the Soviet-Mongolian program "Ubsunur Experiment". The purpose of this work is to develop techniques to acquire complex characteristics of natural systems for scientific and economic needs through rational combination of mathematical modelling, satellite information and minimal ground observations. The project "Ubsunur Experiment" was initiated and is guided by Laboratory Chief with the Institute of Mnangement RAS, Ph. D., Technology, professor V.V. Bugrovsky and former employee of the Council for Mutual Economic Aid, and then minister of environmental protection of Mongolia Doctor Z. Batzhargal. Significant scientific power of a number of Universities (Moscow State University Named after Lomonosov, Novosibirsk State University, Saint-Petersburg State University) and academic institutes of Moscow, Ulan-Batar, Novosibirsk, Krasnoyarsk, Minsk and teacher's training institutes of Kyzyl, Novosibirsk, as well as scientists from Poland, Germany, China and USA (NASA, University of Maryland) are involved with these studies.

The Basin of Ubsunur Lake was accepted as a model for biospheric research due to its confined nature, remoteness from industrial centres and existence of traditional pastoral land use pattern. Ubsunur hollow is an integrate natural complex, a closed basin surrounded by mountain ranges. Confined nature of the basin preconditions the local character of biospheric process, such as internal atmospheric circulation in the

hollow producing the “hollow effect”. The latter effect determines the vertical belt zonality of landscapes, presence of all natural zones of the Central Asia in the hollow and wide variety of ecosystems. Coexistence of these ecosystems within a relatively small area is a unique phenomenon. Geographical situation on the contact of boreal and arid zones predetermines high biodiversity of flora and fauna, specific regularities of forming processes and allows the hollow to be a refuge for biosphere genetic bank.

Specific traits of mountain-and-depression relief of the isolated hollow, differing by its atmospheric circulation pattern, call for elaboration of non-ordinary environmental approach to land use, indicate a need for specialised design and management suited for mountainous terrain described by high degree of biophysical heterogeneity (vertical zones) and highly dynamic processes (weathering, wind and water-borne erosion, tectonic activity).

The hollow retains multiple historical and cultural monuments of the nations, which used to populate its territory in the olden times. This history has survived in archaeological artefacts, such as burial mounds, deer stones, various stone effigies and ancient people’s camps dated back to Stone Age.

All these specific traits made us appeal to UNESCO, to its international program “Global Change”. Upon our request an international expert panel consisting of 9 members of UNESCO “Global Change” program was created. It includes J.P. Malingro (Italy, Main Research Center of IGBP), D. Taunsend (University of Maryland), S. Rattenberg (University of California), David Skoll (University of New Hemhnere, USA), Gerry Barton (oceanic center, Washington), Gilbert Sent (Space centre, Toulouse, France), Frank Sadovsky (South Dakota, geological monitoring centre), Jim K. Taker (NASA, USA), J. A. Starikov (scinetific koordinator for biospheric research of [AHCCEP]), V.V. Viskov (Geophysical Committee of [AHCCEP] Presidium), J. P. Seliverstov (Saint-Petersburg University) and other Soviet scientists.

Doctor Z. Batzhargal (environmental section of CMEA), D. Tuvedendorzh (Administration for international relations of Ministry of Environment of Mongolia), and L. Natsagdorzh (Director of the State Center for Hydrology and Meteorology of Mongolia) and other scientists participated in the panel on the Mongolian side.

The expert committee appreciated the true value of the natural features of the hollow and named it a biosphere laboratory. The “Ubsunur Experiment” program was proposed for inclusion into the IGBP and “Global change” UNESCO programs as a priority pilot component, and Ubsunur hollow was declared probation grounds for international research.

The participants of “Ubsunur experiment” program have elaborated a project of establishment of biospheric sanctuary on the territory of Tyva and Mongolia. The project was implemented and the state natural sanctuaries “Uvs Nuur” in Mongolia and “Ubsunur hollow” in Tyva were established in 1993, and in 1997 the sanctuary acquired the “biospheric” status.

The next stage in the activities carried out by the research group of “Ubsunur Experiment” was acquisition of the “Special status of restricted land use” by the Tyvian part of the territory. The latter status was assigned to the area by virtue of corresponding provision of the Government of Tyva Republic in 1994.

All the aforementioned preliminary work established the basis for elaboration of the project aimed at inclusion of the hollow into the World Natural and Cultural Heritage List of UNESCO. The nomination was submitted in 1996 and then again in 1998.

3.2. Ubsunur International Centre for Biospheric Research with Tyva Republic and Siberian Branch of the Russian Academy of Science. Biospheric sanctuary "Ubsunur hollow".

3.2.1. The Ubsunur International Centre (UIC), created by the government of Tyva Republic (1992) and guided by SB RAS since 1993 co-ordinates scientific research in the hollow and maintains connections and relations with foreign scientists.
Based on the project and solicitation of Ubsunur Centre the "Ubsunur Hollow" sanctuary was established (1993).
UIC staff accounts for 10 employees: director – 1, accountant 1, scientists – 5, driver – 2, laboratory assistants – 1. The yearly budget is 253,000 rubles, out of which salaries make up 112,000 rubles and taxes 43,680 rubles. The financing comes from the budget of Tyva Republic.
3.2.2. Biospheric sanctuary "Ubsunur hollow" (Table). It has its own budget , is financed from Federal budget, 38 staff members, including: Director –1, accountant – 2, personnel manager – 1, secretary & operator – 1, deputy director for science1, scientific department – 4; deputy director for conservation – 1; conservation department –10; environmental education department –4, driver –2 , mechanic –1, supply and logistics manager – 1, firemen –2; technicians – 1.
Biospheric sanctuary budget:
1. Funds received by the sanctuary from Federal budget in 1999:

Operational costs	739, 000 rubles
Federal environmental fund money	100, 000 rubles

2. Funds acquired by the sanctuary in 1999 from non-budget sources:

- grants of Global Environmental Fund	36,900 rubles
- fine and court action	1,200 rubles

3.3. Environmental protection and monitoring

Ubsunur International centre, biospheric sanctuary "Ubsunur Hollow", State Committee for Environmental protection of Tyva Republic, Territorial forestry management of Tyva Republic, Administration for Hunting of Tyva Republic, State committee for Land Management of Tyva Republic, local governmental bodies, administrations of kozhuuns and sumons are involved into conservation and environmental monitoring responsibility.
Inspectors/ rangers of the sanctuary guard the sanctuary areas (nucleus and buffer zones). Sanctuary clusters are scattered all over the territory of the hollow. Distances between the areas are long. It requires substantial investments. Local inspectors are operating in the areas remote from the sanctuary center (Mongoon-Taiga, Tsagaan-Shibetu).
Conservation and monitoring look as watching for the protected area condition, protection of animals from poachers and of vegetation and forest from fires; as watching out for the activities of local residents, such as forest logging in the areas where it is prohibited, illegal catching and shooting of wild animals, cattle grazing in the nuclear areas of the sanctuary.

3.4. Environmental education activities.

A few trends can be distinguished in the activities aimed at enhancement of environmental awareness and environmental education in the hollow.

3.4.1. Along the lines of Goscomecology of Tyva Republic

an environmental centre has been established and is supported by environmental fund of Goscomecology of Tyva Republic. Goscomecology of Tyva Republic in co-operation with the environmental centre carry out the activities aimed at environmental education of the general public, school students, kozhuun officers, large businesses, industrial and farming specialists. Two seminars and two information & training sessions for managers were carried out in 1999.

Goscomecology of Tyva Republic carries out annual kozhuun and republican environmental conferences, where environmental situation in the region is considered and evaluated.

Goscomecology of TR has its radio and TV time, where environmental issues are discussed, including those in "Ubsunur Hollow" sanctuary. There is a newspaper "Call of nature" ("Boidustun kyigyzy"), in 1999-2000 five issues were published with the total number 3500 copies.

3.4.2. Biospheric sanctuary

has a department for environmental education. It carries out the activities aimed at broadening environmental awareness of the general public. The final "March of parks" conference are held in schools and kozhuuns every year. Close relationships have been established with the school nature friends clubs, there are 9 of such clubs. On of the nature friends clubs "Young nature friends" has been working on the basis of the sanctuary for three years already. Fifteen students are club members, 39-40 club sessions are held every year. Every spring, in May, the employees of the sanctuary go camping with the kids in the cluster areas "Tsugeer-Els" and "Ular".

Good working relations are established with the schoolteachers of biology and geography. Filed trips are organised as part of methodological and practical assistance in environmental activities. For instance, participation in international movement "March of Parks", in which all schools of Erzinsky kozuun take part every year together with the sanctuary employees. In the course of 1999 due to the joint efforts of sanctuary staff, secondary school teachers and education department representatives 120 activities were carried out, in which 3100 people were involved, including 1534 school students.

3.4.3. Ubsunur International Center

Follows the "Ubsunur Experiment" program, which includes a wide spectrum of issues, such as scientific research, environmental monitoring, public health monitoring and environmental education.

The program is well known not only in Tyva, but also in Russia and abroad, it facilitated organisation of experimental schools (Moren, Khandagaity, Erzin) specialised in ethnic ecology and raising youth in the traditions and customs of the Central Asian nations, including Tuvinian.

The idea of "Ubsunur Experiment" provides grounds for environmental and patriotic upbringing, being the appreciation of direct homeland, aspiration for participation in nature conservation and monitoring.

3.4.4. Environmental education and upbringing in the State University of Tyva and regional schools.

Geography department of Tyvinian University provides training for ecologists (future teachers and employees of environmental services). At school the teachers carry out environmental educational work with the students and their parents.

3.5. Studies and research of Ubsunur hollow

Since 1984 a joint Soviet-Mongolian program "Ubsunur Experiment" aimed at comprehensive study of the nature and resources of the hollow has been underway. The scientists from various institutes and universities of Russia and Mongolia, as well as from international institutions have been involved with this program.
Since the beginning of the program "Ubsunur Experiment" and until present the Ubsunur International Centre together with Mongolia has carried out the following activities:

- 7 international symposiums with participation of Russia, Mongolia, USA China, Germany, Sweden and Poland;
- a group of authors –program participants has published 3 monographs: "Ubsunur Experiment" in 2 parts, Moscow, 1995 606 pages; "Residual mountain Onchalaan as a natural model of biogeocenosis development", Kyzyl, 1992, 182 pages, "Intellectual systems of autonomous apparatus for space, ocean and method of technico-biological analogies", Moscow, 1997, 213 p.;
- Compilation of different thematic 1:500,000 scale maps for publication: geology, geomorphology, vegetation, soils, pasture productivity, inventory of archaeological sites of the hollow.

3.5.1. The natural complex study expeditions are carried out in the hollow in co-operation with foreign scientists:

- Russian-Mongolian expedition of Tyvian and Mongolian universities for the purposes of studies of the nautral complexes of "Torikholog" cluster (UvsNuur – Mongolia) and "Tsugeer Els" (Possia), 1992;
- Russian-Chinese expedition for the study and monitoring of steppe ecosystems,1997, guided by professor Chzhen, Botany Institute of the Academy of Science of China;
- Russian-Chinese expedition for the study of glaciers, 1995. It was headed by professor Se Tszychu from Glaciology Institute of Lan' Chzhou, China;
- Russian-German expedition for the study of vertical zonality of landscapes and pasture status in 1998, headed by Kristain Opp, University of Leipzig;
- The study and conservation of rare animals, the projects "Snow leopard", "Argali", "Manul", in co-operation with WWF international program for protection of rare animals (with participation of doctor S.O. Ondar, Chairman of Goscomecology of Tyva Republic and N.I. Putintsev, Deputy Chairman of Goskomecology of Tyva Republic);
- The study of Tyvian (Mongoon-Taiga) and Mongolian (Khakhiraa, Turgen-Ula) glaciers with professor J. P. Seliverstov, University of Saint-Petersburg;
- The study of steppe ecosystem and pastures, professor A.A. Titlianov from Novosibisrck, SB RAS, Soil science and agrochemical institute, and assistant professor S.S. Kurbatskaya from Kyzyl, Ubunur Centre and Tyva State University;
- The study of soil fauna in ecosytems of Tyva. Professor Ch. T. Sagdy, State University of Tyva, UIC, and A.Ch. Oorzhak, a specialist of Goscomecology of TR;
- Lower plant study, Doctor J.M Naumenko, Central Siberian Botanical Garden with SB RAS;
- Traditional land use, professor L.K. Arachaa from Tyva State University;
- The study of flora and vegetation of the sanctuary and the hollow in general, Doctor D.N. Shaulo, the Central Siberion Botanical Garden with SB RAS in Novosibirsk;

- Soils and soil cover, the resources of organic matter and productivity of ecosystems are researched by Ubsunur International Centre, headed by professor S.S. Kurbatskaya, the UIC Director and professor of Tyva University .

3.5.2. Monitoring

Over a long period of time the monitoring of natural herbaceous (steppe) ecosystems and their alteration due to the impact of cattle grazing is carried out in Ubsunur hollow.

For this purpose fenced plots inaccessible for domestic grazing animals, but accessible to insects and rodents have been set up in tree different steppe types and monitoring of all changes occurring inside and outside the fencing is carried out.

Monitoring of climate changes is carried out at stationary meteorological stations in Erzin, Khandagaity and Mugur-Aksy.

The "Ubsunur hollow" sanctuary sets up the plots for systematic phenological monitoring to be carried out in the hollow.

The bird population has been monitored over along period of time under the guidance of V.I. Zabelin, assistant professor of Tyva University.

3.6. Development of tourism

Development of tourism is described above in section 2.2.5.

3.7. International relations and co-operation

Ubsunur International Centre and biospheric sanctuary "Ubsunur hollow" interact with Uvs Nuur sanctuary in Mongolia, as well as Mongolian and other foreign scientists.

Post graduate students form China receive training based on the topics of "Ubsunur Experiment". There are agreements on scientific co-operation with Institute for Economic Geography of Hunan province (China), and teacher's training university (Areal study institute) of the same province; an agreement on scientific co-operation with Hovda University, Mongolia, as well as with "Uvs Nuur" sanctuary.

Creation of integrated world Heritage Monument would strengthen our scientific and cultural ties.

4. Analyses of environmental situation and management

4.1. Explanations and main site of Ubsunur hollow (Ubs-Nur Lake basin)

4.1.1. The World heritage nomination currently submitted for inclusion into the World Heritage List includes the entire basin of Ubsu-Nur Lake.

The growing human pressure on the environment increases the importance of sanctuary areas with restricted land use. The latter areas allow to maintain natural unmodified and slightly modified natural systems, which function as natural laboratories allowing to study natural ecosystems and to protect endangered small-numbered plant and animal species.

Ubsunur hollow is a unique territory, a closed basin, a natural biospheric laboratory with vividly exposed biospheric processes. Due to their limited "power" these processes can be easily destroyed by heavy or mining industrial development. For these reasons the hollow has been assign a status of territory with limited land use.

The following natural features are unique:

- The first unique natural trait of Ubsunur hollow is presence of all natural zones of the Central Asia, such as: sandy and saline flay deserts, desert steppes, dry and

true steppes, forested steppes and forests, swampy and steppes tundras, cliffs and glaciers. Presence of all these natural zones within such a limited space makes Ubsunur hollow an invaluable site for environmental, biogeographical and other biosphere studies;

- Second important peculiarity of Ubsunur hollow is the "sharp explicitness " of biosphere processes. Due to limited size of the hollow the natural zones and transitions between them take little space and are expressed very definitely. The latter circumstance stands for the fact that the processes shaping the natural zones work sharply and locally, which simplifies the research both of the processes themselves and the factors of their origin.

4.1.2 The areas of biosphere sanctuary "Ubsunur hollow" are situated the hollow. The structure of the sanctuary is based on landscape principle:

- High mountain glacier "Mongoon-Taiga"
- High mountain meadows and tundras of "Ular" at the Khormnug-Taiga Range of Selingen uplift;
- High mountain meadow-steppe "Big Mongoon-Taiga" and "Smaller Mongoon-Taiga";
- Mountain steppes and forests of "Yarskannyg" at the east Tannu-Ola Range;
- The steppe and historical cultural "Yarmaalyg" at the residual plain in the east part of the hollow;
- Desert-steppe and semi-desert "Tsugeer-Els", sandy massif of Tcugeer-Els and its surroundings;
- Floodplain-delta "Orurku-Shynaa";
- Lacustrine-saline-meadow "Ubdsu-Nuur".

Each cluster part retains biodiversity of a certain landscape together with all other components.

4.2. The threat and pressure.

4.2.1. Factors posing threat for biological species in Ubsunur hollow.

4.2.1.1. Existing threats for of animal population.

Human action:

- Human residence within the administered area, concentration around watering ponds and concentration of wintering camps in the river valleys can put pressure on certain species and induce their extinction;
- Limited awareness of local population of rare and endangered species, lack of understanding of environmental regulations;
- Due to direct chasing, competitions with domesticated animals for grazing areas and unsatisfactory conservation the area of ibex and Mongolian bobak habitats are being progressively reduced.

Hunting and poaching:

As a result of illegal hunting there is danger for the following animal species: snow leopard, manul, argali, Siberian ibex, maral wild reindeer, dzeren, musk deer, beaver, red fox, Mongolian bobak etc. The above animals are procured for there meet and fell. Illegal actions create disturbance and negatively impact distribution, habitat area and species natality.

-Success of regular inspections and monitoring;

- Inspectors are insufficiently encouraged and motivated to have violations identified.

4.2.1.2. Threat for plant species

Cattle grazing:

- degradation of pastures in the hollow is noted in places of concentrations around wintering camps and settlements Nizhnyi Bulun near Erzin (wintering camps in river valley) and Torgalyg, as well as along the Moren river (foothill plains);
- transition to individual arat peasant businesses lead to abandonment of traditional pasture rotation, the remote pastures are put out of use, long-term use of stationary camps. Reasons: absence of transportation and well failure.

Illegal gathering:

- same valuable food and medicinal rare plant species, such as Altai onion (at Mongoon-Taiga, the mountain White Khaiyrakan (Erzin), Selingen) are withdrawn in large quantities. Medicinal plants like golden root and some other plants are also withdrawn (East and West Tannu-Ola), Selingen. However, the withdrawal of plants occurs locally, local population gather plants for own needs only and in limited quantities.
- Rare and endangered species included into the Red Data Books of Russia. Information about rare and endangered plant species, the need for their protection is spread out in schools and universities. There are legal acts protecting plant biodiversity.

Forest fires:

Over the last years the forest fires have been more frequent and have been causing great harm to the forest stock. The west cluster "Ular" and partially "Aryskannyg" were subject to fires. Difficult economic situation of Tyva and Russia does not allow to react promptly to the fires and enable their extinction.

4.2.2. The need for Ubsunur hollow protected area management

4.2.2.1. Insufficient utilization of pastures

- The pasture degression does not happen everywhere throughout the hollow;
- It is related to decrease of the total number of cattle;
- Pasture degression is noted locally around wintering camps and summer watering ponds;
- The river valleys, where wintering camps and summer pasture are situated are subject to degression.

4.2.2.2. Lack of rational land use

- the land area subject to water erosion in the hollow makes up about 1%, including 161 ha of arable lands and 26,003 ha of pastures. The soils are considered to be weakly washed;
- considerable areas of the hollow reaching 144,750 ha or 5.4% of the area are subject to weak deflation;
- the dry steppe and desert-steppe landscapes of Erzin and Tes-Kem and particularly Tsugeer-Els and Eder –Els sand massifs are subject to deflation;
- saline lands of the hollow constitute 52150 ha and are considered to be slightly saline. These lands are situated in the vicinity of Ubsu-Nur Lake (Uvs-Nuur), Amdagiin and mountain depressions, as well as the lower reaches of Tes-Khen River. All slightly saline areas are used as hay lands, and tussock areas are used for grazing;
- garbage dumps are growing around settlements. Natural utilization proceeds slowly. Natural wastes are combined with polymeric compounds, which can not be degraded naturally.

-

4.2.2.3. Obstacles of nature conservation and monitoring

- poor communication infrastructure between kozhuuns and within each kozhuun;
- poor equipment with transportation means and machinery;
- absence forest and steppe fire monitoring data base;
- poor equipment of inspectors with technical means: no transport, no radios, no adequate uniforms;
- inspectors need special boots for waling in the mountains and other equipment required in the mountain conditions;
- monitoring of rivers and lakes requires motor and rubber boats.

4.2.2.4. Obstacles in the area research and studies

- lack of specialists for various kinds of monitoring;
- Absence of stationary field bases, where scientific research and observations could be carried out and information for data base obtained;
- No scientific equipment required for successful research;
- No methodical guidelines for scientific research on this kind of diverse natural area;
- Absence of a specialist responsible for scientific research;
- Lack of interaction between scientific personnel and inspectors.

4.2.2.5. Obstacles for environmental education of the general public

- Local communities are underinformed about violations taking place on the territory;
- Poor quality of information spreading;
- Absence on public relations specialist;
- Absence of consumables and equipment necessary to work with the population;
- Lack of co-operation between the local administration and local population.

4.2.2.6. Obstacles for tourism development

- Absence of a Plan for Development of Tourism
- Difficult access to the hollow for tourists. There are no direst airplane flights to the capital of Tyva;
- No infrastructure for development of tourism, meaning no transportation means and tourist camps;
- Absence of tourist companies and economical capacities;
- Absence of a necessary level of management required for tourist development.

4.2.2.7. Obstacles for transboundary co-operation with Mongolia

- Due to lack of patrol along the state border the number of illegal hunting for argali, snow leopard, manul and Mongolian bobak is increasing;
- No bilateral monitoring and research activities are presently carried out at the transboundary areas;
- No exchange of experience between the sanctuaries is currently taking place.

4.2.2.8. Financial difficulties

- Low wages of inspectors compared to other employees;
- Absence of transport and radio communication equipment for inspectors;
- Absence of qualified personnel;

- Financial difficulties do not allow for the required level of management of the activities aimed at conservation of biodiversity;
- Absence of equipment and tools to ensure management of protected area.

4.3. Immediate tasks and trends of protected area management

4.3.1. Tasks and trends for conservation of biodiversity

4.3.1.1. Conservation of fauna

- Strengthening of inspector responsibly for identification of the reasons caused violations, to carry out preventative measures to minimize violations and to involve local residents into wild animals conservation;
- Identification of distribution, habitats and numbers of rare and endangered species subject to illegal hunting through scientific research , and to take all measure possible to facilitate natural increase of the wild areas within their habitats;
- elaboration and improvement of the law on hunting in order to stop illegal hunting for wild animals;
- to create specially protected areas with lower status then federal.

4.3.1.2. Conservation of flora.

- To establish quality maintenance for a certain area of the hollow;
- To develop a program for conservation of rare and endangered species in the hollow;
- Fire prevention and timely extinction with list losses and damage possible and regulation of firewood procurement;
- Scientific study of medicinal plants to identify the resources and distribution throughout the area;
- To carry out preventative measures to hinder transboundary fires and calculated the fire damages together with adjacent regions;
- Carry out forest rehabilitation activities and sanitary cuttings prior to establishment of protection regime;

4.3.2. Immediate tasks of Administration for protected areas.

4.3.2.1. Sustainable use of pastures

- To establish a mechanism/network for rational use of pastures;
- To control total number of cattle in relation to the pasture capacity;
- To support seasonal migrations and rotation of pastures.

4.3.2.2. Conservation strengthening and studies

- To improve the mechanism for economic stimulation and encouragement of inspectors, public inspectors and information sources;
- To involve physical persons with adequate qualifications and with transportation and communication means in their possession to work as inspectors and public inspectors;
- Inspector training and certification, establishment of a specialized protection group;

4.3.2.3. Strengthening of scientific research and monitoring

- O involve inspectors into scientific research activities, monitoring, gathering of raw material for collections in compliance with monitoring methodology; inspectors must be able to identify flora and fauna species;
- To elaborate master plans/programs for scientific research to be carried out on the protected area;
- To carry out scientific research activities in the areas directly indicated by administration;
- To include scientific articles, reports and other materials onto the information data base;
- Securing equipment and tools necessary for scientific research activities.

4.3.2.4. Strengthening of environmental education

- to establish en environmental information center and its branches in the administrative center;
- carry out environmental education work among the local population;

4.3.2.5. Development of tourism

- Elaboration of Ubsunur Hollow Tourism Development Plan;
- Acquisition of Internet access;

4.3.2.6. Development of tourism

- Establishment of transboundary SPNAs;
- Elaboration of an agreement on co-operation.

4.3.2.7. Financial situation

- To establish the salaries for employees of Administration in compliance with a Uniform Tariff System;
- To set up an certifying commission;
- To develop mechanism for administrative center proceedings.

Division of administered area into zones.

Table 1

Names of kozhuuns	Kozhuun area	Sanctuary zone			Restricted land use, ha
		Cluster name	Size of nuclear areas, ha	Buffer zone area, ha	
Erzinsky	1, 108, 145	Tsuger-Els	4, 900	50, 000	1, 009, 965
		Ular	18, 000	20, 480	
		Yamaalyg	800	4, 000	
Tes-Khemsky	668, 723	Aryskannyg	15, 000	11, 800	613, 173
		Oruku-Shynaa	28, 750		
Mongoon-Taiginsky	441, 420	Mongoon-Taiga	940	100, 160	274, 478
		Big Mongoon-Taiga	14, 950		
		Smaller Mongoon-Taiga	33, 452		
		Tsagaan-Shibetu	17, 440		
Ovursky	452, 250		4, 490		447, 760
Total:	2, 670, 538		186, 440		2, 345, 376
% of total area	2, 670, 538	5.19	6.98		88%

List of extremely rare and simply rare plants

Table 3

Red Data Book of the Russian Federation	Red Data Book of Tyva Republic	Extremely rare 1E, 2U	Rare 3R
	Astragalus tuvinicus Timochina	Gueldenstaedtia Monophylla	Astragalus tuvinicus Timochina
	Astragalus polozhiae Timochina	Tulipa uniflora	Astragalus polozhiae Timochina
	Pugionium pterocarpum	Lilium martagen	Pugionium pterocarpum
	Goldbachia Ikonnikovii	Rhodiola rosea	Goldbachia Ikonnikovii
Stevenia Sergievskayae	Stevenia Sergievskayae	Stevenia Sergievskayae	
	Iris Loczyi Kanitz	Iris Loczyi Kanitz	
	Cheropodium Frutescens	Hedysarum Fruticosum	Cheropodium Frutescens
	Potentilla astragalifolia	Hedysarum sangilense	Potentilla astragalifolia
	Oxitropis acanthasea		Oxitropis acanthasea
	Oxitropis mongolyca		Oxitropis mongolyca
	Ladochilus ilicifolius		Ladochilus ilicifolius
	Asterothamnus heteropappodies		Asterothamnus heteropappodies
	Delphinium barlykense		Delphinium barlykense
Total: 1	Total: 14	Total: 8	Total: 12

List of rare and endangered animals listed in the Red Data Book of Tyva Republic

Table 3

№№	Animals	Red Book of Tyva	Red Book of Russia	Red Book of IUCN	Appendix CITES
Mammals					
1	[Усатая ночница] (Myotis (S.) mystacinus)	IV			
2	Great bat (Nyctalus noctula (Sehreber, 1774))	IV			
3	Long-eared bat (Plecotus (P.) auritus (Linnacus, 1758))	III			
4	Two-coloured bat (Vespertilio murinus Linnacus,1758)	I			
5	Dhole (Cuon alpinus (Pallas,1811)	I	I		
6	Stone marten (Martes (M.) foina (Erxleben, 1777)	III			
7	marbled polecat – Vormela peregusna (Guldenstaedt,1770)	III	II		
8	Eurasian otter - Lutra (L.) lutra (Linnaeus, 1758)	III			
9	Manul or Pallas' cat - Felis (O.) manue Pallas, 1776	V	III		
10	Snow leopard – Uncia uncia (Schreber, 1776)	I	I		
11	Reindeer – Ranqifer tarandus (Linnaeus, 1758)	III			
12	Dzeren – Procapra gutturosa (Pallas, 1777)		I		
13	Argali or Marco Polo's sheep – Ovis (O.) ammon (Linnaeus, 1758)	I	I		
14	Gray marmot - Marmota baibacina (Kastschenko, 1889)	II			
15	Mongolian bobak – Marmota sibirica (Radde)	II			
16	Tuvinian beaver – Castor tiber tuvinicus Lavrov, 1969	I	I		
17	Hairy-legged jerboa – Dipus sagitta (Pallas, 1773)	III			
18	Five-toed dwarf jerboa – Cardiocranius paradoxus Satunin, 1903	III	III		
19	Mongolian hamster – Allocricetulus curtalus (S. Allen, 1925)	IV			

20	Campbell's hamster –Phodopus campbelli (Thomas,1905)	IV			
21	Roborovski's hamster - Phodopus roborovsckii (Satunin, 1902)	III			
22	Tuvinian silver vole – Alticola (A.) tuvinicus Ognev, 1950	III			
23	Central-Asian (Gobi-Altai) vole – Alticola (A.) stoliczkanus (Blanfozd, 1875)	III			
24	Tolai-hare Lepus tolai Pallas,1778	III			
Reptiles					
25	Eremias multiocellata bannicowi Szczerbak, 1973	III			
26	Ermias przewalskii tuvensis Szczerbak, 1970	III			
27	Grass sanke – Waterix naterix (Linnalus, 1758)	III			
28	Adder –Vipera berus (Linnalus, 1758)	III			
Fishes					
29	Sterlet – Asipenser ruthenus Linnalus	III			
30	Tugun – Coregonus tugun infaaspecies fluviatilis Gundziser, 1969	III			
31	Sayan high mountaine lake whitefish – Caregonus lavaretus sajanensis, 1966	II			
32	Siberian lake grayling - Thymallus arcticus dentatus Gunriser, 1979	I			
33	Sayan lake grayling - Thymallus arcticus lacustris Gundriser, 967	II			
34	Taimen – Hucho taimen (Pallas)	II			
Birds					
35	Dalmatin pelican	6	2		
36	Great cormorant	3	-		
37	Bittern	3	-		
38	Great white heron	3			
39	Spoonbill	2	2		
40	Black stork	3	3		
41	Greater flamingo	6	3		
42	Red-brested goose	6	3		
43	Gray goose	2	-		
44	Siberian bean goose	2	-		

45	Bar-headed goose	1	1		
46	Swan goose	6	5		
47	Bewick’s swan	2	-		
48	Wooper swan	2	-		
49	Grebe	3	-		
50	Baikal teal	6	2		
51	Falcated teal	3	-		
52	Warbler	1	1		
53	Smew	3	-		
54	Osprey	3	3		
55	Pale harrier	3	2		
56	Long-legged buzzard	3	3		
57	Honey buzzard	3	-		
58	Booted eagle	3	-		
59	Steppe eagle	3	3		
60	Spotted eagle	3	2		
61	Imperial eagle	2	2		
62	Golden eagle	3	3		
63	Bald eagle	0	1		
64	White-tailed sea eagle	2	3		
65	Lammergeier	0	3		
66	Black vulture	3	3		
67	Gritten vulture	6	3		
68	Arctic falcon	6	2		
69	Saker falcon	3	2		
70	Peregrine falcon	3	2		
71	Lesser kestrel	3	1		
72	Altai snow-cock (?)	3	-		
73	Chukar	4	-		
74	Quail	3	-		
75	Common crane	3	-		
76	Hooded crane	6	3		
77	Demoiselle crane	3	5		
78	Corn crake	4	-		
79	Great bustard	1	2		
80	Houbara bustard	1	1		
81	Greater sand plover	3	-		
82	Oriental plover	3	-		
83	[Хохлолодочник]	3	3		
84	Avocet	3	3		
85	Eastern solitary snipe	3	-		
86	Whaup	4	2		
87	Black-tailed godwit	4	-		
88	Red-breasted snipe	6	3		
89	Great black-headed gull	3	5		
90	Little gull	4	-		
91	Gull-billed tern	4	-		
92	Caspian tern	4	3		

93	Little tern	3	2		
94	Snowy owl	6	-		
95	Eagle owl	3	2		
96	Spinetail swift	3	-		
97	Tuvinian sunny lark	3	-		
98	Mongolian lark	3	2		
99	Blue-headed wagtail	4	-		
100	Great gray shrike	4	3		
101	Siberian motley-breaster	4	-		
102	Hodgson' stonechat	4	1		
103	David's snow-finch	3	-		
104	Godlevski's meadow bunting	3	-		

List of very rare and rare mammals

Table 4

Red book of the Russian Federation	Very rare species	Rare species	IUCN Red Book species
1. Mongolian bobak Marmota sibirica Radde	1. Dhole – Cuon alpinus Pall	1. Reindeer, forest subspecies (Altai-Sayan population) – Ranqiter tarandus Fennicus Lonnferd	1. Snow leopard – Felis (Uncis) unsia Scherd
2. Dhole – Cuon alpinus Pall	2. Snow leopard – Felis (Uncis) unsia Scherd	2. Manul – Felis manul Pallas	2. Dhole – Cuon alpinus Pall
3. Manul – Felis manul Pallas	3. Argali or Marco Polo's sheep – Ovis (ovis) ammon L.	3. Mongolian bobak – Marmota sibirica Radde	
4. Snow leopard – Felis (Uncis) unsia Scherd	4. Dzeren, or Mongolian gazelle – Gazella (Procarpa) guttorusa	4. Five-toed dwarf jerboa – Cardiocranius paradoxus	
5. Reindeer – Ranqiter tarandus Fennicus Lonnferd	5. Asiatic ibex – Capra sibirica sibirica Meyer	5. Phodopus roborovsii Satun	
6. Dzeren, or Mongolian gazelle – Gazella (Procarpa) guttorusa		6. Phodopus campbelli Thomas	
7. Argali or Marco Polo's sheep – Ovis (ovis) ammon L.		7. Allocricetulus curtatus Gl. All.	
8. Marbled polecat– Vormela peregusna			
TOTAL: 8	**5**	**7**	**2**

The list of very rare and rare birds species
listed in the Red Data Books of the Russian Federation and IUCN.

Table 5

Species Listed In the RF Red Book	Very rare species	Rare species	Species included into the Red Book of IUCN
1. Spoonbill – Plaelea Leucorodia L.	1.Glossy ibis – Plegadis falcinellus L.	1. Black stork – Ciconia nigra	1. White-tailed sea eagle – Halialtus albcilla L.
2. Glossy ibis – Plegadis falcinellus L.	2. Swan goose – Cygnopsis cygnoides L.	2. Bar-headed goose – Eulabeia indica Lath.	2. Hooded crane – Grus monacha Temm
3. Black stork – Ciconia nigra	3. Warbler – Ozyura leucocephala Scopoli	3. Bewick's swan – Gyqnus bewickii Yarell	3. Peregrine falcon – Falco rusticolus
4. Bar-headed goose – Eulabeia indica Lath.	4. Long-legged buzzard – Buteo rufinus Cretzchm	4. Osprey – Pandion haliaetus L.	
5. Swan goose – Cygnopsis cygnoides L.	5. Short-toed (serpent) eagle – Ciraetus gallicus	5. Steppe eagle – Aquila rapax nipalensis Hodg.	
6. Bewick's swan – Gyqnus bewickii Yarell	6. Imperial eagle – Aquila helliaca Sav.	6. Golden eagle – Aquila chrysaetos L.	
7. Warbler – Ozyura leucocephala Scopoli	7. Bearded vulture or lanmmergeier– Gypaetus Barbatus)	7. Bald eagle - Haliaeetus leucoryphus Pall	
8. Osprey – Pandion haliaetus L.	8. Griffon vulture – gyps fulvus Habl.	8. White-tailed sea eagle – Halialtus albcilla L.	
9. Pale harried – circus macrourus Gmelin.	9. Arctic falcon – Falco rusticolus L.	9. Black vulture – Aegypius monachus L.	
10. Long-legged buzzard – Buteo rufinus Cretzchm	10. Peregrine falcon – Falco rusticolus	10. Great bustard – Otis tarda dybowskii Tacz.	
11. Short-toed (serpent) eagle – Ciraetus gallicus	11. Hooded crane – Grus monacha Temm	11.Houbara bustard –Chlamydotis undulata Jacg.	
12. Steppe eagle – Aquila rapax nipalensis Hodg.	12. Norfolk plover-Burhinus oedicnemus L.	12. Stilt sandpiper – Himantopus himantopus L.	
13. Imperial eagle – Aquila helliaca Sav.	13. Red-breasted snipe - Limnodromys semipalmatus Blyth.	13. Great black-headed gull – Larus ichthyaetus Pall.	

Species Listed In the RF Red Book	Very rare species	Rare species	Species included into the Red Book of IUCN
14. Golden eagle – Aquila chrysaetos L.	14. Relic gull – Larus relictus L.	14. Eagle owl – Bubo bubo L.	
15. Bald eagle - Haliaeetus leucoryphus Pall.	15. Hodgson's stonechat – Saxicola insignis Gray	15. Mongolian lark – Melanocorypha mongolica	
16. White-tailed sea eagle – Halialtus albcilla L.	16. Dalmatin pelican – Pelecanus crispus Bruch	16. Great gray shrike - Lanius excubitor	
17. Bearded vulture or lanmmergeier– Gypaetus Barbatus)	17. Japanese crane – Grud japonensis		
18. Black vulture – Aegypius monachus L.	18. White-naped crane – Grus vipio Pallas		
19. Griffon vulture – gyps fulvus Habl.	19. White crane – Grus leucogeranus Pallas		
20. Arctic falcon – Falco rusticolus L.			
21. Saker falcon – Falco cherrug milvipes Jerdon			
22. Peregrine falcon – Falco rusticolus			
23. Lesser kestrel – Falco naumanni Fleisch			
24. Hooded crane – Grus monacha Temm			
25. Demoiselle crane – Anthropoides virgo L.			
26. Great bustard – Otis tarda dybowskii Tacz.			
27. Houbara bustard – Chlamydotis undulata Jacg			
28. Norfolk plover-Burhinus			

Species Listed In the RF Red Book	Very rare species	Rare species	Species included into the Red Book of IUCN
oedicnemus L.			
29. Stilt sandpiper – Himantopus himantopus L.			
30. Avocet – Recurvirostra avosetta L.			
31. Red-breasted snipe - Limnodromys semipalmatus Blyth.			
32. Great black-headed gull – Larus ichthyaetus Pall.			
33. Relic gull– Larus relictus L.			
34. Eagle owl – Bubo bubo L.			
35. Mongolian lark – Melanocorypha mongolica			
36. Great gray shrike - Lanius excubitor			
37. Hodgson's stonechat – Saxicola insignis Gray			
38. Dalmatin pelican – Pelecanus crispus Bruch			
39. Japanese crane – Grud japonensis			
40. White-naped crane – Grus vipio Pallas			
41. White crane – Grus leucogeranus Pallas			
TOTAL: 41	**19**	**16**	**3**

Administrative division of the managed area (Tyvinian-Russian part).

Table 6

Kozhuuns	Land area, ha	Population	Administr. Center	Distance from the	Sumons, centers

			(settlements)	Capital of the Republic, km	
Erzinsky	1,110,000	9,100	Erzin	220	Moren*, Bai-Dag, Haryn, Saryg-Bulun, Erzin, Kachyk
Tes-Khemsky	670,000	10,400	Samagaltai	166	Bert-Dag, Chyrgalandy, O-Shynaa, Kyzyl-Chyraa, U-Shynaa, Shuurmak, Samagaltai
Ovursky	450,000	9,200	Khandagaity	330	Solchur, Sagly, Chaa-Suur, Saryg-zol', Dus-Dag, Khandagaity
Mongoon-Taiginsky	440,000	6,400	Mugur-Aksy	516	Morgen-Buren, Kargy

* - The name of sumon and its center is the same

Total numbers of livestock within the area of nomination

Table 7

Kozhuuns	Cattle, capita	Pigs, capita	Sheep and goats, capita	Yaks, capita	Horses, capita	Camels, capita	**Total numbers**
Erzinsky	10,688	204	71,960	292	5,020	307	**88,471**
Tes-Khemsky	7,977	977	61,697	1,753	2,408	38	**74,850**
Ovursky	10,757	148	85,354	4,980	1,876	-	**103,115**
Mongoon-Taiginsky	15,448	21	63,008	16,480	1,363	-	**96,320**
Total:	**44,870**	**1,350**	**282,019**	**223,505**	**10,667**	**345**	**362,756**

Agricultural lands within the area of nomination (ha)

Table 8

Type of agricultural businesses	Number of businesses	Total area	Arable	Hay land	Pastures	Idle lands	Total agricultural land area
Ovursky kozhuun							
Collective enterprises	3	159,941	658	221	114,636	-	115,849
OSS "Soguna"	1	6,610	7	-	4,272	-	4,279
Agricultural production cooperation societies	10	56,079	268	32	39,204	-	39,504
Arat peasant businesses	47	5,315	52	2	5,093	-	5,147
Administration of kozhuuns	66		283	-	75,078	-	75,027

and sumons							
Total	67		1,268	255	238,283	-	239,806
Mongun-Taiginsky kozhuun							
Collective enterprises	1	78,179	200	16	69,877	-	70,093
Collective farms	1	19,642	-	-	10,811	-	10,811
Soviet farms	1	102,593	20	20	83,007	-	83,047
Arat peasant businesses	44	4,437	-	7	4,370	-	4,377
Administration of kozhuuns and sumons	2		93	-	109,550	-	109,643
Total	49		313	43	277,615	-	277,971
Tes-Khemsky kozhuun							
OSS “Manyk”	1	7,363	100	165	6,625	400	7,290
Soviet farms	5	163,224	1,805	1,622	132,300	1,440	137,167
Arat peasant businesses	21	3,501	641	75	2,770	-	3,486
Administration of kozhuuns and sumons	7		7,453	3,850	232,174	-	243,477
Subtotal:	34		9,999	5,712	373,869	1,840	391,420
Erzinsky kozhuun							
Collective enterprises	1	86,632	200	404	68,127	1,070	69,801
Association of Arat peasant businesses “Kachyk”	1	9,510	-	-	6,826	-	6,826
Agricultural production cooperation societies	2	140,885	1,349	164	83,850	3,395	88,758
Arat peasant businesses	62	7,225	290	50	6,437	-	6,777
Administration of kozhuuns and sumons	6		2,040	1,449	98,370	193	32,9500
Subtotal:	73		5,164	2,067	316,239	6,030	329,500
Total:			16,744	8,077	1,206,006	7,870	1,238,697

Specially protected natural areas of Tyva part of Ubsunur hollow

Table 9

Name of SPNA	Land area, thousand ha	Administrative unit		Distinctive features	Violations
		Kozhuun	Sumon		
"Ubsunur hollow" clusters 1)"Tsugeer Els"	39.640 4.9	Erzinsky	Bulun-Bazhi Naryn	A stripe of loamy sand ridge stretching north to south along the left bank of Tess River, from 0.5km to 5km in width. Relict crescentic dune terrain fixed by shrubs, with sections of secondary loose honeycomb-hillock and crescent dune sands.	Illegal hunting for maral, roe deer, cattle grazing.
2) "Yamaalyg"	0.8	Erzinsky	Bai-Dag	Residual mount Yamaalyg is composed of light granite. The granites are strongly weathered and intricate shapes are formed. The main site-seeing feature of the residual mount is the ancient burial field in its foothills. The field accounts for over four hundred graves. It speaks for the fact that in the past the mountain was considered sacred.	
3) "Ular"	18.0	Erzinsky	Moren	This part is distinguished by 4 large landscapes: the cliff tundra, subalpine meadows with shrubs, high mountain cedar taiga, larch forest of intermountain depressions and mountain river valleys. Highly diverse flora and fauna is typical for taiga zone. Among the Red List species the snow leopard, argali and dhole are present.	Illegal hunting, antlers gathering, forest fires.
4) "Aryskannyg"	15.0	Tes-Khemsky	U-Shynaa	It is situated on the southern slopes of east Tannu-Ola, stretching along the mountain fans. Flat stony water divides have not alpine cliffs belt. The large and stony southern slopes are strongly dissected by contemporary erosion. The flora and fauna are very diverse. Among	Illegal hunting, cattle grazing, forest fires.

				the Red List species the snow leopard, Mongolian bobak, saker falcon, booted eagle and the Selingen oat grass, few-flowered onion, etc. should be mentioned.	
5) "Mongoon-Taiga"	0.94	Mongoon-Taiginsky	Kagry	The Mongoon-Taiga range is a system of strongly dissected alpine ridges and massifs with small contemporary glaciers and infrequent forms of ancient glaciation. It bears the epicenter of present time glaciation, the highest point in Tyva (3976 m) covered by firn fields and glaciers. The most typical species are: snow leopard, Manul, dhole, marbled polecat, argali, ibex, Mongolian bobak, black stock, bar-headed goose, golden eagle and saker falcon, etc. can be mentioned.	Illegal hunting for argali and snow leopard.
6) "Ubsu-Nur"		Ovursky	Saryg-Khol	Wetlands. Areas of concentration of many waterfowl species, including rare and endangered ones.	Illegal hunting of waterfowl, rare and endangered bird species, steppe fires.
7) "Oruku-Shibetu"		Tes-Khemsky	O-Shynaa	Unique ecosystems of wet meadows and wetland areas, representing a refuge for wild animals, particularly hoofed ones and waterfowl.	Illegal hunting and steppe fires.
8) "Tsagaan – Shibetu"		Mongoon-Taiginsky	Kargy	This part represents a high mountain massif elongated west to east and strongly dissected. It is situated within the Tsagaan-Shibetu Ridge. Snow leopard, manul, Mongolian bobak and others habituate the area.	Illegal hunting and cattle grazing.
9)"Smaller Mongoon-Taiga"		Mongoon-Taiginsky	Kyzyl-Khaya, Kargy	The area is situated in the mountains within Cvhikharev's Range. It borders with Altai in the west and Mongolia in the south. Its relief is strongly dissected. Snow leopard, argali, manul, Mongolian bobak and others habituate the area.	Illegal hunting and cattle grazing.

Measures to facilitate management plan of the protected area

Table 10

Activity aspect	Direct objective	Measures	Responsible insitution	Time frame	Budget	Criteria for evaluation of results
4.3.1 Conservation of biodiversity	4.3.1.1. Conservation of fauna	4.3.1.1.1.Reaclimatization of dzeren in the Tyva part of Ubusunur hollow	Goskomecology of TR, biospheric	2000 – 2004	20.0	Rehabilitation of animal numbers.
		4.3.1.1.2. Stock taking, establishment of log book and monitoring of animals	sanctuary, SPNA Administration. SPNA	2000 – 2004	5.0	Database establishment.
		4.3.1.1.3. Conservation of new specially protected natural areas	Administration, biospheric sanctuary, UIC.	2000 – 2005	5.0	Conservation of biodiversity.
		4.3.1.1.4. Stock taking, establishment of log book and monitoring of rare and endangered animal species	Goskomecology TR, SPNA Administration, biospheric sanctuary, UIC.	2000-2004	5.0	Database establishment.
	4.3.1.2. Conservation of forests and biodiversity	4.3.1.2.1. Protection of forests against fires, carrying out forest management measures and sanitary logging.	SPNA Administration, biospheric sanctuary Goskomecology.	2000 – 2004	10.0	Database establishment
		4.3.1.2.2. Conservation of biodiversity and landscapes.	SPNA Administration, biospheric sanctuary,	2000-2004	3.0	
		4.3.1.2.3. Conservation of rare and endangered plant species.	Goskomecology. SPNA Administration, biospheric sanctuary,	2000-2004	2.0	

			Goskomecology.			
	4.3.2.1.Adequat use of pasture lands	4.3.2.1.1. Facilitation of rotation of pastures used by individual arat peasant businesses in the course of the year. 4.3.2.1.2. Introduction and development of enclosed grazing methods. 4.3.2.1.3. Prevention of livestock business concentration around the summer watering sources. Facilitation of water supply for summer pastures. 4.3.2.1.4. Prevention of concentration of the wintering camps, which otherwise could cause considerable degression around the camps.	Administrations of kozhuuns Ministry of Agriculture of TY, Kozhuun Administrations Administrations of kozhuuns Administrations of kozhuuns	2000 – 2002 2000 – 2004 2000 – 2002 2000 - 2002		
	4.3.2.2. Conservation and monitoring	4.3.2.2.1.Specific training for all inspectors/rangers. 4.3.2.2.2. Increase of the number of on staff and public environmental inspectors of specially protected areas (SPNAs). 4.3.2.2.3. Establishment of telecommunication network. 4.3.2.2.4. Enhancement of the system for stimulation and encouragement of the general public participation in nature protection and conservation	Administration of SPNA Administration of SPNA Administration of SPNA Administration of SPNA	2000 2000 – 2004 2000 – 2004	1.0 7.0	Implementation Implementation Implementation Implementation

		activities. 4.3.2.2.5. Establishment of phenological monitoring sites in the buffer zone for the purposes of continuous monitoring. 4.3.2.2.6. To expand monitoring sites in the steppe ecosystems, where monitoring of human impact (grazing) has been carried out since 1995. 4.3.2.2.7. To establish environmental monitoring of climate change in the hollow and of its impact on the human and ecosystem health.	 Biospheric sanctuary Ubsunur International Center (UIC) UIC, biospheric sanctuary	2000 – 2001	2.0 1.0 5.0	 Implementation Implementation Implementation
	4.3.2.3.Scientific research activities	4.3.2.3.1. To carry out complete inventory of biodiversity of the sanctuary and in the hollow. 4.3.2.3.2. Development of soils map of sanctuary clusters. 4.3.2.3.3. Development of vegetation map of sanctuary clusters. 4.3.2.3.4. To carry out a full inventory of archaeological artifacts and ancient human camps. 4.3.2.3.5. Establishment of systematic monitoring of ecosytems and their alteration under the influence of natural and human factors.	Biospheric sanctuary, UIC. UIC Biospheric sanctuary, UIC. UIC and Tyv IKOPR SO RAN UIC and Institutes of SO RAN	2000-2002 2000 – 2002 2000 – 2002 2000 – 2002 2000 - 2004	9.0 3.0 5.0 5.0 10.0	Complete inventory. Map Scale 1:200000 Map Scale 1:200000 Establishment of data base and map compilation. Scientific reports and publications.
	4.3.2.4. Enhancement of	4.3.2.4.1. To strengthen environmental education involving traditions and	Tyva State University	2000-2004	1.0	

	environmental awareness of the general public	customs of Central Asian nations and Tyva people in the schools of Ubsunur hollow. 4.3.2.4.2. To introduce a program of continuous environmental education into the school and university study schedules. 4.3.2.4.3. To use in the March of Parks the ideas on conservation of unique areas as World Heritage sites put forward by school students. 4.3.2.4.4. To continue the work on enhancement of environmental awareness of industrial and administrative leaders and general public.	 Tyva State University Biospheric Sanctury Goscomecology of TR	 2000 – 2004 2000 – 2004 2000 - 2004	 2.0 1.0 2.0	
	4.3.2.5. Tourism development	4.3.2.5.1. To elaborate a Plan for development of tourism in the Ubsunur hollow. 4.3.2.5.2. Construction of tourist camps. 4.3.2.5.3. Creation of infrastructure required for tourism development. 4.3.2.5.4. Arrangement and carrying out of the site-seeing tours the places of interest in Ubsunur Hollow.	SPNA Administration, Ecocenter. SPNA Administration SPNA Administration SPNA Administration	2000 – 2001 2000 – 2004 2000 – 2004 2000 - 2004	1.0 100.0 20.0 100.0	Providing year-round services to tourists from all over the world.
	4.3.2.6.Cooperation with Mongolia	4.3.2.6.1. Arrangement and carrying out international environmental meetings and conferences, symposiums and workshops.	SPNA Administration, Sanctuary, UIC. SPNA	2000 – 2004	5.0	Enhancement of international relations in the area of conservation and

		4.3.2.6.2. Arrangement and implementation of joint scientific research activities. 4.3.2.6.3. Creation of transboundary SPNAs. 4.3.2.6.4. Cooperation of State Nature Biospheric Sanctuary “Ubsunur Hollow” with Uvs Nuur Sanctuary. 4.3.2.6.5. Access to email.	Administration, Biospheric sanctuary, UIC, Goscomecology TR, SPNA Administration, Goscomecology, Biospheric sanctuary SPNA Administration	2000 – 2004 2000 2000 – 2004 2000 - 2004	10.0 4.0 5.0	environmental protection

Staff table of the protected area administration to be created

Table 11

№№	Position name	2000	2001	2002	2003	2004	Total
1	Director	1					1
2	Accountant	1					1
3	Economist-manager		1				1
4	Secretary-operator	1					1
5	Logistics manager			1			1
6	Legal manager	1					1
7	Information and communications specialist		1				1
8	Manager for tourism			1			1
9	Driver	1				2	3
10	Deputy Director for Science	1					1
11	Botanist		1				1
12	Zoologist		1				1
13	Ornithologist		1				1
14	Monitoring specialist		1				1
15	Deputy Director for Conservation		1				1
16	Rangers		2	2	2	2	8
17	Environmental awareness specialist		1				
18	Night guard			1			2
	Total:	**6**	**10**	**5**	**2**	**4**	**27**

Budget and funds required for implementation of management plan

Table 12

№№	Item	2000	2001	2002	2003	2004
1	Personnel	**6**	**17**	**21**	**23**	**27**
2	Budget	6370.6	18021.0	24943.0	31157.8	54375.0
3	Salaries	2823.9	8000.0	11200.0	15366.8	28900.0
4	Taxes	706.4	2001.5	4001.0	3852.5	7603.0
5	Expenses	688.9	1951.5	2115.0	2566.0	2872.0
6	Capital costs	1429.0	4568.0	5627.0	6872.5	11000.0
7	Income	529.0	1500.0	2000.0	2500.0	4000.0
8	Subsidies	5830.9	16521.0	22943.0	28657.0	50375.0

Equipment required for Management of protected area

Table 13

№	Item	Units	Quantity	Cost	Total	Timeframe	
						2000-2002	2003-2004
1	Office desks	Item	30	75	2250	10	20
2	Chairs	Item	50	25	1250	20	30
3	Computers, equipment	Item	8	1500	12000	2	6
4	Copier	Item	4	800	3200	2	2
5	Conference table	set	1	300	300	1	-
6	Jurt	Item	5	1500	7500	2	3
7	Accessories for jurt	Set	5	100	7500	2	3
8	Telecommunication network	Set	1	4000	4000	1	-
9	Office building	Item	1	60000	60000	1	-
10	Warehouse	Item	1	1000	1000	1	-
11	Garage for 5 vehicles	Item	1	1200	1200	1	-
12	Jeep	Item	2	6000	12000	1	1
13	Bus	Item	1	5000	5000		1
14	Telephone	Item	6	35	210	4	2
15	Fax	Item	1	250	250	1	-
Total:					117660		

Equipment required for rangers (inspectors)

Table 14

№ №	Name	Unit	Quantity	Cost	Sum	Timeframe	
						2000 – 2002	2003 - 2004
1	Uaz-469	item	4	3000	12000	2	2
2	Horses	item	16	100	1600	8	8
3	Saddles	item	8	80	640	4	4
4	Binoculars	item	8	100	800	4	4
5	Photo camera	item	8	120	960	4	4
6	Video camera	item	1	1800	1800	1	-
7	Short Wave (SW) station	item	10	400	4000	5	5
8	Motor boat	item	1	1000	1000	1	-
9	Rubber boat	item	2	500	1000	2	-
10	Winter and summer footwear	pair	16	40	640	8	8
11	Rubber boots	pair	8	50	400	4	4
12	Summer and winter uniforms	item	16	100	1600	8	8
13	Primus stove	item	4	60	240	2	2
14	Gas cooker	item	4	200	800	2	2

15	Tent for 2 people	item	4	200	800	2	2
16	Sleeping bags	item	8	250	2000	4	4
17	Mattress-rugs	item	8	25	200	4	4
18	Night visions binoculars	item	1	5000	5000	1	-
19	Torch	item	8	30	240	4	4
20	Radio	item	4	90	360	2	2
21	Mobile SW station	item	8	300	2400	4	4
22	Compass	item	4	50	200	2	2
23	Distance measuring device	item	2	250	500	1	1
24	Trapping cage	item	8	30	240	4	4
Total:					**39420**		

Equipment and devices required for scientific-research work

Table 15

№	Item	Units	Quantity	Cost	Total	Timeframe	
						2000-2002	2003-2004
1	Video camera	item	2	1500	3000	1	1
2	Video tapes	item	20	30	600	10	10
3	TV	item	1	300	300	1	-
4	Video recorder	item	1	200	200	1	-
5	Tent for 4 people	item	4	300	1200	4	-
6	Primus stove	item	2	60	120	2	-
7	Scientific devices	item			1000		
8	UAZ-452	item	2	3000	6000	1	1
9	Sleeping bags	item	10	250	2500	10	-
10	Black-and – white scanner	item	1	300	300	1	-
11	Colour scanner	item	1	400	400		1
12	Colour printer	item	2	250	500	1	1
13	Codoskop	item	3	180	540	1	2
14	Power generator	item	4	400	1600	2	2
15	Maps and distance & scale meters	item	6	50	300	3	3
Total:					**18560**		

RESOLUTION OF THE MONGOLIAN GREAT KHURAL
(PARLIAMENT)

November 12, 1993 Reference # 83 Ulaanbaatar city

Subject: Giving permission for some areas to be under State special protection

It is resolved by the Parliament of Mongolia:

1. The Government will take under State special protection the following territories representing the main feature of unique formation, rare animals and plants of natural zones and belts:

Lake Uvs Basin Strictly Protected Area which covers Lake Uvs including Torkhilog and Tes river mouths, Turgen Mountain, Tsagaan shuvuut Mountain and some parts of Altan els.

SPEAKER OF THE GREAT
KHURAL (PARLIAMENT) B. BAGABANDI

AGREED
with the Vice-Head
of the Executive Committee
of People Khural of Uvs aimak
Dejit C.
signed and sealed

AGREED
with the First Vice-Head
of the Government
of Tyva Republic
Morgush L.S.
signed and sealed

TREATY

Of the scientific co-operation between the State Committee of Environmental protection of the Tyva Republic, the Ubsunur International Center for Biosphere research of the Tyva Republic under the aegis of SO RAN, the Biosphere Preserve "The Ubsunur hollow" from one side, and the Ubsunur Aimak Board of Nature Protection and Environment, Center for scientific research in hydro-meteorology and environment of the State Nature Preserve "Uvs Nur", from the other side. Valid from 1998 till 2001.

1998

The present Treaty is concluded between the State Committee of Environment of the Tyva republic in the person of the Head, Ph.D. Ondar S.O., the Ubsunur International Center for Biosphere research of the Tyva Republic under the aegis of SO RAN in the person of the Director, Ph.D. Kurbatskaya S.S., the Biosphere Preserve "The Ubsunur hollow", from one side, and the Ubsunur Aimak Board of Nature Protection and Environment, Center for scientific research in hydro-meteorology and environment in the person of the Head Specialist N.Tsevendorge and the State Nature Preserve "Uvs Nur", from the other side.

The object of the present treaty is the mutual research on biosphere-geosphere monitoring within the international "Ubsunur" experiment program, theme "Ecosystems of the Ubsunur hollow".

The Treaty is valid from 1998 till 2001.

TERMS OF TREATY

1. The treated parties bind themselves to exchange scientific information within the specified theme with holding periodic (1-2 times a year) conferences to discuss the results of the research and to exchange experience in two years.
2. Publication of the results of the mutual research is made under the agreement of the parties.
3. Parties organize mutual and independent expeditions into Southern Tyva and North-Western Mongolia, and for this purpose:
   - 3.1. Parties envisage assistance in providing expeditors with gasoline, oil and lubricants, technical service of their transport within the territory of their States.
   - 3.2. The inviting party provides expeditors with food in equivalent shares and assists them in their accommodation.
   - 3.3. Parties envisage the possibility of exchanging the scientific materials, reagents, equipment and space images under the mutual agreement and on barter basis.
4. Members of delegations and expeditions, and also the working period is agreed by the parties additionally no later than 1 month before starting.
5. The scientific research programs and plans of the mutual expeditions are discussed annually before the field season and are agreed additionally.
6. The field materials: water and soil samples, herbs, insects and small vertebrals can be transferred from one State to the other for determination and carrying out analysis.
7. Expenses for carrying out the works are paid by the corresponding parties.
8. In case of necessity, the treaty can be prolonged by the parties for the defined period.

THE PRESENT TREATY

is composed in 6 copies in Russian and Mongolian, every one of which has equal power.

The Treaty is composed in Kyzyl on June, 18, 1998

The Ubsunur aimak Board of Nature Protection and Environment,

signed and sealed

Head of the State Committee of Environmental Protection,
S.O.Ondar
signed and sealed

Head Specialist of the Science research center for hydro-meteorology and environment,
N.Tsevendorge
signed and sealed

Director of the Ubsunur international center for biosphere research,
S.S.Kurbatskaya
signed and sealed

State Nature Preserve “Uvs Nur”,
Ganbold
signed and sealed

Biosphere Preserve “The Ubsunur hollow”,
A.D.Doduk
signed and sealed

PROTOCOL OF CO-OPERATION

09.09.2000

1. Parties of treaty

Management office of the State Biosphere Nature Preserve "The Ubsunur hollow" (668380 Erzin, Erzin region, Tyva Republic, Russian Federation); management office of the State Nature Preserve "Uvs-Nur" (Ulangom, Uvs Aimak, Mongolia).

2. Object of treaty

The Ubsunur hollow (strictly protected area/ nature Preserve) of the two States: Russian Federation and Mongolia.

3. Goals of co-operation

3.1 To Preserve the Ubsunur hollow as a unique natural and cultural landscape which is important and significant both for Altai-Sayan eco-region and for the whole Central Asia.

3.2 To Preserve and to use rationally the natural, cultural and recreational resources of the territory.

3.3 To collaborate in planning and in projecting cognitive tourism (especially bicycle and pedestrian tourism between the Preserves of the two States), and also to jointly work on improvement of capacity of the Preserves. With this purpose to prepare general touristic scheme of the Ubsunur hollow territory, educational and promotional booklets and other printed issues in four languages (English, Russian, Tyva and Mongolian), for visitors of the two Preserves.

3.4 To plan and arrange regular conferences concerning the preservation of the vulnerable ecosystem of the hollow.

3.5 To carry out mutual scientific inquiries in the field of preservation of natural and cultural heritage, to exchange specialists and working experience.

3.6 To create mutual management-plan of the World Heritage territory.

With these purposes the Mongolian party binds itself to:

- to give the Russian party historical, archeological, biological and other materials concerning natural and cultural heritage.
- to take part in mutual inventory works of natural and cultural heritage on Russian part of the Ubsunur hollow, and also to work out the priority directions of in preserving natural and cultural heritage on Russian part of the Ubsunur hollow.
- to take part in working out juridical documents and normative acts, regulating the questions of construction, re-construction, renovation of the building, cultural monuments and historical places on the Russian part, with the aim of conservation of all the objects of cultural heritage of the Ubsunur hollow.
- to provide the living conditions of the common working group and to promote the successful works in preservation natural and cultural heritage.

With the same purposes the Russian party binds itself to:

- to give the Mongolian party historical, archeological, biological and other materials concerning natural and cultural heritage.
- to stimulate the preparation of juridical documents and acts (on the first stage: on the level of the Government of Tyva Republic) concerning construction works

within the hollow territory, and also the preparation of reglament for conservation of buildings, monuments and historical objects in the Ubsunur hollow.

- to take part in mutual preparation of general issues for visitors of the both Preserves.
- to provide the living conditions of the common working group and to promote the successful works in preservation natural and cultural heritage.

Director of the State
Biosphere Nature Preserve
“The Ubsunur hollow”
Doduk A.D.
Signed and sealed

Director of the State
Nature Preserve
“Uvs Nur”
Ganbold
Signed and sealed

APPENDIX C

LISTS OF PLANT AND ANIMAL SPECIES

1. List of rare, relict and endemic plant species of the Ubsunur basin.
2. List of rare, relict and endemic bird and mammal species of the Ubsunur basin.

LIST OF SPECIALLY NOTED SPECIES OF PLANTS OF UVS NUUR BASIN
RELICTS AND ENDEMICS PLANTS

TERTIARY RELICTS

1. Nanophyton grubovh
2. Reaumuria songarica
3. Salsola passerina
4. Allium polyrhizum
5. Caragana bungei
6. Caragana jubata
7. Gypsophila desertorum
8. Kochia prostrata
9. Larix sibirica
10. Piceaobovata
11. Cymbaria daurica
12. Halocnemum strobilaceum
13. Ceratoides papposa
14. Allium altaicum
15. Saussurea dorogostaiskii
16. Asplenium altajense

GLACIERS RELICTS

17. Saxifraga sibirica
18. Bupleurum multinerve
19. Gentiana barbata
20. Dasystephana decumbens
21. Patrinia sibirica
22. Artemisia santolinifolia
23. Carex pediformis
24: Draba sibirica
25. Poaattenuata
26. Mannagettaea hummelii
27. Achnatherum mongolica
28. Poatibetica
29. Polygonum viviparum
30. Silene graminifolia
31. Oxytropis strobilabea
32. Scorzonera radiata
33. Carex curaica

PERIGLACIAL RELICTS

34. Ephedra monosperma
35. Stipa orientalis
36. Stipa glareosa
37. Stellaria dichotoma
38. Stevenia cheiranthoides
39. ...rysimum flavum
40. Arabidopsis mollissima
41. Potentilla sericea
42. Potentilla soongarica
43. Chamaerhodos erecta
44. Hippophae rhamnoides

45. Schizonepeta multifida
46. Aster alpinus

PLEYSTOCEN RELICTS

47. Poa stepposa
48. Androsace incana
49. Stipa sibirica
50. Helictotrichon altaica
51. Saxifraga spinulosa
52. Thiaspi cochleariforme

ENDEMICS OF TUVA

53. Astragalus polozhiae
54. Astragalus tuvinicus
55. Silene tuvinica
56. Scutellaria tuvensis
57. Helictotrichon sangilense
58. Saussurea czichaczevii
59. Cancrinia krasnoborovii
60. Tarax cum tuvense

ENDEMICS OF TUVA AND MONGOLIA

61. Agriophyllum pungens
62. Goldbachia ikonnikovii
63. Pugionium pterocarpum
64. Hedysarum sangilense
65. Oxytropis acanthacea
66. Anoplocaryum turczaninovu
67. Scorzonera ikonnikovii
68. Oxytropis lanuginosa
69. Lagochilus ilicifolius
70. Craniospermum mongolicum
71. Limonium congestum
72. Allium mongolicum
73. Euphorbia potaninii
74. Potentilla gracillima
75. Asterothamnus poliifolius
76. Asterothamnus heteropappoides
77. Saussurea ceterahifolia
78. Artemisia globosa
79. Artemisia xerophytica

ENDEMICS OF ALTAY-SAYAN FLORISTIC PROVINCE

80. Astragalus politovii
81. Oxytropis physocarpa
82. Oxytropis aciphylla
83. Oxytropis martjanovii
84. Oxytropis saposhnikovii
85. Eremogone mongolica
86. Panzeria conescens
87. Dracocephalum bungeanum
88. Stenocoelium athamanthoides
89. Allium pumilum

90. Chenopodium frutescens
91. Potentilla astragalifolia
92. Potentilla kryloviana
93. Saussurea orgaadayi
94. Crepis czuensis
95. Galatella altaica
96. Sedum populifolium

MOUNTAIN'S SPECIES OF SOUTHERN SIBERIA AND MONGOLIA

97. Limonium aureum
98. Draba kusnetzowii
99. Allium altaicum
100. Stipapennata

SPECIES OF WEST BOUNDARY OF AREA

101. Peucedanum puberulum
102. Cymbaria daurica

SPECIES OF EAST BOUNDARY OF AREA

103. Astragalus schanginianus
104. Gypsophila perfoliata
105. Hordeum bogdanii
106. Halocnemum strobilaceum
107. Potentilla imbricata
108. Saussurea laciniata
109. Orostachys thyrsiflora
110. Asplenium septentrionale
111. Rosa majalis

SPECIES OF NORTH BOUNDARY OF AREA

112. Oxytropis trichophysa
113. Reaumuria songarica
114. Puccinellia schischkinii
115. Stipa klemenzii
116. Saxifraga macrocalyx
117. Iris loczyi
118. Juniperus sabina
119. Leiospora exscapa
120. Ptilotrichum canescens
121. Taphrospermum altaicum
122. Allium oliganthum
123. Anabasis brevifolia
124. Micropeplis arachnoidea
125. Salsola passerina
126. Pedicularis longiflora
127. Bolboschoenus popovii
128. Zygophyllum pterocarpum
129. Chamaerhodos sabulosa
130. Waldheimia tridactylites
131. Saussurea glacialis
132. Krylovia eremophila

133. Asparagus tamariscinus

WIDE-SPREAD IN TYVA SPECIES, BUT INTENSIVELY DESTROYED

134. Betula microphylla Bunge
135. Rhodiola rosea
136. Cypripedium calceolus
137. Cypripedium guttatum
138. Orchis militaris
139. Oxytropis tragacanthoides
140. Hypecoum lactiflorum
141. Rheum altaicum
142. Lilium martagon
143. Tulipa uniflora
144. Hippophae rhamnoides
145. Trollius asiaticus
146. Paeonia anomala

RARE, ENDANGERED AND ENDEMIC SPECIES OF MAMMALIA, BIRDS AND REPTILES

Vertebrates - especially vulnerable group. They are distributed into categories and possess of certain status.

1- category. Status: endangered species. Especially vulnerable species, which population has decreased up to the most critical point leading to their extinction.

BIRDS:

1.Cygnopsis cygnoides L.
2.Haliaeetus leucoryphus Pall.
3.Grusjaponensis Muller
4.Grus leucogeranus Pallas
5.Saxicola insignis Gray
6.Larus relictus Lonnberg
7.Pelecanus crispus Bruch
8.Gypaetus barbatus L.
9.Chlamydotis undulata macqueenii Gray

MAMMALIA:

1.CuonalpinusPall.
2.Panthera uncia Sch.
3.Ovisammon L.
4.Procapra gutturosa G.

2 - Category. Status: species decreasing in the number of population, which can get in the 1 - Category in a short period of time.

BIRDS:

1.Plegadis falcinellus L.
2.Ciconia nigra L.
3.Ozyura leucocephala Scopoli
4.Circaetus gallicus
5.Aquila heliaca Sav.
6.Gyps fulvus Habl.
7.Grus vipio Pallas
8.Otis tarda dybowskii Tacz.
9.Burhinus oedicnemus L.
10.Charadrius veredus Gould
11 .Numenius minutus Gould
13.Aquila chrysaetos L.
14.Haliaeetus albicilla L.
15.Grus monacha Temminck

MAMMALIA:

1. Marmota baibacina Kastschenko
2. Cardiocranius paradoxus Satunin
3. Vormela peregusno Yuldenstaedt
4. Lutra lutra **L,**

5. Felis manul Pallas

3 - Category. Status: rare species met on the limited territories, characterized by a low number of population with a tendency to den-easing.

BIRDS:

1. Botaurus stellaris L.
2. Egretta alba L.
3. Platalea leucorodia L.
4. Anser albifrons Scop.
5. Anser fabalis Lath.
6. Eulabeia indica Lath.
7. Cygnus cygnus L.
8. Gyqnus bewickii Yarell.
9. Anas poecilorhyncha Forst.
10. Anas formosa Geor.
11. Anas falcata Geor.
12. Melanitta deglandi Bonar.
13. Mergus albellus L.
14. Mergus serrator L.
15. Pandion haliaetus L.
16. Pernis ptilorhyncus Temm.
17. Circus pygargus L.
18. Circus macrourus Gmelin.
19. Buteo rufinus Cretzchm.
20. Aquila rapax nipalensis Hodg.
21. Aquila clanga Pall.
22. Aegypius monachus L.
23. Falco rusticolus L.
24. Falco peregrinus Tunstall
25. Tetraogallus altaicus Gebler
26. Alectoris chukar dzungarica Sushkin
27. Grus grus L.
28. Anthropoides virgo L.
29. Himantopus himantopus L,
30. Heteroscelus brevipes Vieill.
31. Gallinago solitaria Hodg.
32. Numenius arquata L.
33. Limnodromus semipalmatus Biyth.
34. Nyctea scandiaca L.
35. Bubo bubo L.
36. Glaucidium passerinum L.
37. Surnia ulula L.
38. Strix nebulosa Forst.
39. Lanius excubitor L.
40. Podoces hendersoni Hume
41. Reguh.is regulus L.
42. Remiz pendulinus L.
43. Pyrgilauda davidiana Ver.
44. Leucosticte brandti Bonap.
45. Stumus cineraceus Temm.

MAMMALIA:

1. Myotis mystacinus Kuhe
2. Nyctalus noctula Schreb.

3. Plecotus auritus L.
4. Lepus tolai Pallas
5. Phodopus roborovskii Satunin
6. Alticola argentatus tuvinicus Og.
7. Alticola barakshin Bann.
8. Martes foina Erxleben
9. Rangifer tarandus L.
10.Capra sibirica Pall.

4 - Category. Status: species not identified by their status for the lack of information.

BIRDS:

1. Syrrhaptes paradoxus Pall.
2. Tadoma tadorna L.
3. Hieraaetus pennatus Gm.
4. Falco cherrug milvipes Jerdon
5. Falco naumanni Fleisch.
6. Recurvirostra avosetta L.
7. Numenius phaeopus L.
8. Larus ichthyaetus Pall.
9. Emberiza godlewskii Tacz.
10.Carpodacus rubicilla Guld.
11.Emberiza spodocephala Pall.
12. Sturnus roseus L.

MAMMALIA:

1. Dipus sagitta Pallas
2. Phodopus campbelli Thomas
3. Cricetulus curtatus Alien

APPENDIX D

PHOTOGRAPHIC DOCUMENTATION

List of photos of the Uvs Nuur basin

1. Steppe landscape in Tes-Khem river, near inflow of Erzin river (Zuger els cluster). Photo by Butorin A.A.
2. Steles at ancient burials (Yamaalig cluster). Photo by Kantor V.A.
3. Salt lake Khindiktik-Khol (2305 m). Photo by Butorin A.A.
4.
5. Yamaalig ridge. Photo by Kantor V.A.
6. Zugeer els sands, the northern border of deserts of Central Asia (Zuger els cluster). Photo by Kantor V.A.
7. Tore-Khol lake (Zuger els cluster). Photo by Kantor V.A.
8. Ariskannig cluster. Photo by Kantor V.A.
9. Yaks with Mongun-Taiga mountain in the background. Photo by Butorin A.A.
10. «Ovaa» – praying place at the remnant top in the river Kargy valley. Photo by Butorin A.A.
11. River Arzajty valley. Photo by Butorin A.A.
12. View of river Kargy valley and Zagan-Shibetu ridge from Mongun-Taiga mountain (Black hill) (Mongun-Taiga cluster). Photo by Butorin A.A.
13. Flood plain of Mugur river, right tributary of Kargy. Snowed peak of Mongun-Taiga mountain (3970 m). Photo by Butorin A.A
14. View of the Ubsunur hollow from Sangilen ridge. On the foreground – river Ariskannig valley (Ariskannig cluster). Photo by Butorin A.A.
15. Demoiselle crane (Ubsu-Nur cluster). Photo by Kantor V.A.
16. Granite remnant (Zugeer els cluster). Photo by Kantor V.A.
17. Ancient burial hill (Yamaalig cluster). Photo by Kantor V.A
18. Uvs Lake. Photo by Kantor V.A.
19. High-mountain tundra (Mongun Taiga cluster). Photo by Kantor V.A.
20. River Ariskannig head water. Photo by Kantor V.A.

UVS NUUR BASIN

MONGOLIA / RUSSIAN FEDERATION

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

UVS NUUR BASIN (MONGOLIA / RUSSIAN FEDERATION) ID Nº 769 REV

Background note: The IUCN technical evaluation of the Uvs Nuur Basin, nominated jointly by Mongolia and the Russian Federation in 1999, was presented to the 23rd extraordinary session of the Bureau in November 1999 (see Annex A). IUCN's evaluation noted that the site had the potential to meet natural criteria (ii) and (iv) but that the authorities should be requested to revise the boundaries from the 7.5 million hectares so as to exclude the 90% of the basin which currently has no protective status. IUCN also noted that *"the existing 9 strictly protected areas (SPAs) do not adequately cover the wide range of ecosystems within this large site. In particular, the wetlands in the lower 60km of the Tes-Khem need to be part of a protected area which can extend northwards across the border to Tuva, incorporating semi-desert, steppe and the slopes of the Vostochnyi Tannu Ola range (mixed forest/steppe, taiga and tundra)."* The Bureau decided to **defer** the nomination back to the States Parties to revise the boundaries and to prepare a joint management plan in a framework of transboundary cooperation.

On 13 November 2001, the Mongolian and Russian Federation State Parties submitted additional information to the World Heritage Centre. This information included a map of the revised boundaries of the nominated area showing a serial site with 11 separate clusters encompassing 971,165ha. All of the nominated area had protected status, made up of two protected area groupings: (i) The Ubsunur Hollow State Biosphere Nature Preserve (Russian Federation) which is comprised of seven core areas totalling 258,620ha; and (ii) The Uvs Nuur State Nature Preserve (Mongolia) made up of four discrete sites covering 712,545ha.

The State Parties also submitted at that time:

- Two management plans -- one for the Mongolian side and one for the Russian part;
- A Protocol of Co-operation between the Russian State Biosphere Nature Preserve and the Mongolian State Nature Preserve;
- A Treaty of scientific cooperation between the Republic of Tuva, of the Russian Federation and the Uvs Aimag of Mongolia; and
- Resolution on the expansion of the Russian Ubsunur Hollow State Biosphere Nature Preserve.

At its 26th session (Paris, 2002) the Bureau *"**referred** the nomination back to the State Party of Mongolia with the request that the nominated 'Uvs Lake' protected area cluster be enlarged to include more of the wetlands on the Mongolian side of the Tes-Khem delta (in the vicinity of the new 'Ubsu-Nur' and 'Oroko-Shinaa' clusters added by the Russian State Party and that the buffer zones be excluded from the nominated area. The Bureau commended the State Parties for the development of the two management plans, the signing of transboundary cooperation agreements on scientific research and management, and the steps taken by the Russian authorities to expand the nominated area."* (see Annex B for full IUCN report)

ADDITIONAL INFORMATION

Additional information was submitted by the State Party of Mongolia on the 31 January 2003 and 14 March 2003. This included:

- a letter from the Ministry of Nature and Environment of Mongolia noting that the Tes River Specially Protected Area (SPA) was established on 10 January 2003 by Resolution of Presidium of the Citizen's Representative Hural of the Uvs Aimag (Province), and a copy of this resolution;
- a copy of the Conservation regime of the Tes River SPA, also approved on 10 January 2003; and
- maps of the new area.

The Resolution (10 January 2003) to establish the Tes River SPA places the area under Provincial level legislation and protection, and requests that a proposal be prepared and submitted to the Ministry of Nature and Environment requesting its upgrading to a SPA under State legislation. The newly protected area covers a total of 97,688 ha.

EVALUATION OF ADDITIONAL INFORMATION

This extension of the nominated area to include the Tes River delta is in line with the recommendation of IUCN and the World Heritage Bureau (Paris, 2002). The revised nomination for the Uvs Nuur Basin now includes:

- The Ubsunur Hollow State Biosphere Nature Preserve (Russian Federation) which is comprised of seven areas totalling 258,620ha; and

- The Uvs Nuur State Nature Preserve (Mongolia) made up of five discrete sites covering 810,233ha.

In relation to the buffer zones, all buffer zones have been excluded from the Mongolian clusters. Buffer zones, however, of five of the seven clusters on the Russian side are still included in the nomination. The most important of these is the buffer to cluster 1 ('Mongun Taiga'), an area of 84,510ha. This area remains in a very natural state, consisting of high altitude tundra and meadows, and is an integral part of the whole mountain ecosystem around this glaciated massif. Similarly, the 50,000 ha buffer zone around cluster 6 ('Tsuger els'), an area of desert/desert steppe, is indistinguishable in quality from the small core area of 4900 ha. There are no problems relating to the quality of management of buffer zones around clusters 4, 5 and 7 (as shown on attached map) and these should be kept within the nominated area.

APPLICATION OF WORLD HERITAGE CRITERIA

The Uvs Nuur basin was nominated under all four natural criteria (as described in 1999).

Criterion (i): Earth's history and geological features

The nomination document does not present any compelling evidence in support of this criterion. The western Mongolia mountains sector of the site contains a good range of glaciers and landforms of glacial origin but these are only of regional significance and probably better represented in the Golden Mountains of Altai site. IUCN does not consider that the nominated site meets criterion (i).

Criterion (ii): Ecological processes

The closed salt lake system of Uvs Nuur is of international scientific importance because of its climatic and hydrological regimes. Because of the unchanging nature of the nomadic pastoral use of the grasslands within the basin over thousands of years, current research

programmes should be able to unravel the rate at which Uvs Nuur (and other smaller lakes within the basin) have become saline (and eutrophic). These processes are on-going and because of its unique geophysical and biological characteristics, the basin has been chosen as an IGBP site for monitoring global warming. IUCN considers that the nominated site meets criterion (ii).

Criterion (iii): Superlative natural phenomena, scenic beauty

The diversity of landscapes within Uvs Nuur basin, and especially the uncluttered horizons of the steppes broken only by colourful ribs of weathered rocks ('skerries'), have their own subtle aesthetic appeal. Overall, however, they are not superlative in character, thus IUCN does not consider that the nominated site meets criterion (iii).

Criterion (iv): Biodiversity and threatened species

The Uvs Nuur site has a large range of ecosystems, representing the major biomes of eastern Eurasia, with a number of endemic plants. Although the basin is inhabited and has been used for nomadic pastoralism for thousands of years, the mountains, forests, steppes and deserts are extremely important habitats for a wide range of wild animals, many of them threatened or endangered. The steppe ecosystem supports a rich diversity of birds and the deserts a number of rare gerbil, jerboas and the marbled polecat. The mountains at the western end of the basin are important refuges for the globally threatened snow leopard, mountain sheep (argali) and the Asiatic ibex. Uvs Nuur itself is an important habitat for waterfowl as well as for birds migrating south from Siberia. IUCN considers that the nominated site meets criterion (iv).

RECOMMENDATION

IUCN recommends that the Committee **inscribe** the Uvs Nuur Basin on the World Heritage List under natural criteria (ii) and (iv). IUCN also recommends that the Committee:

- urge the State Party of Mongolia to place priority on upgrading the Tes River Specially Protected Area, currently protected at a provincial level, to a Specially Protected Area under State legislation; and

- encourage both States Parties to ensure that adequate resources are made available quickly and maintained for the effective implementation of the management plans.

The Committee may wish to commend the Mongolian State Party for steps taken to expand the nominated area, and both States Parties for their efforts to date in developing transboundary cooperation for the conservation of the site. The consolidation of such collaboration should be encouraged and maintained.

ANNEX A

The IUCN Technical Evaluation report, October 1999

1. DOCUMENTATION

i) **IUCN/WCMC Data Sheet:**

ii) **Additional literature consulted:** Dompke, S. & Succow, M. 1998. **Cultural Landscapes and Nature Conservation in northern Eurasia**, NABU/AID Environment/Nature Conservation Bureau, Bonn. 330pp.; Henwood, W.D., 1998. An overview of Protected Areas in the Temperate Grassland Biome, **PARKS Vol. 8, No. 3.** 3-8; IUCN, 1994. **Protecting Nature: regional reviews of protected areas**, Ed. McNeely, J.A., Harrison, J., Dingwall, P., p.13; Ministry for Nature and the Environment of Mongolia, 1998; Biological Diversity in Mongolia. MNEM/UNDP/Regional Bureau for Asia & Pacific, Ulaanbaator. 106pp. Ministry for Nature and the Environment of Mongolia, 1996. **Mongolia's Wild Heritage**. MNEM/UNDP-GEF/WWF, Ulaanbaator, 42pp. UNESCO/Mongolian Ministry of Enlightenment, 1997. Mongolian Tentative List: Cultural & Natural Heritage. World Heritage Centre, 53pp. USSR Academy of Sciences, 1991. **Uvs Nuur Hollow: an unique test region for Biospherical Research**. Pushchino, 47pp. Russian Academy of Sciences (Siberian Division), 1993. Experiment Uvs Nuur. Puchchino, 432pp. Russian Academy of Sciences (Siberian Branch), 1994. **Uvs Nuur Hollow World**. 156pp.

iii) **Consultations:** 2 external reviewers; relevant officials from government and non-government organisations in Mongolia and Republic of Tuva (Russian Federation).

iv) **Field Visits:** J. Thorsell & Y. Badenkov, June 1996 (Tuva section only); L.F. Molloy, August 1999 (Tuva and Mongolia).

2. SUMMARY OF NATURAL VALUES

The nominated site is the northern-most of the enclosed basins of Central Asia, lying between latitudes 49-51 degrees N and longitudes 91-99 E. The basin is enclosed on the north (Tuva) by the Tannu Ola Range and the Sangilen Mountains in the north-east (2,600-3,200m); the Tannu Ola Range marks the northern limits of Central Asia, for its northern slopes drain to one of the major rivers of Siberia, the Yenisey, which runs directly north for 3,000km from Tuva to empty into the Arctic Ocean. In the west, the basin is bounded by outliers from the Mongolian Altai – the glaciated Tsagan Shuvuut - Turgen Uul ranges, extending from Mongun Taiga (3,976m) in Tuva south to Turgen (3,955m) and Harkhiraa (4,057m) in western Mongolia. In the south, the Khan Khohiy Range (2,300-2,900m) extends along the full length of the main drainage system, the Tes-Khem River. Estimates of the size of the basin vary (because of the complex topography) but is considered to be in the range of 7.5 million hectares (5,400,000ha in Mongolia; 2,160,000ha in Tuva).

At the bottom of the basin lies Uvs Nuur (759m a.s.l), the large, roughly-circular lake (60-70km in diameter) from which the site takes its name. The main feeder to Uvs Nuur is the Tes-Khem River, which has its source in a fresh-water lake, Sangyn Dalai Nuur, in the alpine meadows and larch forests of the Sangilen uplands at the eastern extremity of the basin (in Mongolia). The Tes-Khem then flows 500km westwards, through steppe and desert, into southern Tuva, and then back into Mongolia, before emptying into Uvs Nuur. For its last 100km, the river meanders through an extensive wetland complex, a green swathe in an

otherwise semi-desert landscape; its delta is nearly 40km wide and is an important wildlife habitat. Uvs Nuur itself is by far the largest (335,000ha) of 7 lakes larger than 5,000ha within the basin. Uvs is relatively shallow (10-20m depth) and very saline (18g salts/l) and alkaline (pH 9.0). In all, the lakes display a range of hydrological character, water quality and biomass productivity; like Uvs Nuur, some of them have no surface outlet and those with the lowest level of dissolved minerals (such as Tere-Khol) are fed by springs from the surrounding dunelands. Uvs is the 'sea' of western Mongolia; it is so wide that the other side is often not visible, and it is frequented by a range of seabirds, even though the nearest ocean is 3,000km away.

The climate of the basin is sharply continental. The basin is in the rain-shadow of the Tannu Ola Range, which shelters it from the prevailing moisture-bearing north-westerly winds from Siberia. This is a significant bioclimatic transition, where the south Siberian taiga gives way to the deserts and steppes of Central Asia. The Uvs Nuur basin has an extraordinary temperature range; the lowest winter temperature in western Mongolia (-58° C) has been recorded here but summer temperatures can rise to 40° C. Because of the sharp topographic and climatic gradients, the basin contains representative samples of seven continental ecosystems.

Within the site there are 9 strictly protected areas (5 in Tuva; 4 in Mongolia) with a total area of 805,400ha, representing the main ecosystems. The 5 Tuvan 'cluster reserves' constitute the 'Uvs Nuur zapovednik; four of them are grouped around the protected area administrative centre of Erzin and cover the taiga/steppe/desert (and 'desert lake') systems. The fifth Tuvan strictly protected area, Mongun Taiga (core 940ha, buffer 99,460ha), is in the extreme west and protects the Mongun Taiga massif, with its glaciers and tundra/alpine meadow landscapes.

Two of the Mongolian protected areas, Turgen Uul and Tsagaan Shuvuut, also lie in the western mountains. Together with Mongun Taiga, they effectively encircle the second-largest lake in the site, Ureg Nuur, which nestles in a mountain steppe basin at 1450m (and also has no surface outlet). Studies in the two Mongolian protected areas have shown the presence of 173 bird and 41 mammal species within their boundaries. Both are important habitats for the endangered Snow Leopard and there is active research into the conservation of this species. Other important mammals are large herbivores such as the Asiatic ibex, argali mountain sheep, wild boar, red deer and musk deer and the Mongolian and black-tailed gazelle; predators include: wolf, red fox, lynx, polecats and weasels, and many different kites, falcons, eagles and vultures. Monitoring of large mammals in the two protected areas indicated that Turgen Uul contains around 7,000 ibex and 200 argali, while Tsagaan Shuvuut probably holds 2,000 ibex and 800 argali.

Within the ecologically-diverse Uvs Nuur site, some 359 bird species have been recorded. Many of these are of international importance, including: Dalmatian pelican, red-crowned crane, Siberian crane, Houbara bustard, Asian dowitcher, relict gull, white-tailed sea eagle, and black griffon. Some of the migrating birds that use Uvs Nuur as a temporary habitat are rare: Bewick's swan, lesser white-fronted goose, red-breasted goose, and the Baikal teal. There are 81 resident rare and endangered bird species found within the wider Uvs Nuur basin, including the Eurasian spoonbill (more than 100 pairs breed around the lake), black stork, relict gull, Altai ular, swan goose, bar-headed goose, shelduck, osprey and white-tailed sea eagle. Many of these are entered in the Red Book(s) of Tuva and Mongolia. The vegetation also reflects the conjunction of the Siberian and Central Asian floras, with 19 species endemic to Tuva and Mongolia, 51 relict species and 94 plant species classified as rare.

3. COMPARISONS WITH OTHER AREAS

Biogeographically, Uvs Nuur is a very diverse site but one which has a high degree of ecological integrity because it all lies within one closed catchment. Consequently, it is not valid to compare individual ecosystem components of Uvs Nuur with other similar ecosystems; instead, the whole basin needs to be compared with other closed Central Asian lake systems.

The only other listed natural World Heritage site with some of Uvs Nuur's features is the Golden Mountains of Altai (GMA) lying 400km to the WNW in the Altai Republic of the Russian Federation. The western high mountain sector of Uvs Nuur is indeed an outlier of the Altai Mountains and shares with the GMA similar glacial landforms, tundra and boreal forest vegetation, and habitats for endangered large alpine mammals, especially the Snow Leopard. However, Uvs Nuur contains much more climatic and landscape diversity than GMA; it includes this Siberian mountain element (the Altai Highlands biogeographic province) but extends right into the Central Asian steppe and desert environment.

Most of the Uvs Nuur site lies within the Mongolia-Manchurian Steppe biogeographic province which currently has less than 1% of its large area (2.6 million sq km) in protected areas (McNeely et al, 1994) – and no World Heritage sites. The steppe grasslands are one of the major biomes of Eurasia, extending from Manchuria to Hungary, but they generally have a low level of protection – a conservation problem of world-wide concern. IUCN estimate that less than 1% of the world's natural grasslands are protected (IUCN, 1994; Henwood, 1998) and the Mongolian-Manchurian Steppe province is no exception.

The most famous of Central Asia's 'inland seas' is Lop Nur and the Tarim River system within the Taklamakan Desert basin of Xinjiang (Uygur Autonomous Region) in western China. The environment of this vast basin is severely modified through human use. There are other salt lake systems in western Mongolia (in both Uvs and Hovd aimags) but they do not have the diversity of the Uvs Nuur system. Within the Arjin Mountains Nature Reserve (nestled between the Altun Shan and Kun Lun Shan of southern Xinjiang) there are two salt lake systems – Ayakkum Hu and Aqqikkol Hu – but these are at a much higher altitude and have a very different alpine desert climate. There are a number of salt lakes (such as Ebinur Hu and Manas Hu) in the Dzungarian basin of northern Xinjiang (between the Tian Shan and Altai Mountains) but neither has protected area status. Further west, in Kyrgyzstan, Lake Issyk Kul is one of the largest (slightly saline) intermontane lakes in Central Asia but it is affected by urbanisation, industrialisation and intensive agriculture in its large catchment.

It is difficult to find data on the waterfowl populations of the other lakes of Central Asia for comparison purposes. The importance of Uvs Nuur for waterfowl migrating through Central Asia is well known.

Because of its high salinity, Uvs Nuur does not carry any fish which are edible for human populations, so it has never been subject to commercial exploitation. It does, however, contain two small fish which are endemic to the salt lakes of western Mongolia. Each is considered to be a relict species from the fish that populated the lakes of large extent in western Mongolia at the close of the last glaciation of the ice age.

It is difficult to assess whether Uvs Nuur contains the best of the world's steppe landscapes without a detailed knowledge of a biome that extends across 8,000km of Eurasia. However, virtually all the steppe landscapes of eastern Europe, the Ukraine, the central Russia uplands of the Don and Volga, Kazakstan, the western Siberian plain and Manchuria have been significantly modified – by arable agriculture and industrial development.

In conclusion, Uvs Nuur basin contains an outstanding diversity of ecosystems and spans one of the major geoclimatic boundaries of Asia, that between Central Asia and Siberia. No existing World Heritage sites within this bio-geographic region contain this diversity. In addition, Uvs Nuur contains one of the best remaining natural steppe landscapes of Eurasia.

4. INTEGRITY

4.1. Legal Status and Scientific Research

The 5 Tuvan 'cluster areas' making up the Uvs Nuur zapovednik were given protected area status by both the governments of the Republic of Tuva and the Russian Federation in 1993. The 4 cluster areas in Mongolia were listed under the "Mongolian Law on Protected Areas" in 1994 and their buffer zones by law in 1997.

However, the 85% of Uvs Nuur basin that lies outside the 9 protected areas seems to have no specific protective legal status, other than the protection afforded to State-owned land. This issue is of concern (see 'Management' below) because of the threat of over-grazing, particularly in the desert steppe landscape around Uvs Nuur in the vicinity of the capital of Ulaangom.

The existing 9 strictly protected areas (SPAs) do not adequately cover the wide range of ecosystems within this large site. In particular, the wetlands in the lower 60km of the Tes-Khem need to be part of a protected area which can extend northwards across the border into Tuva, incorporating semi-desert, steppe, and the slopes of the Vostochnyi Tannu Ola range (mixed forest/steppe, taiga and tundra). This proposal was discussed with senior officials in Ulaan Baator who stated that it had merit and that both countries were on the point of signing a protocol to establish better trans-border conservation management. Also the nomination document admits that the additions of other SPAs are desirable.

4.2. Management

Management of the Tuvan Uvs Nuur zapovednik is vested in the State Committee for the Protection of the Environment, and exercised through the Tuvan Minister for the Environment and an administration centre in the village of Erzin at the junction of the Erzin and Tes-Khol rivers. The Mongolian Administration of the Uvs Nuur Basin Strictly Protected Area is based in Ulaangom.

However, the crucial integrity issue for the site is how the rest of the basin – nearly 7 million hectares – can be managed in a way which will sustain the natural values currently exhibited within the site. There is no comprehensive management plan for the basin, although this is stated to be "under preparation" by the Mongolian Ministry for Nature and the Environment in Ulaan Baator.

Although most Mongolian land is still the property of the State, Mongolia privatised grazing herds in 1992; since that date there has been a spectacular increase in the domesticated grazing animal population of Mongolia – from an estimated 20 million in 1992 to 30 million in 1999. Mongolia's most important sustainable natural resource is its fertile soils and grasslands, so the threat of continually increasing stock numbers leading to over-grazing (and rural conflicts over traditional family pasturage rights) is a very serious issue facing the country. It is certainly a key issue in maintaining the integrity of the natural and cultural values of the steppe and desert steppe ecosystems of Uvs Nuur.

4.3. Other Human Uses

There is a small open-cast coal mine near Ureg Nuur but at present it only has a very local impact. The lack of any controls over rural road development within the basin is another localised detrimental human impact that can probably only be improved through environmental education. The opportunities for large-scale tourism in the basin are very limited compared with more popular natural attractions like Khovsgol National Park. Small-scale cultural/eco-tourism will develop naturally but any tourism strategy is a very low priority at this stage of Uvs Nuur's development.

4.4. Other Threats

Notwithstanding the above concern about the potential for over-grazing, there are currently few other serious threats to the natural environment of Uvs Nuur. The low level of urban population and complete lack of industry in both the Tuvan and Mongolian sectors affords protection; its geographic isolation, climatic extremes, and lack of surface water flow make it an unattractive locality for agricultural industries. There has been talk of pressures for mining within Tuva but the Tuvan government has blocked this industry initiative pending a decision on World Heritage. If rural populations continue to increase at their current rate, however, the impact of hunting and forest clearance could become a threat to the taiga and forest steppe ecosystems. Indeed, as per Operational Guidelines 44(vi), only the core zone would be appropriate for World Heritage nomination with the buffer and occupied zones excluded.

In conclusion, the Uvs Nuur basin has important integrity issues which need to be solved. The 1999 nomination differs significantly from the 1996 proposal, in that the original nomination of 12 'cluster reserves' (covering 838,000ha) has now been expanded to encompass the entire basin (of more than 7.5 million ha). Whilst the present nomination is much stronger because it is now a continuum of all the ecological diversity in the basin; on the other hand, it now includes all the villages, some agricultural areas, and vast areas of grazed mountain, steppe and desert lands, which are not subject to any form of explicit management controls over grazing levels, buildings, roading, discharges to waterways, etc. Economic and social/demographic pressures are steadily building on Mongolia's grazing lands and no assurances have been given by the State parties that this large site can be maintained in its current state through management planning and strict land-use regulations. Thus there are major questions of integrity relating to the nominated site.

5. CULTURAL LANDSCAPE VALUES

The Uvs Nuur basin has a rich historical and cultural heritage. The site has also been nominated for cultural heritage status, largely on the basis of 2900 sites containing burial mounds ('kurgans') and stone tablets ('steles'), many of late Palaeolithic age. These will be reported on separately by ICOMOS. However, IUCN would like to note the following:

- Historically, a large proportion of the Eurasian steppe would have undergone a vegetation succession to forest as the post-glacial climate became warmer – had wild herbivores and humans (as they domesticated wild grazing animals) not worked to maintain the grassland environment.

- There is a close relationship between the domesticated grazing animals (traditionally sheep, cattle, goats and horses) and the grassland plants of the steppes, a relationship which has moulded this landscape over thousands of years. To an extent the increasing domestication of livestock supplemented (and supplanted) the wild grazing animals of the steppe – such as Przewalski's horse, the Saiga Antelope and the wild Bactrian camel. Over the millennia, the nomadic seasonal herding patterns transferred plants and nutrients

spatially within the steppe ecosystems. Some grasses and herbs will have been eliminated; others will have thrived. Soil organic matter (humus) gradually accumulated as plant leaf litter, dead roots and animal excreta were decomposed and their constituent nutrients recycled back into new plant growth. To a large extent, it can be argued that the great soils of the steppes – the chernozems and chestnut soils – are partly cultural by-products. They are indeed zonal soils but the domesticated herbivores (as well as wild ones) of the steppes have contributed to their development. In fact, some soil ecologists would argue that domesticated herbivores have been essential to the development of the steppe soil landscape.

- The nomadic herders of the steppes of Tuva and Mongolia have traditionally relied upon their grazing animals for most of their domestic needs. Animal protein and fat provides most of their diet; bone has a myriad uses as a raw material; felted wool is used to provide shelter (yurts/gers) and clothing. Sustainable hunting of marmots and other wild animals has traditionally supplemented food and skins from domesticated animals. The culture of the Tuvan and Mongolian herding society is inextricably linked to their land-use – nomadic pastoralism and a relationship to wild Nature. This is particularly reflected in their stories, songs, arts and crafts, and religious beliefs.

The only remaining question, then, is whether the Uvs Nuur basin is the best 'universal' example of a steppe cultural landscape. It could be that there are better steppe cultural landscapes in eastern Mongolia. Nevertheless, all the major varieties of steppe landscapes are well represented within the Uvs Nuur basin and the site would appear to have high value as a cultural landscape.

6. APPLICATION OF WORLD HERITAGE CRITERIA

The Uvs Nuur basin has been nominated under all four natural criteria, as well as criterion (v) for cultural properties:

Criterion (i): Earth's history and geological features

The nomination document does not present any compelling evidence in support of this criterion. The western Mongolia mountains sector of the site contains a good range of glaciers and landforms of glacial origin but these are only of regional significance and probably better represented in the Golden Mountains of Altai site. IUCN consider that this site does not meet criterion (i).

Criterion (ii): Ecological processes

The closed salt lake system of Uvs Nuur is of international scientific importance because of its climatic and hydrological regimes. Because of the unchanging nature of the nomadic pastoral use of the grasslands within the basin over thousands of years, current research programmes should be able to unravel the rate at which Uvs Nuur (and other smaller lakes within the basin) have become saline (and eutrophic). These processes are on-going and because of its unique geophysical and biological characteristics, the basin has been chosen as an IGBP site for monitoring global warming. IUCN considers that this site has the potential to meet criterion (ii).

Criterion (iii): Superlative natural phenomena, scenic beauty

The diversity of landscapes within Uvs Nuur basin, and especially the uncluttered horizons of the steppes broken only by colourful ribs of weathered rocks ('skerries'), have their own

subtle aesthetic appeal. Overall, however, they are not superlative in character and the site is not considered to meet criterion (iii).

Criterion (iv): Biodiversity and threatened species

The Uvs Nuur site has a large range of ecosystems, representing the major biomes of eastern Eurasia, with a number of endemic plants. Although the basin is inhabited and has been used for nomadic pastoralism for thousands of years, the mountains, forests, steppes and deserts are extremely important habitats for a wide range of wild animals, many of them threatened or endangered. The steppe ecosystem supports a rich diversity of birds and the deserts a number of rare gerbil, jerboas and the marbled polecat. The mountains at the western end of the basin are important refuges for the globally threatened snow leopard, mountain sheep (argali) and the Asiatic ibex. Uvs Nuur itself is an important habitat for waterfowl as well as for birds migrating south from Siberia. IUCN considers that this site has the potential to meet criterion (iv).

7. RECOMMENDATIONS

That the Bureau recommend to the Committee that noting that Uvs Nuur Basin has the potential to meet natural criteria (ii) and (iv), **defer** the nomination back to the State Parties involved (Mongolia and the Russian Federation) until the management plan for the site is prepared, including the feasibility analysis of its implementation. Further, the authorities should be requested to revise the boundaries from the 7.5 million hectares to exclude the 90% of the basin which currently has no protective status.

The Bureau may wish to recommend to the two State Parties involved to continue their efforts to enhance transboundary cooperation to ensure the conservation of this site. The preparation and implementation of a joint management plan for this site might be a good framework for transboundary cooperation.

Noting the economic difficulties facing the State Parties involved, the Bureau may wish to encourage them to submit a request to the World Heritage Fund for technical assistance for the preparation and implementation of a management plan for the Uvs Nuur Basin.

ANNEX B
The IUCN Technical Evaluation Report, May 2002

Background note: The IUCN technical evaluation of the Uvs Nuur Basin, nominated jointly by Mongolia and the Russian Federation in 1999, was presented to the twenty-third extraordinary session of the Bureau in November 1999. IUCN's evaluation noted that the site had the potential to meet natural criteria (ii) and (iv) but that the authorities should be requested to revise the boundaries from the 7.5 million hectares so as to exclude the 90% of the basin which currently has no protective status. IUCN also noted that "the existing 9 strictly protected areas (SPAs) do not adequately cover the wide range of ecosystems within this large site. In particular, the wetlands in the lower 60km of the Tes-Khem need to be part of a protected area which can extend northwards across the border to Tuva, incorporating semi-desert, steppe and the slopes of the Vostochnyi Tannu Ola range (mixed forest/steppe, taiga and tundra)." The Bureau decided to defer the nomination back to the States Parties to revise the boundaries and to prepare a joint management plan in a framework of transboundary cooperation.

ADDITIONAL INFORMATION

On 13 November 2001, the Mongolian and Russian Federation State Parties submitted the additional information to the World Heritage Centre. This information included a map of the revised boundary (see Map 1). The site now encompasses 971,165ha and is a serial nomination with 11 clusters. All the nominated area now has protected status and is made up of two protected area groupings:

1. The Ubsunur Hollow State Biosphere Nature Preserve (Russian Federation) which is comprised of seven core areas totalling 258,620ha; and

2. The Uvs Nuur State Nature Preserve (Mongolia) made up of four discrete sites covering 712,545ha.

The State Parties also submitted:

- Two management plans -- one for the Mongolian side and one for the Russian part;
- A Protocol of Co-operation between the Russian State Biosphere Nature Preserve and the Mongolian State Nature Preserve;
- A Treaty of scientific cooperation between the Republic of Tuva, of the Russian Federation and the Uvs Aimag of Mongolia; and
- Resolution on the expansion of the Russian Ubsunur Hollow State Biosphere Nature Preserve.

EVALUATION OF ADDITIONAL INFORMATION

Management
Separate management plans for the Russian and Mongolian parts of the nominated area have been prepared and these are considered to be adequate, along with the transboundary agreements, for the future management of the site.

Transboundary Cooperation
The protocol of co-operation between the reserves on both sides of the border, as well as the treaty of scientific cooperation between the Republic of Tuva, of the Russian Federation and

the Uvs Aimag of Mongolia, provides a solid foundation for trans-boundary cooperation on the management and protection of the site.

Boundaries
The current nomination contains 11 separate protected areas - seven on the Russian side and four in Mongolia.

On the Russian side, the resolution on the expansion of the Russian Ubsnuur Hollow State Biosphere Nature Preserve signed on 21 April 2000 expands the Nature Preserves in Tuva by 283,558 ha with the establishment of five new special protected areas. However, only two of these new protected areas are included within the nomination. IUCN has asked the State Party for clarification on why three of the new protected areas have not been included in the nomination. It appears that the other three protected areas only have protection at the Tuvan (not federal) government level as yet. The two new nominated protected areas ('Ubsu-Nur' and 'Oroku-Shinaa') are located on the northern side of the Tes delta/floodplain, along the border with Mongolia. The inclusion of these sites within the nomination partly responds to IUCN's 1999 request to include the wetlands in the lower 60km of the Tes-Khem and the semi-desert, steppe and the slopes of the Vostochnyi Tannu Ola range within the nominated area (see Background Note above). Coupled with the existing nominated 'Aryskannyg' cluster, the three protected areas also appear to satisfy IUCN's 1999 request to see a representative sequence of ecosystems, from the floodplain of the Tes to the crest of the Tannu-Ola Range, included in the nomination. The core area of one of the Russian SPAs -- 'Mongun Taiga' - has also been expanded from 940ha to 15,890ha (by decreasing the buffer zone). This is a satisfactory response to a recommendation made by IUCN during the 1999 field mission. Consequently, IUCN accepts that the Russian Federation State Party has adequately responded to the Bureau's request in the 1999 deferment.

On the Mongolian side, however, the four sites proposed as part of the nomination are still the same sites which were nominated in 1999. There has been no expansion of the 1999 nominated 'Uvs Lake' protected area cluster to include more of the wetlands on the Mongolian side of the Tes-Khem delta as recommended. The new nomination makes no mention of why the Mongolian partner has not responded – whether they consider that the narrow protected zone around Uvs Lake near the Tes-Khem delta is adequate, or whether the Mongolian State party is still working on a proposal to match the Russian response.

Buffer Zones
The buffer zones of the eleven clusters of the nominated site have been included in the nominated area. IUCN considers that these buffer areas are not adequately protected to merit inclusion in the nominated area. This would reduce the nominated 11 areas to a 'pristine zone' core of 483,530 ha (395,750ha in Mongolia, and 87,830ha in the Tuvan Republic of the Russian Federation).

Serial Site
When IUCN evaluates a serial nomination it asks the following questions:

a) **What is the justification for the serial approach?** The Uvs Nuur Basin is a naturally enclosed basin and the 11 clusters are representative of the main ecosystem types of the basin. Most of them are also large enough if their buffer zones are well managed. IUCN, however, remains concerned that there has been no response to it's request, accepted by the Bureau in 1999, to include the wetlands in the lower 60km of the Tes-Khem and the semi-desert, steppe and the slopes of the Vostochnyi Tannu Ola range on the Mongolian side.

b) **Are the separate elements of the site functionally linked?** IUCN notes that the sites are partially linked on functional terms.

c) Is there an overall management framework for all the units? As noted above, IUCN considers the management plans and transboundary agreements to be adequate for the management of the site.

RECOMMENDATION

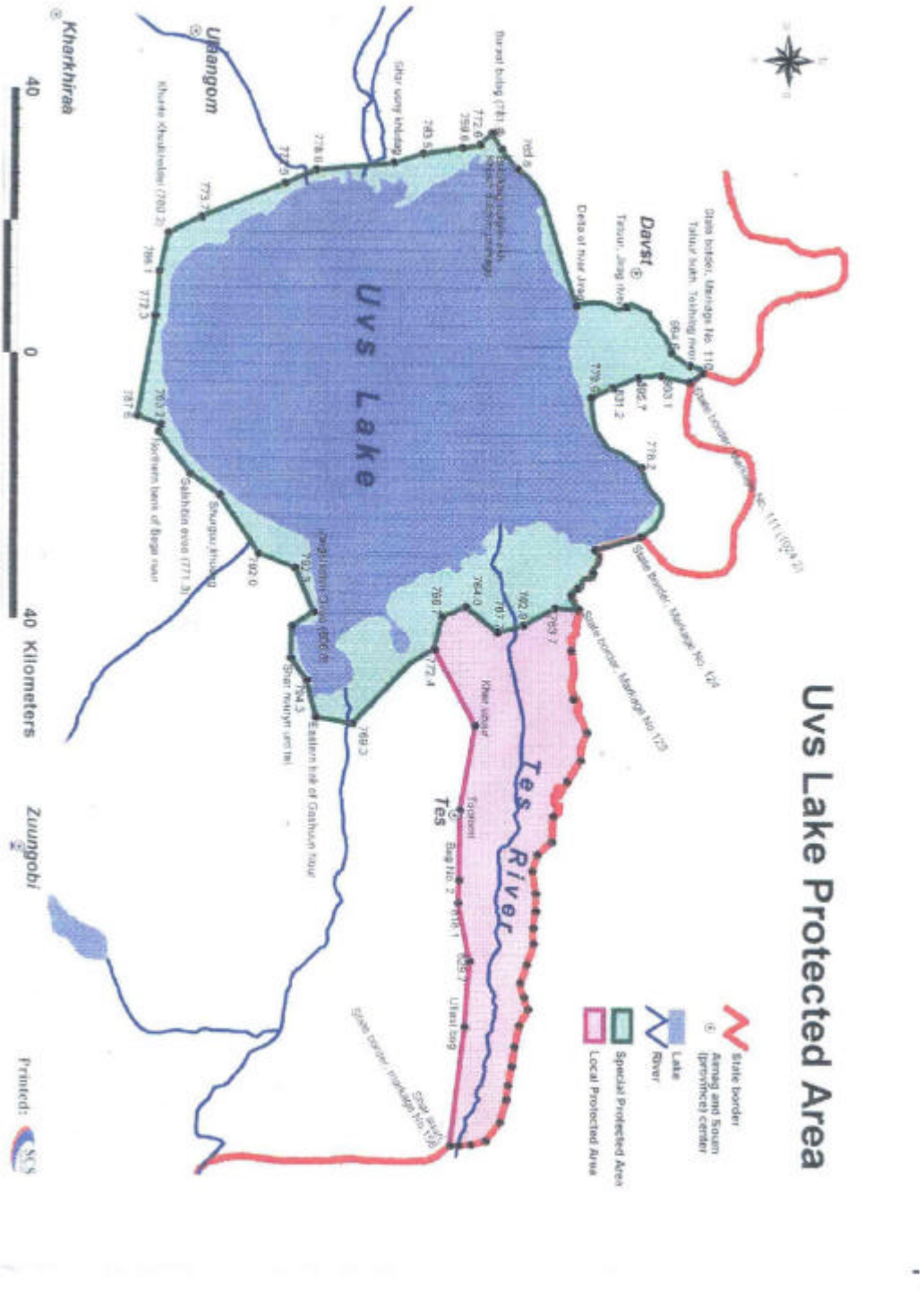
The Bureau **referred** the nomination back to the Mongolian State Party with the request that:

1) The nominated 'Uvs Lake' protected area cluster be enlarged to include more of the wetlands on the Mongolian side of the Tes-Khem delta (in the vicinity of the new 'Ubsu-Nur' and 'Oroko-Shinaa' clusters added by the Russian state party ;
2) The buffer zones be excluded from the nominated area; and

The Bureau commended the State Parties for the development of the two management plans, the signing of transboundary cooperation agreements on science and management, and the steps taken by the Russian authorities to expand the nominated area.

Map 1: General Location of Site

Map 2: Newly Protected Area: Tes River Delta, Mongolia (in pink)



Map 3: Detailed Map of Site

The "Ubsunur Hollow" nature preserve (Russia):

1. "Mongun Taiga" cluster
2. "Ubsu-Nur" cluster
3. "Oroku-Shinaa" cluster
4. "Aryskannyg" cluster
5. "Jamaalyg" cluster
6. "Tsugeer els" cluster
7. "Ular" cluster

The "Uvs Nuur" nature preserve (Mongolia):

8. "Tsagan shuvuut" cluster
9. "Turgen" cluster
10. "Uvs lake" cluster
11. "Altan els" cluster
12. "Tes River" cluster

CANDIDATURE AU PATRIMOINE MONDIAL - ÉVALUATION TECHNIQUE DE L'UICN

BASSIN D'UBS NUUR (MONGOLIE/FÉDÉRATION DE RUSSIE) ID N° 769 Rev

Rappel: L'évaluation technique de l'UICN concernant le bassin d'Ubs Nuur, proposé conjointement par la Mongolie et la Fédération de Russie en 1999, a été présentée à la 23e session extraordinaire du Bureau, en novembre 1999 (voir annexe A). Dans son évaluation, l'UICN notait que le site pourrait remplir les critères naturels (ii) et (iv) mais qu'il importait que les autorités révisent les limites de ce site de 7,5 millions d'hectares afin d'exclure les 90% du bassin qui ne bénéficiaient pas alors d'un statut de protection. L'UICN notait également *«Les neuf aires intégralement protégées actuelles (AIP) ne couvrent pas toute la gamme des écosystèmes de ce vaste site. Les zones humides des 60 kilomètres du bas Tes-Khem, en particulier, doivent être intégrées dans une aire protégée qui se prolongerait vers le nord au-delà de la frontière jusque dans la République de Touva afin d'englober le semi-désert, la steppe et les versants de la chaîne Vostochnyi Tannu Ola (forêt mixte/steppe, taïga et toundra).»* Le Bureau a décidé de **renvoyer** la proposition aux États parties afin qu'ils révisent les limites et préparent un plan de gestion conjoint dans un cadre de coopération transfrontière.

Le 13 novembre 2001, les États parties de la Mongolie et de la Fédération de Russie ont présenté des informations supplémentaires au Centre du patrimoine mondial. Ces informations comprenaient une carte, des limites révisées de la zone proposée correspondant à un site sériel de 11 groupes séparés couvrant, au total, 971 165 ha. Toute la zone proposée était désormais protégée et se composait de deux groupes d'aires protégées: i) la Réserve naturelle de biosphère d'État du bassin d'Ubsunur (Fédération de Russie) qui se compose de sept zones centrales couvrant au total 258 620 ha; et ii) la Réserve naturelle d'État d'Uvs Nuur (Mongolie) composée de quatre sites séparés couvrant ensemble 712 545 ha.

Les États parties ont soumis en même temps:

- deux plans d'aménagement – un pour le secteur mongol et l'autre pour le secteur russe;
- un protocole de coopération entre la Réserve naturelle de biosphère d'État de Russie et la Réserve naturelle d'État de Mongolie;
- un traité de coopération scientifique entre la République de Touva en Fédération de Russie et l'Uvs Aimag en Mongolie; et
- une résolution concernant l'agrandissement de la Réserve naturelle de biosphère d'État du bassin de l'Ubsunur en Fédération de Russie.

À sa 26e session (Paris, 2002), le Bureau a *«renvoyé la proposition d'inscription à l'État partie de la Mongolie en demandant à ce que l'inscription groupée de la zone protégée du Lac d'Ubs soit élargie afin d'inclure plus de zones humides du côté Mongolie du delta de Tes-Khem (dans le voisinage du nouveau « Ubs Nuur » et « Oroku-Shinaa » ajouté par l'État partie de la Fédération de Russie en tant qu'inscription groupée) et que les zones tampon soient exclues de la zone inscrite. Le Bureau a félicité l'État partie pour le développement de deux plans de gestion, la signature d'accords de coopération transfrontaliers dans le domaine de la recherche scientifique et de la gestion, ainsi que pour les progrès réalisés par les autorités de la Fédération de Russie en vue de l'extension de la zone inscrite.»* (Voir annexe B pour le rapport intégral de l'UICN.)

INFORMATION COMPLÉMENTAIRE

Des informations complémentaires ont été soumises par l'État partie de la Mongolie, le 31 janvier 2003 et le 14 mars 2003. Elles comprennent:

- une lettre du ministère de la Nature et de l'Environnement de Mongolie notant que l'Aire protégée spéciale (APS) du Tes a été établie le 10 janvier 2003 par résolution du Présidium de l'Hural représentant les citoyens de l'Uvs Aimag (province) et une copie de cette résolution;
- une copie du Régime de conservation de l'APS du Tes également approuvé le 10 janvier 2003 et
- des cartes de la nouvelle région.

La résolution (10 janvier 2003) créant l'APS du Tes place la région sous la protection de la législation provinciale et demande de préparer et de soumettre une proposition au ministère de la Nature et de l'Environnement sollicitant le classement en APS au titre de la législation de l'État. La nouvelle aire protégée couvre, au total, 97 688 ha.

ÉVALUATION DE L'INFORMATION COMPLÉMENTAIRE

Cette extension de la région proposée afin d'inclure le delta du Tes est conforme à la recommandation de l'UICN et du Bureau du patrimoine mondial (Paris, 2002). La proposition révisée pour le bassin d'Ubs Nuur comprend maintenant:

- la Réserve de biosphère d'État du bassin d'Ubsunur (Fédération de Russie) qui se compose de sept zones centrales couvrant au total 258 620 ha; et
- la Réserve naturelle d'État d'Uvs Nuur (Mongolie) composée de cinq sites séparés couvrant au total 810 233 ha.

Toutes les zones tampons ont été exclues des groupes proposés par la Mongolie. Cependant, les zones tampons de cinq des sept groupes russes sont encore incluses dans la proposition. La plus importante est la zone tampon du groupe 1 («Mongun Taïga»), d'une superficie de 84 510 ha. Cette région, qui est encore dans un état très naturel, se compose d'une toundra et de prairies de haute altitude et fait partie intégrante de l'ensemble de l'écosystème de montagne qui entoure le massif glacé. De même, la zone tampon de 50 000 ha autour du groupe 6 («Tsuger Els»), une zone de désert/steppe désertique, ne peut être distinguée, du point de vue de la qualité, de la petite zone centrale de 4900 ha. Il n'y a aucun problème concernant la qualité de la gestion des zones tampons qui entourent les groupes 4, 5 et 7 (comme on le voit sur la carte ci-jointe) et celles-ci devraient rester dans la zone proposée).

APPLICATION DES CRITÈRES DU PATRIMOINE MONDIAL

Le bassin d'Ubs Nuur est proposé au titre des quatre critères naturels (comme décrit en 1999).

Critère (i) : histoire de la terre et processus géologiques

Le document de la proposition ne fournit aucune preuve irréfutable à l'appui de ce critère. Le secteur de montagne de Mongolie occidentale contenu dans le site présente une bonne gamme de glaciers et de reliefs d'origine glaciaire mais ceux-ci n'ont qu'une importance régionale et sont probablement mieux représentés dans le site des Montagnes dorées de l'Altaï. L'UICN considère que le site ne remplit pas le critère (i).

Critère (ii): processus écologiques

Le système lacustre salé fermé de l'Ubs Nuur est d'importance scientifique internationale en raison de ses régimes climatique et hydrologique. En raison de l'immuabilité de l'utilisation pastorale nomade des pâturages du bassin depuis des milliers d'années, les programmes de recherche actuels devaient être en mesure de révéler le rythme auquel l'Ubs Nuur (ainsi que d'autres lacs plus petits se trouvant dans le bassin) est devenu salin (et eutrophe). Ces processus sont en cours et, en raison de ses caractéristiques géophysiques et biologiques uniques, le bassin a été choisi par le Programme

géologique international pour l'étude du réchauffement climatique. L'UICN considère que le site remplit le critère (ii)

Critère (iii) : phénomènes naturels éminemment remarquables ou de beauté exceptionnelle

La diversité des paysages dans le bassin d'Ubs Nuur et, en particulier, les horizons de steppes où l'œil ne rencontre aucun obstacle sauf, de loin en loin, des crêtes colorées de roches usées par le temps, ont leur propre beauté subtile. Globalement, toutefois, ils ne sont pas exceptionnels. L'UICN considère que le site ne remplit pas le critère (iii).

Critère (iv): diversité biologique et espèces menacées

Le site d'Ubs Nuur comprend une vaste gamme d'écosystèmes qui représentent les principaux biomes de l'Eurasie orientale, avec un certain nombre d'espèces de plantes endémiques. Bien que le bassin soit habité et qu'il ait servi au pastoralisme nomade depuis des milliers d'années, les montagnes, les forêts, les steppes et les déserts sont des habitats extrêmement importants pour toute une variété d'animaux sauvages qui, dans bien des cas, sont menacés ou même en danger critique d'extinction. L'écosystème steppique entretient une riche diversité d'oiseaux et les déserts un certain nombre de gerbilles, gerboises et putois marbrés rares. Les montagnes de la partie occidentale du bassin sont d'importants refuges pour le léopard des neiges menacé au plan mondial, l'argali et le bouquetin d'Asie. L'Ubs Nuur lui-même est un habitat important pour les oiseaux d'eau ainsi que pour les oiseaux qui migrent au sud de la Sibérie. L'UICN considère que le site remplit le critère (iv).

RECOMMANDATION

L'UICN recommande que le Comité **inscrive** le bassin d'Ubs Nuur sur la Liste du patrimoine mondial au titre des critères naturels (ii) et (iv). L'UICN recommande aussi au Comité:

- de prier l'État partie de la Mongolie de donner la priorité au reclassement de l'Aire spécialement protégée du Tes actuellement protégée au niveau provincial pour en faire une Aire spécialement protégée au niveau de l'État; et

- d'encourager les deux États parties à mettre rapidement à disposition et à maintenir des ressources adéquates pour la mise en œuvre effective des plans d'aménagement.

Le Comité pourrait aussi féliciter l'État partie de la Mongolie pour les mesures prises en vue d'agrandir la zone proposée et les deux États parties pour les efforts consentis à ce jour afin de développer la coopération transfrontière pour la conservation du site. La consolidation de cette collaboration devrait être encouragée.

ANNEXE A
Le Rapport d'évaluation technique de l'UICN, octobre 1999

1. DOCUMENTATION

i) **Fiches techniques UICN/WCMC:**

ii) **Littérature consultée:** Dompke, S. & Succow, M. 1998. **Cultural Landscapes and Nature Conservation in northern Eurasia**, NABU/AID Environment/Nature Conservation Bureau, Bonn. 330pp.; Henwood, W.D., 1998. An overview of Protected Areas in the Temperate Grassland Biome, **PARKS Vol. 8, No. 3.** 3-8; IUCN, 1994. **Protecting Nature: regional reviews of protected areas**, Ed. McNeely, J.A., Harrison, J., Dingwall, P., p.13; Ministry for Nature and the Environment of Mongolia, 1998; Biological Diversity in Mongolia. MNEM/UNDP/Regional Bureau for Asia & Pacific, Ulaanbaator. 106pp. Ministry for Nature and the Environment of Mongolia, 1996. **Mongolia's Wild Heritage**. MNEM/UNDP-GEF/WWF, Ulaanbaator, 42pp. UNESCO/Mongolian Ministry of Enlightenment, 1997. Mongolian Tentative List: Cultural & Natural Heritage. World Heritage Centre, 53pp. USSR Academy of Sciences, 1991. **Ubs Nuur Hollow: an unique test region for Biospherical Research**. Pushchino, 47pp. Russian Academy of Sciences (Siberian Division), 1993. Experiment Ubs Nuur. Puchchino, 432pp. Russian Academy of Sciences (Siberian Branch), 1994. **Ubs Nuur Hollow World**. 156pp.

iii) **Consultations:** deux évaluateurs indépendants, fonctionnaires pertinents des organismes publics et organisations non gouvernementales, en Mongolie et en République de Touva (Fédération de Russie).

iv) **Visite du site**: J. Thorsell et Y. Badenkov, juin 1996 (secteur de Touva uniquement); L.F. Molloy, août 1999 (Touva et Mongolie).

2. RÉSUMÉ DES CARACTÉRISTIQUES NATURELLES

Le site proposé correspond au bassin fermé le plus septentrional de l'Asie centrale, situé entre les latitudes de 49° et 51° N et les longitudes de 91° à 99° E. Le bassin est fermé au nord (Touva) par la chaîne Tannu Ola et au nord-est par les monts Sangilen (2,600 à 3,200m); la chaîne Tannu Ola marque les limites septentrionales de l'Asie centrale et, de son versant nord, descend l'un des grands fleuves de Sibérie, l'Inessei, qui parcourt 3,000 kilomètres depuis Touva, en direction du nord, pour se jeter dans l'océan Arctique. À l'ouest, le bassin est limité par les contreforts de l'Altaï mongol – les chaînes glacées du Tsagan Shuvuut -Turgen Uul, qui vont du Mongun Taiga (3,976m) dans la République de Touva jusqu'à Turgen (3,955m) en direction du sud et Harkhiraa (4,057m) dans l'ouest de la Mongolie. Au sud, la chaîne de Khan Khohiy (2,300 à 2,900m) longe le système fluvial principal du Tes-Khem. Les dimensions du bassin varient selon les estimations (en raison d'une topographie complexe) mais on considère qu'elles sont de l'ordre de 7,5 millions d'hectares (5,400,000 hectares en Mongolie; 2,160,000 hectares en République de Touva).

Au fond du bassin, se trouve l'Ubs Nuur (759m au-dessus du niveau de la mer), le grand lac pratiquement circulaire (60 à 70km de diamètre) qui a donné son nom au site. Le Tes-Khem est le fleuve principal qui alimente l'Ubs Nuur. Il prend sa source dans un lac d'eau douce, Sangyn Dalai Nuur, dans les prairies alpines et les forêts de mélèzes des plateaux de Sangilen, à l'extrémité orientale du bassin (en Mongolie). Il parcourt ensuite 500 kilomètres vers l'ouest, à travers la steppe et le désert, dans le sud de la République de Touva, puis revient en Mongolie avant de se jeter dans l'Ubs Nuur. Sur les 100 derniers kilomètres, le fleuve dessine des méandres à travers un vaste complexe de zones humides, une oasis verte dans un paysage par ailleurs semi-désertique; son delta a près de 40 kilomètres de large et constitue un habitat important pour la faune sauvage. L'Ubs Nuur lui-même est,

de loin, le plus grand (335,000 hectares) des sept lacs de plus de 5,000 hectares que l'on trouve dans le bassin. L'Ubs Nuur est relativement peu profond (10 à 20m), très salé (18 g/l) et alcalin (pH 9.0). Globalement, les lacs présentent toute une gamme de caractéristiques hydrologiques, qualités de l'eau et productivités de biomasse. Comme l'Ubs Nuur, certains d'entre eux n'ont pas de débouchés en surface et ceux qui présentent le plus faible niveau de minéraux dissous (tel que le Tere-Khol) sont alimentés par des sources provenant des dunes alentour. L'Ubs est la «mer» de la Mongolie occidentale; il est si large que l'on en voit rarement l'autre rive et il est fréquenté par toutes sortes d'oiseaux de mer, bien que l'océan le plus proche se trouve à 3,000 kilomètres de là.

Le bassin connaît un climat continental marqué. Il est situé sous le vent de la chaîne Tannu Ola qui le protège contre les vents dominants du nord-ouest, porteurs d'humidité, venant de Sibérie. Il s'agit d'une transition bioclimatique importante où la taïga du sud de la Sibérie fait place aux déserts et aux steppes d'Asie centrale. Le bassin d'Ubs Nuur présente une amplitude thermique extraordinaire avec les plus basses températures hivernales de Mongolie occidentale (-58° C) et des températures estivales qui peuvent s'élever jusqu'à 40° C. En raison des gradients topographiques et climatiques abrupts, le bassin possède des exemples représentatifs de sept écosystèmes continentaux.

À l'intérieur du site, il y a neuf aires intégralement protégées (5 à Touva; 4 en Mongolie) sur une superficie totale de 805,400 hectares, représentant les principaux écosystèmes. Les cinq «réserves groupées» de Touva forment la «zapovednik Ubs Nuur»; quatre d'entre elles se trouvent autour du centre administratif de l'aire protégée à Erzin et contiennent des systèmes de taïga/steppe/désert (ainsi qu'un «lac de désert»). La cinquième aire strictement protégée de Touva, Mongun Taiga (zone centrale 940 hectares, zone tampon 99,460 hectares), se trouve dans l'extrême ouest et protège le massif Mongun Taiga avec ses glaciers et ses paysages de toundra et de prairie alpine.

Deux des aires protégées de Mongolie, Turgen Uul et Tsagaan Shuvuut, se trouvent également dans les montagnes occidentales. Avec Mongun Taiga, elles encerclent en fait le deuxième plus grand lac du site, Ureg Nuur, qui se love dans un bassin de steppe de montagne, à 1,450 mètres d'altitude (et n'a pas non plus de débouché en surface). Les études conduites dans les deux aires protégées de Mongolie ont mis en évidence la présence de 173 espèces d'oiseaux et 41 espèces de mammifères. Toutes deux sont d'importants habitats pour le léopard des neiges menacé d'extinction et l'on y mène des travaux de recherche actifs sur la conservation de cette espèce. Les autres mammifères importants sont les grands herbivores tels que le bouquetin d'Asie, l'argali, le sanglier, le cerf commun et le porte-musc, ainsi que la gazelle de Mongolie et la gazelle du Tibet; parmi les prédateurs on trouve: le loup, le renard roux, le lynx, le putois et la belette et de nombreux milans, faucons, aigles et vautours différents. La surveillance continue des grands mammifères, dans les deux aires protégées, a permis d'établir que Turgen Uul contient environ 700 bouquetins et 200 argalis, tandis que Tsagaan Shuvuut possède probablement 2,000 bouquetins et 800 argalis.

Dans le site d'Ubs Nuur écologiquement divers, on a enregistré 359 espèces d'oiseaux qui, dans de nombreux cas, sont d'importance internationale, notamment: le pélican frisé, la grue couronnée, la grue de Sibérie, l'outarde Houbara, le bécassin d'Asie, la mouette relique, le pygargue à queue blanche et le vautour fauve. Certains des oiseaux migrateurs qui utilisent l'Ubs Nuur comme habitat temporaire sont des espèces rares: le cygne de Bewick, l'oie naine, la bernache à cou roux et la sarcelle élégante. Il y a 81 espèces d'oiseaux résidentes rares et menacées d'extinction à l'intérieur du bassin d'Ubs Nuur, notamment la spatule blanche (plus de 100 couples nichent autour du lac), la cigogne noire, la mouette relique, l'ular de l'Altaï, l'oie cygnoïde, l'oie à tête barrée, le tadorne de Belon, le balbuzard pêcheur et le pygargue à queue blanche. Beaucoup figurent au(x) Livre(s) rouge(s) de Touva et de Mongolie. La végétation est également celle d'une zone de transition entre les flores de Sibérie et d'Asie centrale avec 19 espèces endémiques à Touva et en Mongolie, 51 espèces reliques et 94 espèces de plantes classées rares.

3. COMPARAISON AVEC D'AUTRES AIRES

Du point de vue biogéographique, Ubs Nuur est un site extrêmement divers tout en présentant un degré élevé d'intégrité écologique car il est tout entier situé dans un bassin fermé. En conséquence, il n'est pas possible de comparer les éléments de l'écosystème d'Ubs Nuur avec des écosystèmes semblables; il convient, en revanche, de comparer l'ensemble du bassin avec d'autres systèmes lacustres fermés d'Asie centrale.

Le seul autre bien du patrimoine mondial présentant quelques-unes des caractéristiques d'Ubs Nuur est celui des Montagnes dorées de l'Altaï (MDA) qui se trouvent à 400 kilomètres à l'ouest-nord-ouest dans la République de l'Altaï, en Fédération de Russie. Le secteur de haute montagne de l'ouest d'Ubs Nuur est, en réalité, un prolongement des monts Altaï et partage, avec les MDA, une topographie glaciaire, une végétation de toundra et de forêt boréale et des habitats semblables pour de grands mammifères alpins menacés d'extinction, en particulier le léopard des neiges. Cependant, Ubs Nuur contient une diversité climatique et paysagère supérieure à celle des MDA. Il comprend l'élément des montagnes de Sibérie (province biogéographique des hautes terres de l'Altaï) mais se prolonge à l'intérieur de la steppe et du milieu désertique de l'Asie centrale.

La majeure partie du site d'Ubs Nuur se trouve dans la province biogéographique de steppe Mongolie-Mandchourie, dont moins de 1% de la vaste superficie (2,6 millions de km²) est actuellement inclus dans des aires protégées (McNeely *et al.*, 1994) et où il n'y a pas de bien du patrimoine mondial. La steppe est un des biomes principaux de l'Eurasie. Elle s'étend de la Manchourie à la Hongrie mais elle est généralement peu protégée – un problème de conservation d'importance mondiale. L'UICN estime que moins de 1% des prairies naturelles de la planète sont protégées (UICN, 1994; Henwood, 1998) et la province steppique Mongolie-Mandchourie n'y fait pas exception.

La plus célèbre des «mers intérieures» d'Asie centrale est le système Lop Nur avec le fleuve Tarim, dans le bassin désertique Taklamakan du Xinjiang (région autonome Uygur) dans l'ouest de la Chine. L'environnement de ce bassin est fortement modifié par les activités anthropiques. Il y a d'autres systèmes lacustres salés en Mongolie occidentale (à la fois dans l'Ubs et l'Hovd airmags) mais il ne présente pas la diversité du système de l'Ubs Nuur. Dans la Réserve naturelle des montagnes d'Arjin (lovée entre l'Altun Shan et le Kun Lun Shan dans le sud du Xinjiang) il y a deux systèmes lacustres salés – Ayakkum Hu et Aqqikkol Hu – mais tous deux sont situés beaucoup plus haut en altitude et ont un climat désertique alpin très différent. Il y a plusieurs lacs salés (tels Ebinur Hu et Manas Hu) dans le bassin du Dzungarian dans le nord du Xinjiang (entre le Tian Shan et les monts Altaï) mais aucun ne jouit d'une protection officielle. Plus à l'ouest, au Kirghizistan, le lac Issyk Kul est l'un des plus grands lacs (légèrement salins) intermontagnards d'Asie centrale, mais il est affecté par l'urbanisation, l'industrialisation et une agriculture intensive dans son vaste bassin.

Il est difficile de trouver des données sur les populations d'oiseaux d'eau d'autres lacs d'Asie centrale qui puissent permettre une comparaison. L'importance d'Ubs Nuur pour les oiseaux d'eau qui migrent à travers l'Asie centrale est bien établie.

En raison de sa forte salinité, l'Ubs Nuur ne contient aucun poisson comestible et n'a donc jamais subi d'exploitation commerciale. Il possède cependant deux petits poissons endémiques des lacs salés de Mongolie occidentale considérés tous deux comme des espèces reliques qui peuplaient les lacs de grande étendue, en Mongolie occidentale, à la fin de l'ère glaciaire.

Il est difficile d'évaluer si le bassin d'Ubs Nuur contient les meilleurs paysages de steppe du monde sans connaissance précise d'un biome qui s'étend sur 8,000 kilomètres de l'Eurasie. Toutefois, pratiquement tous les paysages de steppe d'Europe orientale, de l'Ukraine, des plateaux du Don et de la Volga en Russie centrale, du Kazakhstan, de la plaine de Sibérie occidentale et de la Manchourie ont été modifiés de manière notable – par l'agriculture et le développement industriel.

En conclusion, le bassin d'Ubs Nuur contient une diversité exceptionnelle d'écosystèmes et s'étend sur l'une des principales lignes géoclimatiques d'Asie, entre l'Asie centrale et la Sibérie. Aucun bien du patrimoine mondial actuellement inscrit dans cette région biogéographique ne peut prétendre à la même diversité. En outre, Ubs Nuur contient un des derniers et meilleurs paysages de steppe naturels d'Eurasie.

4. INTÉGRITÉ

4.1 Statut juridique et recherche scientifique

Les cinq «zones groupées» de Touva qui forment la zapovednik Ubs Nuur se sont vu conférer le statut d'aire protégée par le gouvernement de la République de Touva et celui de la Fédération de Russie, en 1993. Les quatre zones groupées de Mongolie ont été inscrites au titre de la «loi de Mongolie sur les aires protégées» en 1994 et leurs zones tampons sont aussi inscrites dans la loi depuis 1997.

Toutefois, les 85% du bassin d'Ubs Nuur qui se trouvent en dehors des neuf aires protégées ne semblent pas avoir de statut juridique de protection autre que la protection accordée aux territoires du domaine public. Cette question est préoccupante (voir «Gestion» ci-dessous) en raison de la menace que représente le surpâturage, notamment dans le paysage de steppe désertique qui entoure Ubs Nuur, à proximité de la ville d'Ulaangom.

Les neuf aires intégralement protégées actuelles (AIP) ne couvrent pas toute la gamme des écosystèmes de ce vaste site. Les zones humides des 60 kilomètres du bas Tes-Khem, en particulier, doivent être intégrées dans une aire protégée qui se prolongerait vers le nord au-delà de la frontière jusque dans la République de Touva afin d'englober le semi-désert, la steppe et les versants de la chaîne Vostochnyi Tannu Ola (forêt mixte/steppe, taïga et toundra). Cette proposition a été examinée par de hauts fonctionnaires d'Oulan Bator qui ont estimé qu'elle avait quelque mérite et indiqué que les deux pays étaient sur le point de signer un protocole afin d'établir une meilleure gestion transfrontière en faveur de la conservation. Le document de la proposition d'inscription admet aussi qu'il serait souhaitable d'ajouter d'autres aires intégralement protégées.

4.2 Gestion

C'est au Comité d'État pour la protection de l'environnement qu'incombe la gestion de la zapovednik Ubs Nuur de Touva, gestion exercée par l'intermédiaire du ministère de l'Environnement de Touva et d'un Centre d'administration qui se trouve dans le village d'Erzin, à la jonction des rivières Erzin et Tes-Khol. L'Administration mongole de l'aire intégralement protégée du bassin d'Ubs Nuur est située à Ulaangom.

Toutefois, la question d'intégrité la plus cruciale pour le site consiste à savoir comment gérer le reste du bassin – près de 7 millions d'hectares – de manière à préserver les caractéristiques naturelles que l'on peut actuellement observer dans le site. Il n'existe pas de plan de gestion complet pour le bassin bien que le ministère mongol de la Nature et de l'Environnement, à Uhlan Baator, ait indiqué qu'un tel plan était «en préparation».

La majeure partie du territoire mongol est toujours propriété de l'État mais la Mongolie a privatisé les troupeaux d'herbivores en 1992. Depuis lors, on note une augmentation spectaculaire du cheptel mongol – de quelque 20 millions de têtes en 1992 à 30 millions en 1999. Les sols fertiles et les prairies constituent la plus importante ressource naturelle durable de la Mongolie, de sorte que le risque d'augmentation permanente du cheptel entraînant le surpâturage (ainsi que des conflits en milieu rural à propos des droits traditionnels de pâturage des différentes familles) est un problème grave pour ce pays. C'est en tout cas une question clé pour le maintien de l'intégrité des caractéristiques naturelles et culturelles des écosystèmes de steppe et de steppe désertique d'Ubs Nuur.

4.3 Autres activités anthropiques

Il existe une petite mine de charbon à ciel ouvert près d'Ureg Nuur mais, jusqu'à présent, elle n'a que des effets très localisés. L'absence de tout contrôle sur le réseau routier en milieu rural, à l'intérieur du bassin est un autre impact anthropique localisé et néfaste qui ne peut sans doute être atténué que par l'éducation à l'environnement. Les possibilités de tourisme à grande échelle dans le bassin sont très limitées par comparaison avec le Parc national de Khovsgol qui constitue une attraction naturelle plus populaire. Un écotourisme culturel à petite échelle se développera naturellement, mais toute stratégie concernant le tourisme n'a qu'une faible priorité à cette étape de la mise en valeur d'Ubs Nuur.

4.4 Autres menaces

Outre les préoccupations décrites dans les paragraphes qui précèdent, concernant le surpâturage éventuel, il existe actuellement peu de menaces graves pesant sur le milieu du bassin d'Ubs Nuur. Le faible niveau de population urbaine et l'absence totale d'industrie, tant dans le secteur de la Mongolie que dans celui de la République de Touva, constituent en soi une protection. L'isolement géographique, le climat extrême et l'absence d'eau de surface font que l'agriculture n'est pas une activité intéressante. On a parlé de pressions minières à Touva mais le gouvernement a bloqué cette initiative industrielle en attendant la décision concernant l'inscription au patrimoine mondial. Si les populations rurales continuent d'augmenter au rythme actuel, cependant, la chasse et le déboisement deviendront des menaces pour les écosystèmes de la Taïga et de la steppe boisée. Conformément aux Principes opérationnels 44(vi), seule la zone centrale satisferait aux conditions d'inscription au patrimoine mondial: il faudrait exclure la zone tampon et les zones occupées de la proposition.

En conclusion, le bassin d'Ubs Nuur est confronté à de graves problèmes d'intégrité qui doivent être résolus. La candidature de 1999 diffère considérablement du projet de 1996 en ce que les 12 «réserves groupées» (couvrant 838,000 hectares) de la proposition d'origine ont été élargies pour comprendre le bassin dans sa totalité (plus de 7,5 millions hectares). La présente proposition est beaucoup plus sérieuse car il s'agit maintenant d'un espace continu contenant toute la diversité écologique du bassin; en revanche, elle comprend maintenant tous les villages, certaines zones agricoles et de vastes régions de montagnes à pâturage, de steppe et de terres désertiques qui ne sont soumises à aucune forme de gestion explicite en ce qui concerne le pâturage, la construction, les routes, les déversements dans les cours d'eau, etc. Les pressions économiques et socio-démographiques augmentent régulièrement sur les pâturages de Mongolie et l'État partie n'a donné aucune assurance quant au maintien de ce grand site dans son état actuel par des plans de gestion et règlements stricts concernant l'occupation des sols. Il y a donc de graves problèmes d'intégrité concernant le site proposé.

5. VALEURS DE PAYSAGE CULTUREL

Le bassin d'Ubs Nuur possède un patrimoine historique et culturel riche. Le site est également candidat au statut de bien du patrimoine culturel, notamment sur la base des 2,900 sites qui contiennent des «kurgans» (sépultures) et des stèles datant, dans de nombreux cas, du Paléolithique. Un rapport séparé sera présenté par l'ICOMOS. Toutefois, l'UICN souhaite faire observer ce qui suit:

- Du point de vue historique, une forte proportion de la steppe eurasienne aurait connu une succession végétale pour devenir forêt, à mesure que le climat post-glaciaire se réchauffait – si les herbivores sauvages et les êtres humains (à mesure qu'ils domestiquaient les herbivores sauvages) n'étaient entrés en scène pour maintenir le milieu de la prairie.

- Il existe une relation étroite entre les herbivores domestiques (moutons, bovins, chèvres et chevaux) et les plantes de la steppe, une relation qui a façonné ce paysage en quelques milliers d'années. Dans une certaine mesure, la domestication des animaux a complété (et supplanté) les herbivores sauvages de la steppe – tel que le cheval de Przewalski, le saïga et le chameau de Bactriane. Au fil des millénaires, le nomadisme saisonnier des troupeaux a déplacé les plantes et les matières nutritives à l'échelle des écosystèmes steppiques. Certaines herbes ont été éliminées;

d'autres ont prospéré. La matière organique des sols (l'humus) s'est progressivement accumulé à mesure que la litière de feuilles, les racines mortes et les excréments animaux étaient décomposés et que les matières nutritives qui les formaient étaient recyclées dans la nouvelle croissance végétale. Dans une large mesure, on peut dire que les grands sols des steppes – le tchernoziom et le sol châtain – sont, en partie, des sous-produits culturels. Ce sont des sols zonaux mais les herbivores domestiques (comme les herbivores sauvages) des steppes ont contribué à leur propagation. En fait, certains pédologues estiment que les herbivores domestiqués ont joué un rôle essentiel dans le développement du paysage de la steppe.

- Les bergers nomades de Touva et de Mongolie ont toujours été tributaires de leurs herbivores pour satisfaire la plupart de leurs besoins personnels. Les protéines et les graisses animales constituent l'essentiel de leur régime alimentaire; les os sont utilisés de multiples façons comme matériau brut; la laine sert à fabriquer les abris (yourtes) et les vêtements. La chasse durable aux marmottes et autres animaux sauvages est depuis toujours complétée par l'exploitation des animaux domestiques pour l'alimentation et les peaux. La culture des sociétés pastorales de Touva et de Mongolie est inextricablement liée à la manière dont ces peuples utilisent les sols – pastoralisme nomade et relation avec la nature sauvage, comme en témoignent leurs contes, leurs chants, leurs arts, leur artisanat et leurs croyances religieuses.

La dernière question consiste à savoir si le bassin d'Ubs Nuur est le meilleur exemple «universel» d'un paysage steppique culturel. Il se pourrait qu'il y ait de meilleurs paysages steppiques culturels en Mongolie orientale. Néanmoins, les grandes variétés de paysages steppiques sont bien représentés dans le bassin d'Ubs Nuur et le site semble avoir une grande importance en tant que paysage culturel.

6. CHAMP APPLICATION DES CRITÈRES DU PATRIMOINE MONDIAL

Le bassin d'Ubs Nuur est proposé pour l'inscription sur la base des quatre critères naturels ainsi que du critère (v) qui s'applique aux biens culturels.

Critère (i): Histoire de la terre et géologie

Le document de la proposition ne fournit aucune preuve irréfutable à l'appui de ce critère. Le secteur de montagne de Mongolie occidentale contenu dans le site présente une bonne gamme de glaciers et de reliefs d'origine glaciaire mais ceux-ci n'ont qu'une importance régionale et sont probablement mieux représentés dans le site des Montagnes dorées de l'Altaï. L'UICN considère que le présent site ne satisfait pas au critère (i).

Critère (ii): Processus écologiques

Le système lacustre salé fermé de l'Ubs Nuur est d'importance scientifique internationale en raison de ses régimes climatique et hydrologique. En raison de l'immuabilité de l'utilisation pastorale nomade des pâturages du bassin depuis des milliers d'années, les programmes de recherche actuels devaient être en mesure de révéler le rythme auquel l'Ubs Nuur (ainsi que d'autres lacs plus petits se trouvant dans le bassin) est devenu salin (et eutrophe). Ces processus sont en cours et, en raison de ses caractéristiques géophysiques et biologiques uniques, le bassin a été choisi par le Programme géologique international afin d'étudier le réchauffement climatique. L'UICN estime que le site a le potentiel de satisfaire au critère (ii)

Critère (iii): Phénomène naturel, beauté exceptionnels

La diversité des paysages dans le bassin d'Ubs Nuur et, en particulier, les horizons de steppes où l'œil ne rencontre aucun obstacle sauf, de loin en loin, des crêtes colorées de roches usées par le temps, ont leur propre beauté subtile. Globalement, toutefois, ils ne sont pas exceptionnels et il est donc considéré que le site ne satisfait pas au critère (iii).

Critère (iv): Diversité biologique et espèces menacées

Le site d'Ubs Nuur comprend une vaste gamme d'écosystèmes qui représentent les principaux biomes de l'Eurasie orientale, avec un certain nombre d'espèces de plantes endémiques. Bien que le bassin soit habité et qu'il ait servi au pastoralisme nomade depuis des milliers d'années, les montagnes, les forêts, les steppes et les déserts sont des habitats extrêmement importants pour toute une variété d'animaux sauvages qui, dans bien des cas, sont menacés ou même menacés d'extinction. L'écosystème steppique entretient une riche diversité d'oiseaux et les déserts un certain nombre de gerbilles, gerboises et putois marbrés rares. Les montagnes de la partie occidentale du bassin sont d'importants refuges pour le léopard des neiges menacé au plan mondial, l'argali et le bouquetin d'Asie. L'Ubs Nuur lui-même est un habitat important pour les oiseaux d'eau ainsi que pour les oiseaux qui migrent au sud de la Sibérie. L'UICN considère que le site a le potentiel de satisfaire au critère (iv).

7. RECOMMANDATIONS

Que le Bureau recommande au Comité, étant donné que le bassin d'Ubs Nuur a le potentiel de satisfaire aux critères naturels (ii) et (iv), de **renvoyer** la candidature aux États parties concernés (Mongolie et Fédération de Russie) jusqu'à ce que le plan de gestion du site soit prêt et comprenne une analyse de faisabilité de la mise en œuvre. Les autorités devraient, en outre, être priées de revoir les limites pour exclure de la superficie actuelle de 7,5 millions d'hectares les 90% du bassin qui, actuellement, ne sont pas protégés.

Le Bureau souhaitera peut-être recommander aux deux États parties concernés de poursuivre leurs efforts afin de renforcer la coopération transfrontière en vue d'assurer la conservation du site. La préparation et la mise en œuvre d'un plan de gestion conjoint pourrait être un excellent cadre de coopération transfrontière.

Conscient des difficultés économiques que connaissent les deux États parties concernés, le Bureau souhaitera peut-être les encourager à présenter une demande au Fonds du patrimoine mondial pour obtenir une assistance technique en vue de la préparation et de la mise en œuvre d'un plan de gestion pour le bassin d'Ubs Nuur.

ANNEXE B
Le Rapport d'évaluation technique de l'UICN, mai 2002

Rappel: L'évaluation technique réalisée par l'UICN pour le bassin d'Ubs Nuur, proposé conjointement, pour inscription au patrimoine mondial, par la Mongolie et la Fédération de Russie en 1999, a été présentée à la vingt-troisième session extraordinaire du Bureau, en novembre 1999. Dans son évaluation, l'UICN faisait remarquer que le site pourrait satisfaire aux critères naturels (ii) et (iv) mais qu'il faudrait demander aux autorités de rectifier la superficie du site (7,5 millions d'hectares) pour exclure les 90% du bassin qui n'étaient pas protégés. L'UICN ajoutait que «Les neuf aires intégralement protégées actuelles (AIP) ne couvrent pas toute la gamme des écosystèmes de ce vaste site. Les zones humides des 60 kilomètres du bas Tes-Khem, en particulier, doivent être intégrées dans une aire protégée qui se prolongerait vers le nord, au-delà de la frontière, jusque dans la République de Touva afin d'englober le semi-désert, la steppe et les versants de la chaîne Vostochnyi Tannu Ola (forêt mixte/steppe, taïga et toundra).» Le Bureau a décidé de renvoyer la candidature aux États parties afin qu'ils modifient la superficie du site et préparent un plan de gestion conjoint dans le cadre de la coopération transfrontière.

INFORMATION COMPLÉMENTAIRE

Le 13 novembre 2001, les États parties, Mongolie et Fédération de Russie, ont soumis, au Centre du patrimoine mondial, des informations complémentaires qui comprenaient une carte portant les limites révisées (voir carte 1). Le site, qui couvre maintenant 971 165 ha, est en fait une série de sites formée de 11 groupes. Toute la superficie proposée est aujourd'hui protégée d'une manière ou d'une autre et se compose de deux groupes d'aires protégées:

1. la Réserve naturelle de biosphère d'État du bassin de l'Ubsunur (Fédération de Russie) qui compte sept zones centrales d'une superficie totale de 258 620 ha; et

2. la Réserve naturelle d'État de l'Uvs Nuur (Mongolie) composée de quatre sites séparés couvrant au total 712 545 ha.

Les États parties ont également soumis:

- deux plans d'aménagement – un pour le secteur mongol et l'autre pour le secteur russe;
- un protocole de coopération entre la Réserve naturelle de biosphère d'État de Russie et la Réserve naturelle d'État de Mongolie;
- un traité de coopération scientifique entre la République de Touva en Fédération de Russie et l'Uvs Aimag de Mongolie;
- une résolution concernant l'agrandissement de la Réserve naturelle de biosphère d'État du bassin de l'Ubsunur en Fédération de Russie.

ÉVALUATION DE L'INFORMATION COMPLÉMENTAIRE

Gestion
Les plans d'aménagement séparés, préparés pour les secteurs russe et mongol de la région proposée, sont jugés suffisants, avec les accords transfrontières, pour assurer la gestion future du site.

Coopération transfrontière
Le protocole de coopération entre les réserves situées de part et d'autre de la frontière ainsi que le traité de coopération scientifique entre la République de Touva, en Fédération de Russie et l'Uvs Aimag, en Mongolie, jettent des fondations solides pour la coopération transfrontière en matière de gestion et de protection du site.

Limites
La proposition actuelle concerne 11 aires protégées séparées – sept dans le secteur russe et quatre en Mongolie. Du côté russe, la résolution sur l'agrandissement de la Réserve naturelle de biosphère d'État du bassin d'Ubs Nuur, signée le 21 avril 2000, agrandit les réserves naturelles de Touva de 283 558 ha et créée cinq nouvelles aires protégées spéciales. Toutefois, deux seulement de ces nouvelles aires protégées sont comprises dans la proposition. L'UICN a demandé à l'État partie d'expliquer pourquoi trois des nouvelles aires protégées n'ont pas été intégrées dans la proposition. Il apparaît que les trois aires en question soient protégées au niveau de la République de Touva mais ne le sont pas au niveau fédéral. Les deux nouvelles aires protégées (Ubsu-Nur et Oroku-Shinaa) qui font partie de la proposition sont situées sur le versant nord du delta/plaine d'inondation du Tes, le long de la frontière avec la Mongolie. L'intégration de ces sites dans la proposition répond en partie à la demande formulée en 1999 par l'UICN, à savoir d'inclure les zones humides du cours inférieur du Tes-Khem, sur une longueur de 60 km, ainsi que le semi-désert, la steppe et les versants de la chaîne Vostochnyi Tannu Ola dans le site proposé (voir la note de rappel ci-dessus). Associées au groupe «Aryskannyg» déjà proposé, les trois aires protégées répondent aussi au vœu de l'UICN qui demandait, en 1999, d'inclure dans la proposition une séquence représentative d'écosystèmes, de la plaine d'inondation du Tes à la crête de la chaîne Tannu Ola. La zone centrale de l'une des aires spécialement protégées de Russie – Mongun Taiga – a également été agrandie de 940 à 15 890 ha (par diminution de la superficie de la zone tampon). Il s'agit d'une mesure satisfaisante qui répond à une recommandation faite par l'UICN durant sa mission sur le terrain, en 1999. En conséquence, l'UICN estime que l'État partie Fédération de Russie a répondu de manière satisfaisante à la demande du Bureau formulée en 1999, lorsque la proposition a été différée.

En revanche, du côté de la Mongolie, les quatre sites inclus dans la proposition sont les mêmes qui étaient proposés en 1999. L'agrandissement recommandé du groupe d'aires protégées du lac Uvs proposé en 1999, dans le but d'inclure une plus grande proportion des zones humides du secteur mongol du delta du Tes-Khem n'a pas eu lieu. La nouvelle proposition n'indique pas pourquoi la Mongolie n'a pas répondu – soit qu'elle considère que l'étroite zone protégée qui entoure le lac Ubs près du delta du Tes-Khem est suffisante, soit que l'État partie Mongolie travaille encore à une proposition équivalente à celle de la Russie.

Zones tampons
Les zones tampons des 11 groupes constituant le site proposé ont été intégrées dans la zone proposée. L'UICN considère que ces zones tampons ne sont pas correctement protégées et ne méritent pas d'être intégrées dans le site proposé. Cela réduirait les 11 aires protégées à une zone centrale «intacte» de 483 530 ha (395 750 ha en Mongolie et 87 830 ha en République de Touva, Fédération de Russie).

Série de sites
Lorsque l'UICN évalue une proposition relative à une série de sites, elle pose les questions suivantes:

a) **Comment se justifie l'approche sérielle?** Le bassin d'Ubs Nuur est un bassin naturellement fermé et les 11 groupes sont représentatifs des principaux types d'écosystèmes du bassin. La plupart sont aussi assez grands à condition que leurs zones tampons respectives soient bien gérées. Cependant, l'UICN reste préoccupée par le fait qu'aucune mesure n'ait été prise pour répondre à sa demande, acceptée par le Bureau en 1999, d'intégration, dans la proposition, des zones humides des 60 km du cours inférieur du Tes-Khem et du semi-désert, de la steppe et des versants de la chaîne Vostochnyi Tannu Ola, en Mongolie.

b) **Les éléments séparés du site sont-ils liés du point de vue fonctionnel?** L'UICN note que les sites sont partiellement liés du point de vue fonctionnel.

c) **Existe-t-il un cadre de gestion général pour toutes les unités?** Comme indiqué plus haut, l'UICN considère que les plans de gestion et accords transfrontières permettent de gérer le site de manière adéquate.

RECOMMANDATION

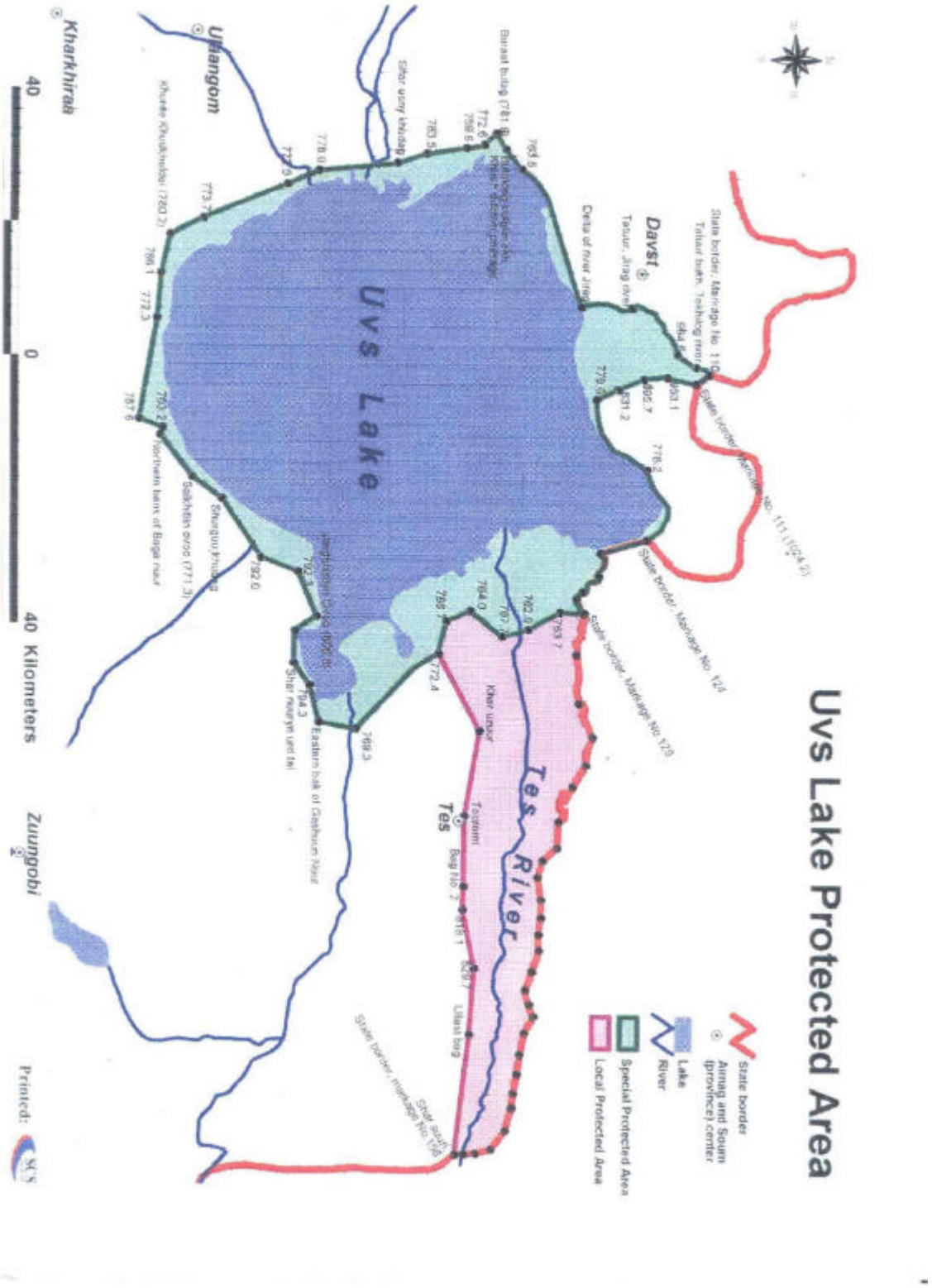
Le Bureau a **renvoyé** la proposition à l'État partie Mongolie en lui demandant:

1) d'agrandir le groupe d'aires protégées du lac Uvs pour inclure une plus grande proportion des zones humides du côté mongol du delta du Tes-Khem (à proximité des nouveaux groupes Ubsu Nur et Oroku-Shinaa ajoutés par l'État partie Fédération de Russie);
2) d'exclure les zones tampons du site proposé.

Le Bureau a félicité les États parties pour la préparation des deux plans de gestion, la signature d'accords de coopération transfrontière en matière de science et de gestion et les mesures prises par les autorités russes pour agrandir le site proposé.

Carte 1 : Localisation du Site

Carte 2: Nouvelle Aire Protegée : Delta de la Rivière Tes, Mongolie



Carte 3 : Détail du Site

The "Ubsunur Hollow" nature preserve (Russia):

1. "Mongun Taiga" cluster
2. "Ubsu-Nur" cluster
3. "Oroku-Shinaa" cluster
4. "Aryskannyg" cluster
5. "Jamaalyg" cluster
6. "Tsugeer els" cluster
7. "Ular" cluster

The "Uvs Nuur" nature preserve (Mongolia):

8. "Tsagan shuvuut" cluster
9. "Turgen" cluster
10. " Uvs lake" cluster
11. "Altan els" cluster
12. "Tes River" cluster