

Nomination Dossier

SARYARKA

- Steppe and Lakes of Northern Kazakhstan -

For inscription on

THE LIST OF CULTURAL AND NATURAL WORLD HERITAGE OF UNESCO



Draft Version

January 2007

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Provided by the Government of the Republic of Kazakhstan

Prepared by:

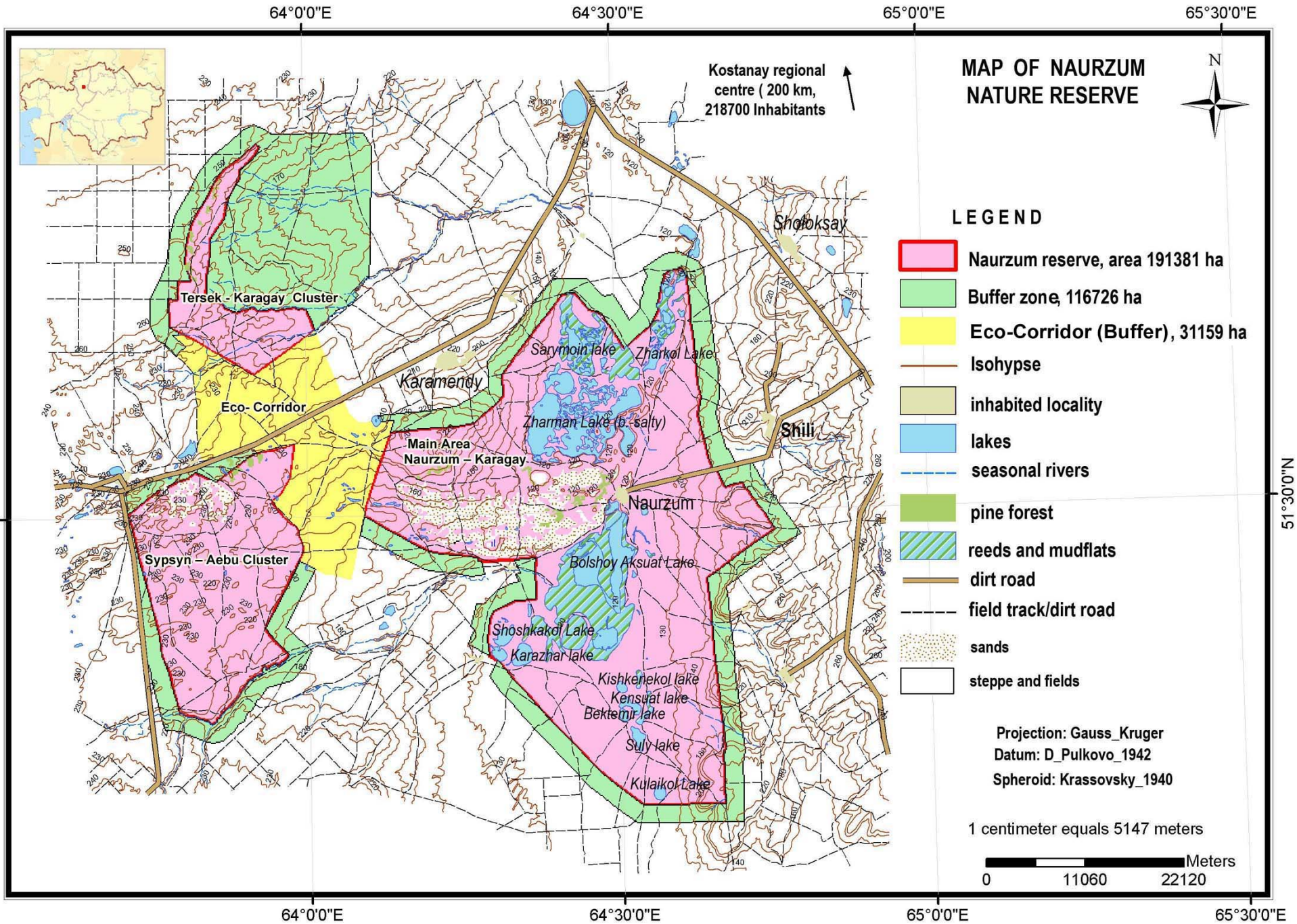
- **Naurzum State Nature Reserve (Bragina T.M., Bragin E.A., Tairbergenov Y.)**
- **Korgalzhyn State Nature Reserve (Sidorova T.V.)**
- **NPO "Ecological scientific center "Envirc" (Rachkovskaya E.I.)**
- **Institute of Geography MON RK (Geldieva G.)**
- **World Wildlife Fund (WWF) (Shestakov A.S., Pereladova O.B.)**
- **GEF/UNDP Wetlands Project (Dieterich, T.)**
- **ACBK (Association for the Conservation of Biodiversity in Kazakhstan) (Koshkin, M., Baktykyzy, G.)**
- **German Society for Nature Conservation (NABU) (Lenk M., Ablaikhanova G., Brombacher M.)**

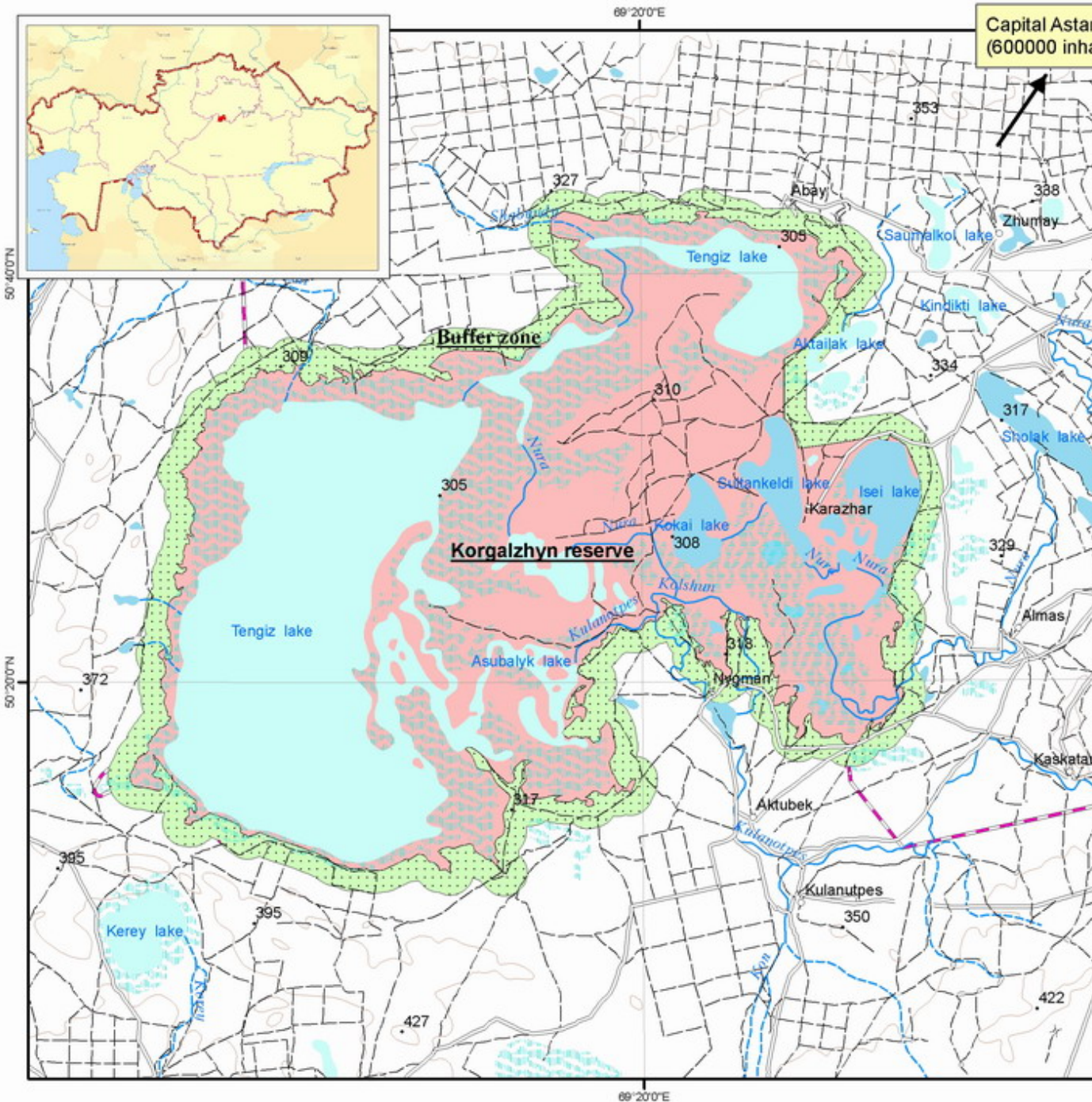
3rd Edition

January 2007

State Party	Kazakhstan
State, Province or Region	<i>Kostanai Oblast:</i> Naurzum Raion Auliekolsk Raion <i>Akmola Oblast:</i> Korgalzhyn Raion Egindikol Raion <i>Karaganda Oblast:</i> Nurinsk Raion
Name of Property	Saryarka – Steppe and Lakes of Northern Kazakhstan
Geographical coordinates to the nearest second	<p>1) <u>Naurzum State Nature Reserve – NSNR</u> (all in Kostanai Oblast) is located in the following geographical coordinates:</p> <p>1.a Naurzum State Nature Reserve – NSNR Main Area Naurzum – Karagay cluster (Nauruzum Raion) North 51° 12' 171'' - 51° 44' 410'' East 64° 05' 227'' - 64° 45' 104'' Center of the cluster: North 51 29 10, East 64 18 13</p> <p>1.b Naurzum State Nature Reserve – NSNR Sypsyn – Aebu cluster (Naurzum Raion) North 51° 17' 348'' - 51° 34' 310'' East 63° 42' 324'' - 63° 58' 499'' Center of the Cluster: N 51° 23' 255'' E 63° 49' 215''</p> <p>1.c Naurzum State Nature Reserve – NSNR Tersek - Karagay cluster (Naurzum and Auliekolsk Raion) North 51° 38' 383'' - 51° 52' 403'' East 63° 46' 407'' - 64° 00' 547'' Center of Cluster: N 51° 47' 331'' E 63° 48' 955''</p> <p>1.d Naurzum State Nature reserve – NSNR Eco- Corridor linking the three upper clusters (Naurzum Raion) North 51° 25' 339'' - 51° 41' 137'' East 63° 47' 144'' - 64° 08' 551'' Center of the Cluster: N 51° 37' 381'' E 63° 59' 015''</p> <p>2) <u>Korgalzhyn State Nature Reserve – KSNR</u> (Korgalzhyn and Egindikolsk Raion of Akmola Oblast, Nurinsk Raion of Karaganda Oblast) cluster is located within the following geographical coordinates: North 50° 10' 00'' - 50° 43' 00'' East 68° 38' 00'' - 69° 41' 00'' Center of Site: North 50° 26' 00''; East 69° 11' 20''</p>
Description of the boundaryies of the proposed property	<p>1) The Korgalzhyn State Nature Reserve is situated 120 Kilometers south-west of the capital Astana in the Kazakh rolling hill area. The reserve boundaries are enclosing Lake Tengiz and the lake system Korgalzhyn. The border of the reserve goes along the shore line of the lakes including some steppe areas between them and in the 2km buffer zone.</p> <p>2) The Naurzum Nature reserve is sited about 220 Kilometer south of Kostanay city in the Turgai depression. The site encloses the Naurzum lakes and is divided in three clusters (Tersek, Sipsin, Naurzum). These clusters are connected by a buffer zone.</p>

Maps





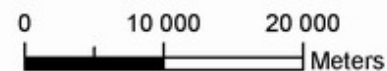
MAP OF KORGALZHYN NATURE RESERVE

Legend

- oblast (district) border
- 338 altitude
- lake**
- river**
- type**
- type**
- sweet
- permanent streams
- saline
- seasonal rivers
- ground**
- swamp
- saline swamp (solontchak)
- steppe, crop fields
- roads**
- type**
- paved road
- field track/dirt roads
- dirt road
- dam
- Nature reserve**
- Korgalzhyn reserve, area 259879 ha
- Buffer zone, area 67528,51 ha

Projection: Gauss_Kruger
Datum: D_Pulkovo_1942
Spheroid: Krasovsky_1940

1 centimeter equals 5 000 meters



<p>Justification Statement of Outstanding Universal Value</p>	<p>On a global aspect the steppe ecosystem has to be considered as an endangered biome of our planet. Less than 1% of this ecosystem is protected in the world (IUCN 1998). As most grasslands are high value arable lands they are generally under anthropogenic pressure. In Kazakhstan the steppe zone occupies 44% of the republic's territory. All land-reclamations of 1950s-1960s in Kazakhstan where natural steppe biomes with a unique flora and fauna. The proposed site does conserve a fine part of the steppe ecosystem, which was predominantly used only by herders till the middle of the past century. The history of the Kazakh people is intensively intertwined with this ecosystem, which served for centuries as summer pastures for their herds.</p> <p>The proposed territory supports valuable parts of natural Pontian steppe types ((Udvary Biogeographical Province No. 2.29.11). Fescue and Feather-grasses are predominant gramineous species stretching as a grass ocean till the horizon. The rare Schrenk Tulip (<i>Tulipa schrenkii</i>, Kazakh Red Data Book), together with wild onions and other equisetum bulb plants are covering the steppes in spring with millions of flowers.</p> <p>On the site rare animal species of the Pontian steppe ecosystem listed in the Red Book of IUCN conduct parts or all their life cycle e.g. Great Bustard (<i>Otis tarda</i>, VU), Sociable Plover (<i>Chettusia gregaria</i>, CR), Imperial Eagle (<i>Aquila heliaca</i>, VU), Pallid Harrier (<i>Circus macrourus</i>, LR), Little Bustard (<i>Tetrax tetrax</i>, LR), Steppe pika (<i>Ochotona pusilla</i>, VU), Boback Marmot (<i>Marmota bobak</i>, LR) and Corsax Fox (<i>Vulpes corsac</i>, VU). For the critically endangered migratory Saiga Antelope (<i>Saiga tatarica</i>, CR) the proposed site is an important place during their seasonal migrations. Saiga does have some calving grounds on the territory, known to be most sensitive as this is the only time in their life cycle when this antelope is not migrating.</p> <p>Due to the extensive use of the Kazakh steppes the habitat of the fauna and flora steppe species has been diminished to a large extent (about 70 to 80%). All mentioned rare steppe species depend on large areas of natural steppe, which is included in the proposed nomination. In addition the site presents a unique natural phenomenon of deep penetration of pine forests in the steppe and semi-desert zone. Thus these forests are very important for the conservation of populations of rare predatory birds, among which there is the biggest population of imperial eagle (<i>Aquila heliaca</i>, VU) (more than 30 nesting pairs), as well as, the stable populations of saker falcon (<i>Falco cherrug</i>), Red-footed Falcon (<i>Falco vespertinus</i>) White-Tailed Eagle (<i>Haliaeetus albicilla</i>, NT) and golden eagle (<i>Aquila chrysaetos</i>) found on the territory of the site.</p> <p>About the half of the proposed territory is covered by a system of fresh and salt water lakes located on major flyways of water birds. The wetlands resemble some of the largest in the Kazakh steppe zone with Tengiz-Korgalzhynsk Lakes (with a total wetland area of approx. 200.000 ha) and Naurzum Lakes (with a total area of 40.000 ha). Being at the cross roads of Central-Asian and Siberian-South-European flyways of migrating birds the lakes are of wetlands of international significance. Such critically endangered species as Siberian crane (<i>Grus leucogeranus</i>, CR) and Slender-billed Curlew (<i>Numenius tenuirostris</i>, CR), are passing through the proposed territory. The numbers of birds found during migration both from nesting and migratory populations together are reaching very high numbers for a series of rare species: White-headed duck (<i>Oxyura leucocephala</i>, EN) numbers up to 5000 individuals (40% of world population), Dalmatian Pelican (<i>Pelecanus crispus</i>, VU) up to 4000 individuals (10% of world population), Red-breasted Goose (<i>Branta ruficollis</i>, VU) up to 6000 individuals (5% of world population) and Lesser white-fronted Goose (<i>Anser erythropus</i>, VU) with up to 1000 individuals (4% of World population).</p> <p>The numbers are mainly given for the hydrologically stable Korgalzhyn-Tengiz lake system, which is supporting food for 10-15 million birds over the year. In addition the northern nesting place of the Greater Flamingo (<i>Phoenicopterus ruber</i>) in the world. In wet years when the Naurzum lakes are filled with water over 500.000 water birds are nesting on the site. In October 1976 Tengiz-Korgalzhyn Lakes were included to the Ramsar Convention list of Wetlands with international significance and reconfirmed in January 2007. With the ratification of the Ramsar Convention in 2007 the Naurzum lakes will also be included as international important wetland as quantity and quality of waterbirds are exceeding the criteria by several times.</p> <p>Thus all the upper listed features do confirm the outstanding universal value of the site. It not only does protect intact steppe territory, but also internationally important wetlands in an extent which is not found throughout the Pontian steppe zone. Both steppes and wetlands have been highly under pressure as fertile steppe soils have been ploughed and water in the dry steppe zone is scarce with a high need of good management. The sites are effectively protected and managed to preserve outstanding valuable parts of the ecosystems in natural condition for generations to come.</p>
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<p>Criteria under which property is proposed</p>	<p>(ix) – Integrity: The proposed site contains outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh and salt water ecosystems and communities of plants and animals: The site is an outstanding example of a large area, with no nature destructions and which has conserved the steppe and wetland ecosystem in the “Kazakh Rolling Hills” and “Turgai Plateau” in their natural conditions. As the protected areas are large in size they are able to guarantee the integrity of ecological processes necessary to conserve the fauna and flora of the Kazakh steppes and lakes. An outstanding model of undisturbed natural steppe and wetland ecosystems can be observed, which has got great scientific significance for long-term ecosystem surveys and conservation. The big steppe territories on the proposed site do support a valuable peace of undisturbed steppe fauna and flora. The rare Schrenk Tulip (<i>Tulipa schrenkii</i>) and other members of the Lilly family together with Fescue and Feathergrass species form typical Pontian steppe communities form the habitat. Important for containing the natural processes are the presence of grazing animals such as ground squirrels, Bobak Marmot (<i>Marmota bobak</i>, LR) and Saiga antelope (<i>Saiga tatarica</i>, CR). As the site of the proposed site is situated at the cross road of two important flyways of birds i.e. Central-Asian and Siberian-South-European. The proposed site is also the habitat of one of the largest populations of waterfowl in Asia with a total number of 120 breeding species and a total breeding number of up to 500.000 water birds. Two times a year it serves as a resting place for millions of migrating birds. Numbers of migrating birds passing through the proposed site exceed 15 million birds including such rare species as Siberian Crane (<i>Grus leucogeranus</i>, CR), Red-breasted Goose (<i>Branta ruficollis</i>, VU), Lesser white-fronted goose (<i>Anser erythropus</i>, VU). On the background of extensive farming activities and other processes of destruction of the steppe biome, the territory of the site is of outstanding value for the protection of virgin steppe. In the Pontian Steppe zone stretching from the Black Sea to the Altai Mountains no bigger protected territory is existing which is protecting natural steppe ecosystems in a strict nature reserve (IUCN Category 1). Steppe ecosystem do cover over 200.000 ha (of which 120.000 ha is in entirely natural stage) on the proposed site and thus do contribute to its outstanding universal value. The nomination presents the typical humus building gramineous Kazakh steppe located in the western part of Kazakh Rolling Hills and Turgai Plateau. There are only natural processes running on the site. The property has preserved its natural condition and appearance. The value of the steppe ecosystem is rather connected with its processes, than absolute numbers of species. Large areas are necessary to conserve this processes, which again are contained in the proposed site. As for the wetlands ecosystem. Only the Wetlands of Tengiz-Korgalzyn cover over 200.000 ha. Looking at a total of 250.000 ha wetlands in the property we look again on the largest strictly protected wetland in the Pontian steppe zone. Some Ramsar sites in Russia are bigger, but have no strict protected status. The size and quality of the included wetlands of the proposed site are there for to be considered as outstanding.</p> <p>(x) – Biodiversity: The proposed site contains the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation: The territory contains natural habitats of high importance and significance from the point of view of conservation of biodiversity. Many endangered steppe and wetland species run through a part or the whole lifecycle on the territory of the proposed site This shows the outstanding universal value of the property for its high biodiversity and high concentration of waterfowl in the wetlands along the Asian flyways. As the steppe ecosystem has undergone intense economic transformation and were drastically destroyed in the last decades. The property presents a large territory of virgin steppe sufficient for the conservation of rare and zonal elements of steppe flora and fauna. The proposed site supports a great variety of steppe formations typical only for the Kazakh region of the Pontian steppes with a unique flora (more than 700 species of vascular plants, including species of: feather-grasses, tulips, wild onions, etc.) and fauna as Bustard species, Sociable Lapwing (CR) Black Lark (<i>Melanocorypha yeltoniensis</i>), White-winged Lark (<i>M. leucoptera</i>), Steppe Eagle (<i>Aquila nipalensis</i>), Pallid Harrier (<i>Circus macrorus</i>, LR), Bobak Marmot (<i>Marmota bobak</i>, LR), Saiga Antelope (<i>Saiga tatarica</i>, VU), Steppe pika (<i>Ochotona pusilla</i>, VU), Corsac Fox (<i>Vulpes corsac</i>, Vu) and others. The wetlands support many rare and endangered species of outstanding scientific value such as Siberian Crane (<i>Grus leucogeranus</i>, CR), Lesser White-fronted Goose (<i>Anser erythropus</i>, VU), White-Headed Duck (<i>Oxyura leucocephala</i>, EN), Ferruginous Duck Duck (<i>Aythya pyroca</i>, LR), Demoiselle Crane (<i>Anthropoides virgo</i>), and Red-breasted Goose (<i>Branta ruficollis</i>, VU) and Dalmatian Pelican (<i>Pelicanus crispus</i>, LR). A close interplay of partly temporary salty, brackish and freshwater lakes support a unique flora and fauna. Vast reeds cover the very productive freshwater lakes, supporting a rich fish and invertebrate fauna. A specific salt lake and salt marsh ecosystem is formed supporting with its productive invertebrate fauna big wader and Greater Flamingo (<i>Phoenicopterus ruber</i>) populations. On isolated pine woods can be found the nesting places of such rare predatory birds such as: White-tailed Eagle (<i>Haliaeetus albicilla</i> LR), Golden Eagle (<i>Aquila chrysaetos</i>), Saker Falcon (<i>Falco cherrug</i>) and the biggest local nesting population of Imperial Eagle (<i>Aquila heliaca</i>). The dimensions of the proposed property are adequate for the conservation of viable populations of plants and animals, as well as some parts the important flyways of wetland and other groups of birds. In 1976 the Korgalzhin-Tengiz Lake system was included into the network of Ramsar wetlands and became member of the world wide operating network “Living Lakes” in the year 2000. This does in addition stress the outstanding wetlands value of the site.</p>
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Index

1. Identification of the Property	17
1a. Country	17
1b. Oblast (Province) and Raion (Region)	17
1c. Name of Property	17
1d. Geographical coordinates to the nearest second.....	17
1e. Maps and plans, showing the boundaries of the proposed property and buffer zone....	18
1f. Area of proposed property and proposed buffer zone	22
2. Description	22
2a. Description of Property	22
2b. History and Development.....	38
3. Justification for Inscription	40
3a. Criteria under which inscription is proposed (and justification for inscription under these criteria)	40
3b. Statement of Outstanding Universal Value	42
3c. Comparative analysis (including state of conservation of similar properties)	43
3d. Integrity and Authenticity.....	47
4. State of conservation and factors affecting the property	48
4a. Present state of conservation	48
4b. Factors affecting the property.....	48
i. Development Pressures	49
ii. Environmental pressures	51
iii. Natural disasters and risk preparedness.....	53
iv. Visitor/tourism pressures.....	53
v. Number of inhabitants within the property and the buffer zone.....	53
5. Protection and Management	54
5a. Ownership.....	54
5b. Protective designation	54
5c. Means of implementing protective measures.....	56
5d. Existing plans related to municipality and region in which the proposed property is located	58
5e. Property management plan or other management system.....	58
5f. Sources and levels of finance	60
5g. Sources of expertise and training in conservation and management techniques.....	61
5h. Visitor facilities and statistics.....	61
5i. Policies and programmes related to the presentation and promotion of the property ..	63
5j. Staffing levels (professional, technical, maintenance).....	63
6. Monitoring	63
6a. Key indicators for measuring state of conservation	64
6b. Administrative arrangements for monitoring the property.....	64
6c. Results of previous reporting exercises.....	64
7. Documentation	65
7a. Photographs, slides and, where available, film/video	65
7b. Texts relating to protective designation, copies of property management plans or documented management systems and extracts of other plans relevant to the property	75
III. Goals, objectives and criteria for development program.....	109
V. Implementation mechanisms	127
Expenses on library equipment.....	133
Formation of costs covered from budgetary funds.....	138
7c. Maps and Charts	254
7d. Lists of Plants and Animals	282
7e. Form and date of most recent records or inventory of property	345
7f. Address where inventory, records and archives are held.	345

7g. Bibliography	345
8. Contact Information of responsible authorities	349
9. Signature on behalf of the State Party	351

Index of Pictures

Picture 1.)	Korgalzhyn Lakes with ice (Korgalzhynsky Zapovednik), Winter 2000, A. Koshkin	65
Picture 2.)	Lake Tengiz under ice (Korgalzhynsky Zapovednik), Winter 2001, T. Dieterich	65
Picture 3.)	Forest Steppe in Winter (Narzumsky Zapovednik), <i>Pinus sylvestris</i> , March 1984, E.A. Bragin	65
Picture 4.)	Steppe during Spring covered with tulips (Korgalzhynsky Zapovednik), <i>Tulipa schrenkii</i> , May 1999, T. Dieterich	65
Picture 5.)	Clay hills at Terceke (Narzumsky Zapovednik), <i>Juniperus sabinea</i> , <i>Pinus sylvestris</i> , October 2000, T.M. Bragina	65
Picture 6.)	Naurzum Pine Forest (Narzumsky Zapovednik), <i>Pinus sylvestris</i> , July 1998, E.A. Bragin	65
Picture 7.)	Steppe with feathergras near Tersek Pine Forest (Narzumsky Zapovednik), <i>Stipa lessingiana</i> , <i>Pinus sylvestris</i> , June 1999, T.M. Bragina	66
Picture 8.)	Rainbow over short gras steppe (Korgalzhynsky Zapovednik), <i>Festuca sulcata</i> , August 1997, T. Dieterich	66
Picture 9.)	Singing Sands at the edge of the Naurzum forest (Narzumsky Zapovednik), July 1994, E.A. Bragin	66
Picture 10.)	Colony of Greater Flamingos on island in Lake Tengiz (Korgalzhynsky Zapovednik), <i>Phoenicopterus ruber</i> , July 1996, M. Lenk	66
Picture 11.)	Colony of Dalmatian Pelicans in the Reed beds of Korgalzhyn Lakes (Korgalzhynsky Zapovednik), <i>Pelecanus crispus</i> , May 2000, T. Dieterich	66
Picture 12.)	Korgadzhyn Lakes from Air (Korgalzhynsky Zapovednik), July 1996, M. Lenk	66
Picture 13.)	Shore line with reed belt at the Korgalzhyn Lakes (Korgalzhynsky Zapovednik), <i>Phragmites communis</i> , July 1999, T. Tennhardt	67
Picture 14.)	Solontshak (Korgalzhynsky Zapovednik), July 1998, T. Dieterich	67
Picture 15.)	Short grass steppe in autumn with spider webs (Korgalzhynsky Zapovednik), <i>Festuca sulcata</i> , Autumn 2000, A. Koshkin	67
Picture 16.)	Steppe with Ephedra (Naurzumsky Zapovednik), <i>Ephedra distachya</i> , July 1997, E.A. Bragin	67
Picture 17.)	<i>Halocnemum</i> a typical salt tollerant species (Korgalzhynsky Zapovednik), <i>Halocnemum strobilaceum</i> , July 1997, T. Dieterich	67
Picture 18.)	Volga pheasant's eye a typical steppe species (Naurzumsky Zapovednik), <i>Adonis wolgensis</i> , April 1984, E.A. Bragin	67
Picture 19.)	Yellow pasqueflower in spring, <i>Pulsatilla flavescens</i> , April 1985, E.A. Bragin	68
Picture 20.)	Schrenks Tulip in full blossom with different colors, <i>Tulipa schrenkii</i> , May 1999, T. Dieterich	68
Picture 21.)	Russian Almond in blossom (Naurzumsky Zapovednik), <i>Amygdalis nana</i> , May 2001, T.M. Bragina	68
Picture 22.)	Wild Onions as a typical steppe feature, <i>Alium delicatulum</i> , July 1998, T. Dieterich	68
Picture 23.)	Saiga antelope rare and typical steppe species, <i>Saiga tatarica</i> , July 1998, O. Belalow	68
Picture 24.)	Steppe Marmot at the entrance of its burrow, <i>Marmota boback</i> , June 1997, T. Dieterich	68
Picture 25.)	Domestic Horses roaming free on the steppes, <i>Equus caballus</i> , May 1999, T. Dieterich	69
Picture 26.)	Demosille craine in blossoming steppe, <i>Anthropoides virgo</i> , May 1999, G. Eichhorn	69
Picture 27.)	Sociable Plover with young, <i>Chettusia gregaria</i> , May 1985, E.A. Bragin	69

Picture 28.)	Steppe Eagle in flight, <i>Aquila nipalensis</i> , August 1999, G. Eichhorn	69
Picture 29.)	Black Lark, Male sitting in steppe, <i>Melanocorypha yeltoniensis</i> , May 2000, T. Tennhardt	69
Picture 30.)	Black-winged Pratincole, <i>Glareola nordmanni</i> , May 1999, G. Eichhorn.....	69
Picture 31.)	Merlin, <i>Falco columbarius</i> , June 1993, E.A. Bragin	70
Picture 32.)	Red-fooed Falcon on nest with young, (Naurzumsky Zapovednik), <i>Falco</i> <i>vespertinus</i> , July 1985, E.A. Bragin	70
Picture 33.)	Greater Falmingo in flight, <i>Phoenicopterus ruber</i> , May 2000, T. Tennhardt.....	70
Picture 34.)	Great Black-headed Gull in flight, <i>Larus ichthyæetus</i> , July 1999, G. Eichhorn....	70
Picture 35.)	Thousands of Gees resting on Korgalzhyn Lakes, October 1999, G. Eichhorn....	70
Picture 36.)	Whooper Swan in early spring on Korgalzhyn Lakes, <i>Cygnus cygnus</i> , Spring 1998, A. Koshkin	70
Picture 37.)	Eastern White Pelican colony, <i>Pelecanus onocrotalus</i> , July 1989, E.A. Bragin ...	71
Picture 38.)	Dalmatian Pelican colony, <i>Pelecanus crispus</i> , May 1978, E.A. Bragin	71
Picture 39.)	Red-breasted Goose in flight, <i>Branta ruficollis</i> , October 1999, G. Eichhorn.....	71
Picture 40.)	Eurasian Spoonbill, <i>Platalea leucorodia</i> , July 1978, E.A. Bragin	71

Index of Documents

Document 1.)	LAW OF THE REPUBLIC OF KAZAKHSTAN # 162-1 "ON SPECIALLY PROTECTED NATURAL TERRITORIES", dated July 15, 1997 (including amendments introduced by the RK laws # 381-1, dated May 11,1999; # 151-II, dated January 23, 2001).....	75
Document 2.)	Decree of the Council of People’s Commissars of the Russian Federal and Socialist Soviet Republic on the boundaries of Naruzum State Nature Reserve of national significance, No. 826, July 30, 1931	91
Document 3.)	Statute of Naurzum State Nature Reserve (approved by the Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Agriculture of the RK, No. 17, July 2 nd 1998).....	92
Document 4.)	Resolution on the enlargement of the Naurzum Nature Reserve 19. October 2001 by the Kostanay Oblast Akimat.....	99
Document 5.)	Resolution on the Ecological Corridor connecting the three parts of Naurzum Zapovednik, 8. January 2004 by the Naurzum Raion Akimat	100
Document 6.)	Decree of the Government of the Republic of Kazakhstan from 26th of January 2004; No. 79 to assign land for permanent use to the “Naurzum State Nature Reserve” of the Committee for Forestry and Hunting at the Ministry of Agriculture of the Republic of Kazakhstan by the Prime Minister of the Republic of Kazakhstan.....	101
Document 7.)	Decree of the Council of Ministers of Kazakh SSR on the transformation of the Korgalzhyn State Hunting Territory into Korgalzhyn State Nature Reserve, N 214, April 16, 1968.....	102
Document 8.)	Decree of the Executive Committee of the Tselinograd Oblast Soviet of Workers’ Deputies “On Establishment of the Boundaries and Regime of the Buffer Zone of Korgalzhyn State Nature Reserve”, April 25, 1974	103
Document 9.)	Decree of the Government of the Republic of Kazakhstan “On Assignment of Lands to Korgalzhyn State Nature Reserve”, No. 767, June 15, 1999	104
Document 10.)	State Act AN # 2000329 issued by Korgalzhyn Region of Akmola Province of the Republic of Kazakhstan on tenure of 2 437 280 000 hectares within the boundaries according to the land use plan, No. 311, January 7, 1994.....	105
Document 11.)	Statute of Korgalzhyn State Nature Reserve (approved by Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Natural Resources and Environmental Protection No. 109, April 3, 2000)	106
Document 12.)	Development program for nature conservation, research and tourism of Korgalzhyn State Nature Reserve for the years 2004–2006.....	107
Document 13.)	Development and Management program of Naurzum State Nature Reserve for 2004–2006.....	140
Document 14.)	Decree of Akim of Korgalzhyn Region of Akmola Province on the transfer of land to KSNR, January 24, 2000.....	152
Document 15.)	Certificate of the Living Lakes World-wide Network.....	153
Document 16.)	Information Sheet on RAMSAR Wetlands	154
Document 17.)	MANAGEMENT PLAN for the "SARYARKA - STEPPE and LAKES of NORTHERN KAZAKHSTAN" Year 2002	156
Document 18.)	Kazakhstan specially protected areas development program years 2006 – 2008.....	173
Document 19.)	Outline of the hydrological status in the Nura River and Tengiz Lake Basin - focusing on the maintenance of natural flows in Nura River to safeguard long-term water supply of Korgalzhyn Nature Reserve	179
Document 20.)	Information on the Nura Clean up Project.....	151
Document 21.)	Information on the GEF/UNDP Wetland Project in Kazakhstan	234

Document 22.)	Information on the GEF/UNEP Siberian Cranes project in Kazakhstan.....	236
Document 23.)	Letter of the Parliament of the Republic of Kazakhstan supporting to grant a status of the World Heritage to the proposed property.....	240
Document 24.)	Letter of the Ministry of Natural Resources and Environmental Protection of the Republic of Kazakhstan to the UNESCO National Commission of the Republic of Kazakhstan, No. 03-05-03/282, February 3, 2001	241
Document 25.)	Letter of KSNR with the request to support granting a status of the World Heritage to the proposed property	242
Document 26.)	Letter of NSNR with the request to grant a status of the World Heritage to the proposed property	243
Document 27.)	Letter of the UNESCO National Commission of the Republic of Kazakhstan to support granting a status of the World Heritage to the proposed property 16.January 2002	244
Document 28.)	Letter of the Deputy prime Minister of the Republic of Kazakhstan on the forwarding of the nomination dossier 16.January 2002	245
Document 29.)	World Heritage Nomination – IUCN technical evaluation Saryarka – Steppe and Lakes of Northern Kazakhstan ID No. 1102 – March 2003.....	246

Index of Maps

Index	8
Map 1.) Kazakhstan in the world and the proposed properties in Kazakhstan	18
Map 2.) Topographical map of northern Kazakhstan with the proposed properties in their present borders.	19
Map 3.) Map of the Naurzum State Nature Reserve (see also Map 35.), Author UNEP Project for the Protection of the Siberian Snow Crane	20
Map 4.) Schematically Map of the Korgalzhyn State Nature Reserve	21
Map 5.) Major Ecosystems and Protected Areas of Central Asia (Kazakhstan).....	255
Map 6.) Geomorphologic map of northern Kazakhstan with the property boundaries.....	256
Map 7.) Legend Geomorphologic map of northern Kazakhstan with the property boundaries	257
Map 8.) Hydrography map of northern Kazakhstan	258
Map 9.) Geobotanical map of northern Kazakhstan with the property boundaries	259
Map 10.) Legend Geobotanical map of northern Kazakhstan with the property boundaries	260
Map 11.) Soil map of northern Kazakhstan with the property boundaries	261
Map 12.) Legend Soil map of northern Kazakhstan with the property boundaries	262
Map 13.) Distribution of Temperate Latitude Grasslands in the World, showing the Pontian Steppe (combined after Udvardy, 1975 and Henwood, 1998).....	263
Map 14.) Map-Scheme of the main flyways of waterfowl and waders & important wetlands location in Kazakhstan.....	264
Map 15.) Satellite image of north Kazakhstan with the property boundaries.....	265
Map 16.) Overview Map on the clusters Scale 1: 1000.000.	266
Map 17.) Map with Diagrams on the climate on the World Heritage Site (after Walter et. al. 1975).....	267
Map 18.) Map showing to what extend the Kazakh Steppes have been plowed till the New Land Programme started in 1953 and since the programme had been lauched in 1954.	268
Map 19.) Map of areal of <i>Anabasis salsa</i> (C.A.M.) Benth.....	269
Map 20.) Map of areal of grey orache (<i>Atriplex cana</i> C.A.M.)	269
Map 21.) Map of areal of Omsk sedge (<i>Carex omskiana</i> MEINSH.).....	270
Map 22.) Map of areal of Sareptsk sea-lavender (<i>Limonium sareptanum</i> (BECKER) GAMS in HEGI)	270
Map 23.) Map of areal of the Bobak (<i>Marmota bobac</i>)	271
Map 24.) Map of areal of the Steppe Pika (<i>Ochotona pusilla</i> Pallas).....	271
Map 25.) Map of areal of Saiga Antelope (<i>Saiga tatarica</i> L.).....	271
Map 26.) Map of areal of Dalmatian Pelican (<i>Pelecanus crispus</i> Bruch.)	272
Map 27.) Map of areal of Demoiselle Crane (<i>Antropoides virgo</i> L.)	272
Map 28.) Map of areal of White-headed Duck (<i>Oxyura leucocephala</i> Scop.).....	273
Map 29.) Map of areal of Greater Flamingo (<i>Poenicopterus ruber</i> L.).....	273
Map 30.) Map of areal of Pallid Harrier (<i>Circus macrourus</i> Gm.).....	274
Map 31.) Map of areal of Sociable Plover (<i>Vanellus gregarius</i>)	274
Map 32.) Map of areal of Black-winged Pratincole (<i>Glareola nordmanni</i> Nordm.).....	275
Map 33.) Map of areal of Black Lark (<i>Melanocorypha yeltoniensis</i>) and White -winged Lark (<i>Melanocorypha leucoptera</i>)	276
Map 34.) Map of area of Caspian plover (<i>Charadrius asiaticus</i> Pall.)	276
Map 35.) Official Map Naurzum State Nature Reserve in 2005.....	277
Map 36.) Official Map of Korgalzhin State Nature Reserve	278
Map 37.) Schematically Map of the planned enlarged territory of the Korgalzhyn State Nature Reserve, as basis for the establishment of a UNESCO Biosphere Reserve.	279

Map 38.) Map 1:1000.000 Kostanai Oblast with Narzum	
Nature Reserve clusture indicated	280
Map 39.) Map 1:1000.000 Akmola Oblast with Korgalzhin	
State Nature Reserve indicated.....	281

Index Tables

Table 1.) Checklist of the vertebrate fauna of the world heritage site „Saryarka- Steppe and Lakes in Northern Kazakhstan“.....	282
Table 2.) Checklist of threatened vertebrates of the world heritage site „Steppe and Lakes in Northern Kazakhstan“ and notes about their status.....	293
Table 3.) List of the Flora Of the clustured, natural World Heritage Site “Saryarka - Steppe and Lakes in Northern Kazakhstan”	298
Table 4.) Summary of relict and endemic species for the small hills area in central and north Kazakhstan where the Natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“ is situated	317
Table 5.) Distribution of the different groups of birds on the three clusters of the natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“	318
Table 6.) List of Animals of the territory of the natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“ living at the border of their areal within the site 319	
Table 7.) List of selected plant species reaching the territory of the World Heritage Site from different directions of their main areal - Plant Species within the territory listed in the Red Book of Kazakhstan growing on the territory of the Natural Heritage Site “Saryarka - Steppe and Lakes of Northern Kazakhstan“”	322
Table 8.) Overview Table for the Comparative Analyse for outstanding universal value of serial nomination „Saryarka – Steppe and Lakes of Northern Kazakhstan“	323

1. Identification of the Property

1a. Country

Republic of Kazakhstan, Central Asia
(total area of the republic: 2.724.900 km², 9th largest in the world)

1b. Oblast (Province) and Raion (Region)

Kostanai Oblast:
Naurzum Raion
Auliekolsk Raion

Akmola Oblast:
Korgalzhyn Raion
Egindikol Raion

Karaganda Oblast:
Nurinsk Raion

1c. Name of Property

Saryarka - Steppe and Lakes of Northern Kazakhstan
(on the basis of Naurzum and Korgalzhyn State Nature Reserves)

1d. Geographical coordinates to the nearest second

The proposed territory is shown on a series of maps in the sections 1e and 7c:

1) Naurzum State Nature Reserve – NSNR (Naurzum and Auliekolsk Raion of Kostanai Oblast) consisting of three clusters (Naurzum, Tersek and Sipsin) is located within the following geographical coordinates:

N-W: North 51°56'00'' and East 63°57'00''

S-W: North 51°29'30'' and East 63°43'00''

N-E: North 51°44'25'' and East 64°36'35''

S-W: North 51°18'40'' and East 64°28'30''

Center of the site: North 51 29 10, East 64 18 13

In addition there is an ecological corridor established connecting the three parts of the reserve, as well as a buffer zone with a minimum of 2 kilometer width. Both zones have the same management regime.

2) Korgalzhyn State Nature Reserve – KSNR (Korgalzhyn and Egindikolsk Raion of Akmola Oblast, Nurinsk Raion of Karaganda Oblast) is located within the following geographical coordinates:

North 50°10'00'' - 50°43'00''

East 68°38'00'' - 69°41'00''

Center of Site: North 50°26'00''; East 69°11'20''

In addition there is a buffer zone with 2 km width around the reserve established.

Potential enlargements of the proposed site:

1. It is proposed to enlarge the KSNR by about 200.000 ha adding valuable virgin steppes in the south and west of the existing reserve. This is part of the development plan lasting from 2006 till 2008 of the responsible Committee for Forestry and Hunting (see **Fehler! Verweisquelle konnte nicht gefunden werden.**)
2. As recommended by IUCN it is planned to update the Sarykopa Wildlife reserve to the Natural Reserve "Altyn Dala" (Golden Steppes), with a core zone of about 300.000 ha till 2008. The site is excluded from this nomination and will be reviewed after a new status is

recheified (see also Development Programm for Protected Areas in Fehler!
Verweisquelle konnte nicht gefunden werden..

1e. Maps and plans, showing the boundaries of the proposed property and buffer zone

Proposed World Heritage Site:
"Steppe and Lakes of Northern Kazakhstan"

Предлагаемые территории для
Всемирного Наследия:

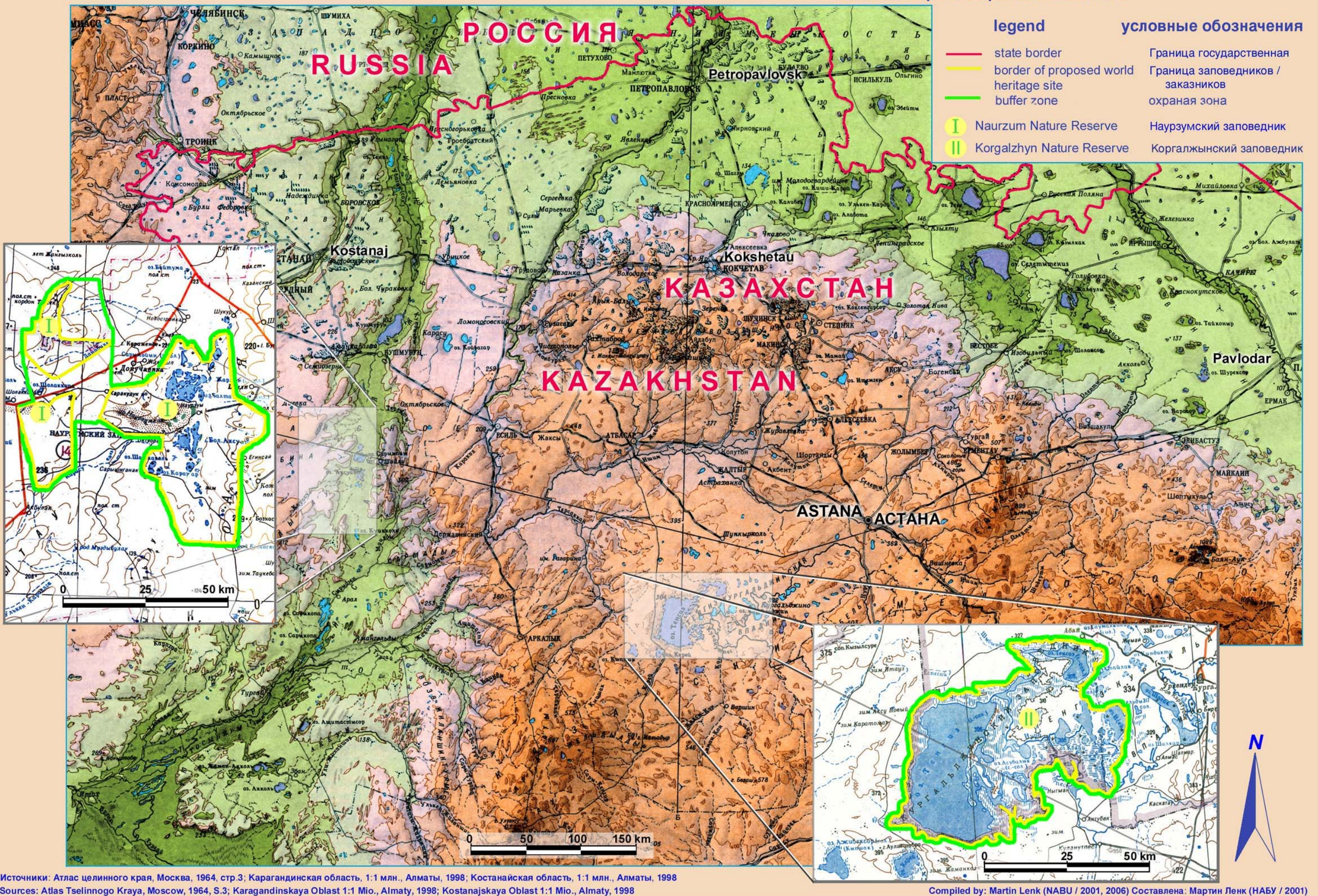
"Степи и Озёра Северного Казахстана"



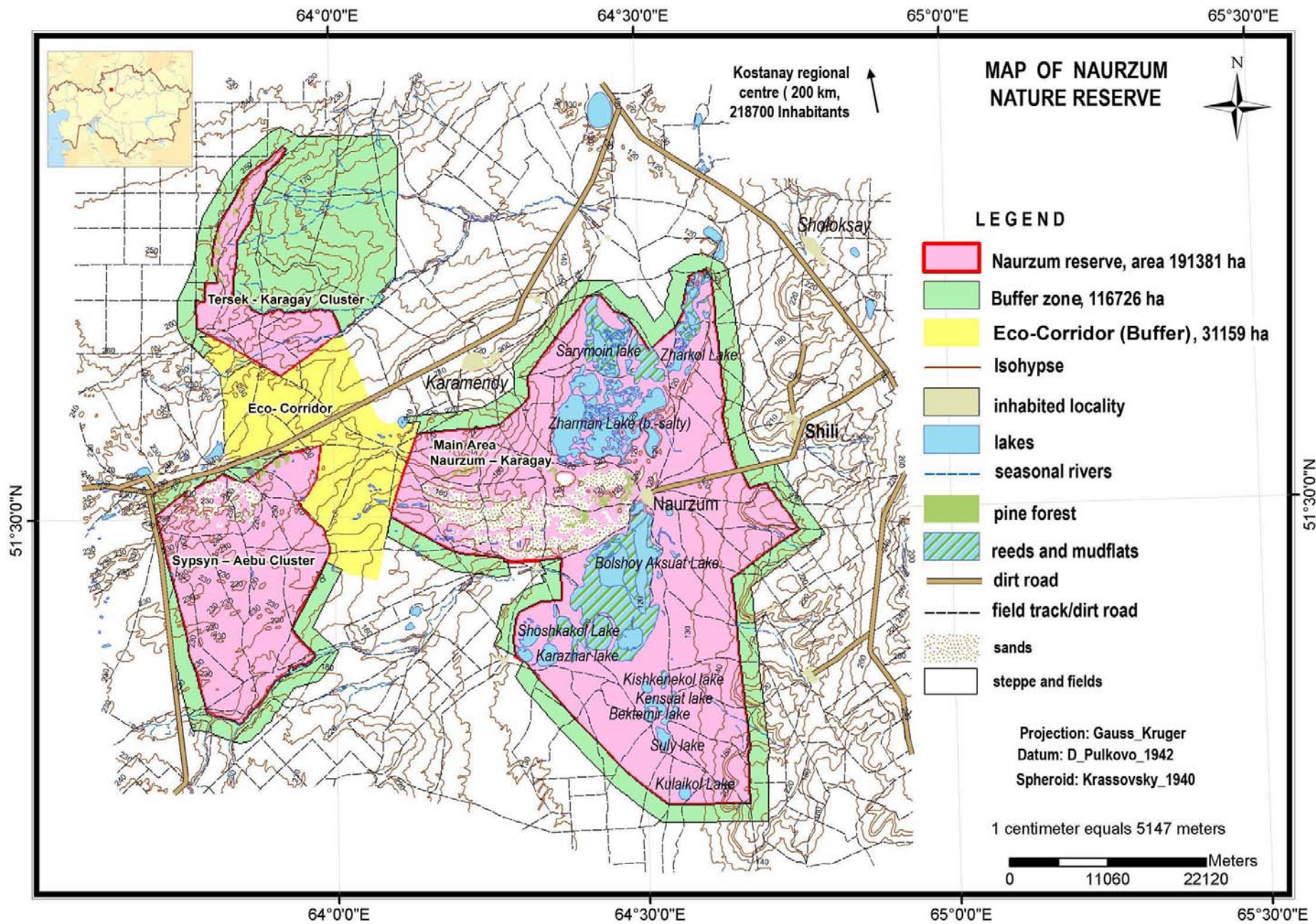
Clusters of the World Heritage Site:

- 1 Narzum Nature Reserve Наурзумский Заповедник
- 2 Korgalzhyn Nature Reserve Коргалжиний Заповедник

Map 1.) Kazakhstan in the world and the proposed properties in Kazakhstan



Map 2.) Topographical map of northern Kazakhstan with the proposed properties in their present borders.



Map 3.) Map of the Naurzum State Nature Reserve (see also Map 35.), (Author Telnov Vladimir)

Capital Astana 120 km.
(600000 inhabitants)

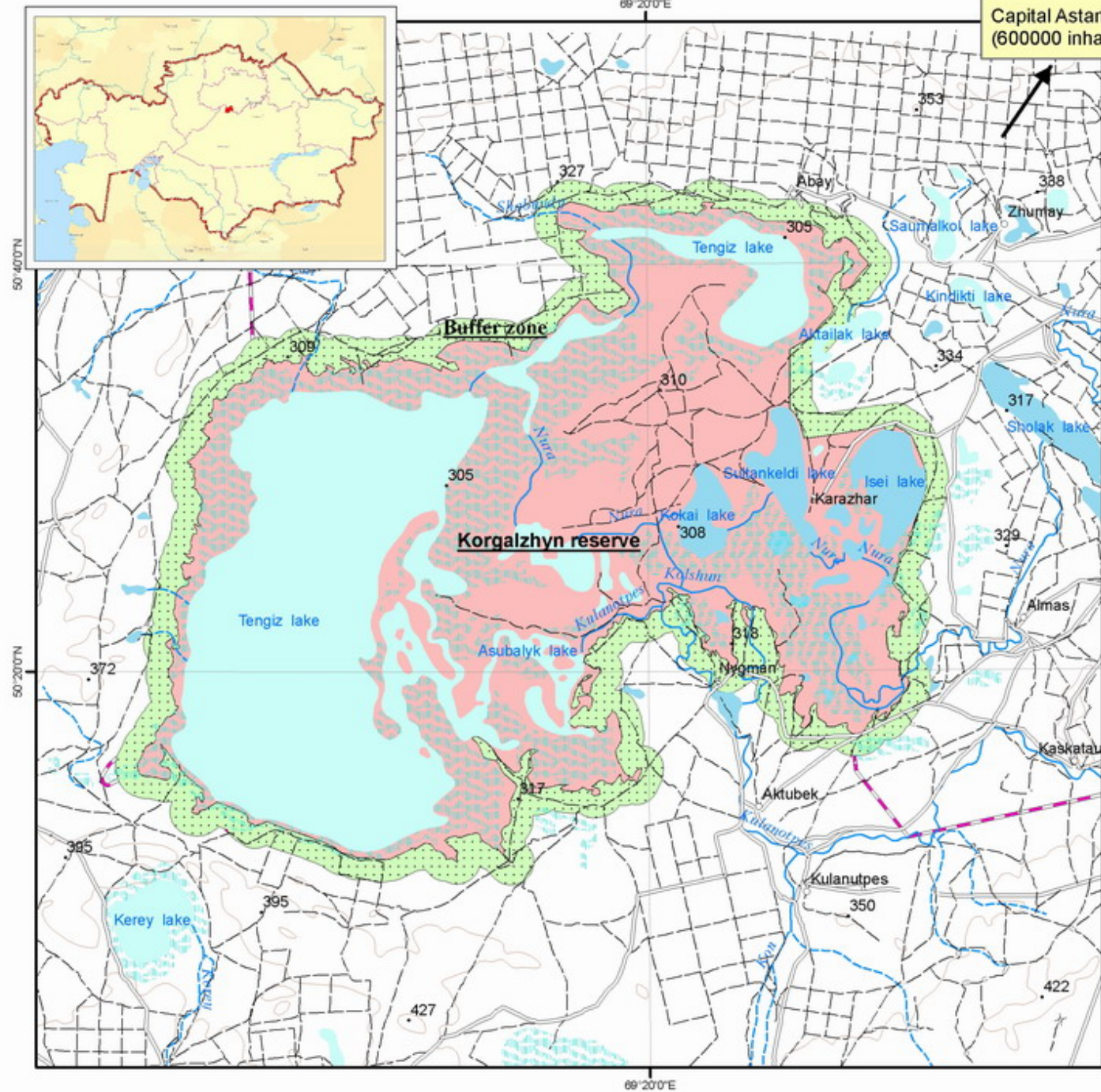


MAP OF KORGALZHYN NATURE RESERVE

Legend

- oblast (district) border
- 338 altitude
- lake type**
- sweet
- saline
- river type**
- permanent streams
- seasonal rivers
- ground**
- swamp
- saline swamp (solontchak)
- steppe, crop fields
- roads type**
- paved road
- field track/dirt roads
- dirt road
- dam
- Nature reserve**
- Korgalzhyn reserve, area 259879 ha
- Buffer zone, area 67528,51 ha

Projection: Gauss_Kruger
 Datum: D_Pulkovo_1942
 Spheroid: Krasovsky_1940
 1 centimeter equals 5 000 meters
 0 10 000 20 000
 Meters



Map 4.) Schematically Map of the Korgalzhyn State Nature Reserve (Author Zhanar Kuragulova)

The eco-corridor at Naruzum reserve was established to connect the three clusters with a buffer zone as recommended by the IUCN Experts Rolf Hogan and Les Molloy in 2002. The yellow marked eco-corridor does not differ in terms of management from the actual buffer zone shown in green (see Map 3.).

In the development plan for nature Reserves till 2008 a total area of 200.000 ha will be added as core zone to the Korgalzhyn reserve (see **Fehler! Verweisquelle konnte nicht gefunden werden.** Protected Areas Action Plan 2006 till 2008 for RK). In result valuable steppe ecosystem will be added and help to conserve the rare Saiga antelope foraging mainly in the not inhabited steppes west of lake Tengiz. The 2 km buffer zone will be reviewed and enlarged up to 10-15 km. During the running UNDP Wetlands Project the establishment of a development zone towards the east of the reserve is planned (around Korgalzhyn village), too. This will ease pressure on the reserves wild animal populations due to poaching on fish, water fowl and mammals.

1f. Area of proposed property and proposed buffer zone

The total area of the proposed property amounts to **661 299 ha** (see maps in sections 1e and 7c) including:

No.	Name	Province	Coordinates	Size (ha)		Map No.
				Core Area	Buffer Zone	
1.a	Naurzum State Nature Reserve – NSNR Main Area Naurzum–Kargay Cluster	Kostanai Province	North 51°12' 171'' - 51°44' 410'' East 64°05' 227'' - 64°45' 104'' Center of the cluster: North 51 29 10, East 64 18 13	139 714	36 287,7	Map 1.) Map 2.) Map 3.) Map 35.)
1.b	Naurzum State Nature Reserve – NSNR Sypsyn–Aebu Cluster	Kostanai Province	North 51°17' 348'' - 51°34' 310'' East 63°42' 324'' - 63°58' 499'' Center of the Cluster: N 51°23' 255'' E 63°49' 215''	38 720	11 624	Map 1.) Map 2.) Map 3.) Map 35.)
1.c	Naurzum State Nature Reserve – NSNR Tersek-Karagay Cluster	Kostanai Province	North 51°38' 383'' - 51°52' 403'' East 63°46' 407'' - 64°00' 547'' Center: N 51°47' 331'' E 63°48' 955''	12 947	37 655,8	Map 1.) Map 2.) Map 3.) Map 35.)
1.d	Narzum State Nature reserve – NSNR Eco- Corridor linking the upper clusters	Kostanai Province	North 51°25' 339'' - 51°41' 137'' East 63°47' 144'' - 64°08' 551'' Center of the Cluster: N 51°37' 381'' E 63°59' 015''	no	31 159	Map 1.) Map 2.) Map 3.) Map 35.)
2	Korgalzhyn State Nature Reserve – KSNR Cluster	Akmolinsk, Karaganda Provinces	North 50°10'00'' - 50°43'00'' East 68°38'00'' - 69°41'00'' Center of the Cluster: North 50°26'00''; East 69°11'20''	258 947	94 421	Map 1.) Map 2.) Map 4.) Map 38.)
	Total managed area of the site			Core 450 328	Buffer 211 147,5	

In total it can be said that about 60% of the core zone is wetlands and 40% is steppe habitat. The bufferzone consists almost fully out of steppe and (salt) meadow vegetation. Looking both to buffer and core zone the ratio is vice versa: 60% steppe and 40% wetlands habitat.

2. Description

2a. Description of Property

The site is situated in the Kazakh rolling hill zone and the Turgai depression which are dominated by short grass steppe characterized by fescue and spirea shrubs intermingled with feather grass and wormwood formations. The Kazakh name for this landscape is Saryarka which can be translated as yellow ridge of a hill. The name does well describe the picture the visitor is facing most time of the year: After spring the green steppe turns soon yellow in the hot summer days and endless yellow fescue grass is floating over the rolling hills of Saryarka (see Picture 8.)Picture 16.)Picture 17.).

General Physio-Geographic Description

NSNR Physio-Geographic Description

This cluster of the proposed site is located in the central part of “Turgai Plateau” that forms a part of the northern Turgai physiographic province of the Pontian steppe zone (see Map 1.), Map 2.) & Map 15.). According to the scheme of botanic-geographical zoning the territory is situated in the Pontian Steppe Zone (see Map 13.) subdivided in: Zavolzhsko (East of Volga river) - Kazakhstan province and Zauralsko (East of Ural) - Turgai subprovince (see Map 9.). Zoo-geographically the proposed territory

belongs to Central Steppe Zone of Kazakhstan of the Kazakhstan-Mongol province. Naurzum reserve is located in the subzone of temperately dry humus building gramineous steppe with dark chestnut soils (see Map 11.)

KSNR Physio-Geographic Description

The reserve is situated within the boundaries of the largest inland basin in the world, covering the centre of the Asian landmass and belongs to Aral-Irtish hydrogeographical system (Map 8.). KSNR is located within the western part of Kazakh Rolling Hills that represents a system of low isolated mountains and hills (Map 2.). On the territory one can find typical Kazakh plains with unique steppe lakes. In accordance to physiographic zoning the reserve is situated in the Tengiz depression of the Kazakh dry steppe zone. After the botanic-geographical zoning it is totally belongs to Pontian steppe area, Black-sea-Kazakhstan subarea, Zavolzhsko-Kazakhstan province, in a southern stripe of dry sheep's fescue-Sagebrush steppe so called short gras steppe (Map 9.). To the south of the Tengiz region the northern areal border of dry Sagebrush-feather-grass steppe is situated. According to the zoo-geographical zoning this territory forms part of the central Kazakhstan steppe and Ulutauskiy regions of plain Kazakhstan (Map 6.).

Geology and Topography of the proposed site

NSNR Geology and Topography

The Turgai Plateau lies between Southern Ural on the west and Kazakh Rolling Hills in the east (its landscapes are described in the part about KSNR, see below). The greater part of the territory of NSNR is occupied by the Turgai Plateau (with an altitude ranging form 200-350 m). The Turgai Plateau consists of continental and marine sediments from the Triassic to Pleistocene period. The thickest series are represented by sediments of Paleogene and Neogene Periods. The main phase of marine accumulation in Turgai straight was finished by the formation of Chegansk salt-bearing clay series, which lasted from Upper Cretaceous to Oligocene. Weak tectonic elevations of Oligocene epoch led to the drainage of former marine straight. Above marine layers lacustrine-alluvial sandy-argillaceous deposits began to accumulate, and thus formed several continental series of Middle and Upper Oligocene. Lake sediments built up in Miocene. However, while tectonic elevations became stronger, Turgai area turned into the arena of predominant denudation. Under the conditions of stratified structure it led to the creation of a table-step-like plateau and plains cut by the ancient and present-day valleys. The highest altitude of the region about 250-330 meters, was formed in the zone of maximum recent uplifts of Turgai Plateau. Within the territory of NSNR this area is represented by the Tersek Plateau (see Picture 5.).

Turgai run-off dell is an important structural element of the region. It extends in meridional direction and can be described as a large erosive tectonic depression several hundred kilometres long. The width of Turgai depression varies in the range between 25 and 30 km. The altitude of its bottom does not exceed 100-120 m above sea level.

Plateaus have undergone a deep dissecting near the edges of Turgai hollow. The highest and steepest benches (scarps) like "chinks" can be found along the western and eastern slopes of the Turgai hollow with height from up to 70-100 meters. A special type of plateau is represented by "structural plateaus", armored by Upper

Oligocene sandstones and gritstones (Kizbel-Tau, Dokuchaevskoye) and rimmed by steep scarps. During the epochs of higher aridity of Late Pleistocene and Holocene, the aeolian factor played a significant role in the formation of relief in Turgai. Due to blow outs of old-alluvial deposits (of Middle and Upper Quaternary Periods) dune-hummocky sands were formed in Naurzum-Karagai.

The river drainage system of Turgai country was mainly formed in Upper Pliocene. It includes the part of contemporary valleys of Ubagan and Turgai rivers. The dry Sapsin run-off dell served as a head of Pra-Ubagan river (in Late Pliocene and Upper Pleistocene). The first flood-plain terrace forms the main part of flat bottom of Turgai hollow and is mainly made of loamy and argillaceous alluvial-lacustrine deposits. The increase of climate's aridity (in Late Pleistocene – Holocene) led to the break-up of a large (in ancient times) river drainage system and to the creation of a lake chain along the Turgai hollow.

KSNR Geology and Topography

The reserve is located in Tengiz depression within Kazakh Rolling Hills which resembles the remains of an ancient folded mountainous country, destructed by denudation processes and to a great extent buried under friable deposits of its own destruction products.

The western part of the territory is occupied by a stratified, denudation plain that represents a weakly dissected surface, uplifted in the south. The eastern part around Tengiz Lake is occupied by lacustrine-alluvial plain and considerably dissected by small gorges, rain rills and small rivers.

The altitude ranges between 305 – 400 meters. A general gradient (slope) goes in direction of Tengiz Lake, which is the largest lake of Northern Central Kazakhstan (total area - 1590 km², 304 m above sea level). Within the plains there are a lot of sinks and basins, a great number of which is occupied by lakes. The relief shows no traces of glacial activity, since the glaciation, that covered Northern Eurasia in the beginning of Quaternary Period, did not spread to the territories of Central Kazakhstan.

According to the opinion of geomorphologists a peneplained territory and a thick crust of weathering, created within the Kazakh rolling hill area in Mesozoic Era, were of primary importance for the future relief development. Later plains of various origins changed each other many times.

In this part of the proposed world heritage site are no Triassic, Jurassic or Cretaceous deposits found. Tertiary sediments by way of covering formations lie on Paleozoic rocks. To the south from Tengiz Lake the Paleozoic rocks are exposed on the surface and can be found along vast territories of its bottom. Tertiary deposits include grey-green clays of the Aral series and are covered by lumpy clays of foxy colour belonged to Pavlodar series. Quaternary deposits are presented by loess-like loam and by lacustrine-alluvial sediments. They can be considered as soil-forming rocks and to a great extent determine the character of contemporary landscapes.

Nowadays in underground current of Nura and Kulanutpes Rivers in divides with its waters between lacustrine depressions and river beds, where an alluvial plain of Middle Pleistocene can be found. The present-day appearance of the territory began in the Upper Pleistocene. Intensive deposits in the area of Tengiz Lake formed Tengiz-Korgalzhyn depression and changed the river run ways. To the west from Tengiz Lake the hilly relief of the Rolling Hills can be found.

Hydrography of proposed site

The scheme of river drainage system development of the property is shown on the Map 8.) For detailed information on the hydrological situation in the whole Nura River Basin concerning Lake Tengiz please consult the report in Document 19.) which was prepared as additional Material to the nomination dossier handed in in 2002. In this report an answer is given how Kazakhstan will be able to guarantee a constant and sufficient water flow to the lake system, as well as guaranteeing a good quality of the water.

NSNR Hydrography

The river system mainly consists of seasonally drying out steppe rivers, called “*karasu*”. On the western part of plateau the river valleys of Dana-Bike river, Naurzum-Karasu river and Ulken-Karazhilga river cut out into the Turgai hollow. During spring floods the beds of these rivers are filled with water flooding the lake system. In summer water remains only in small sections of the river-beds. Fluctuation of annual water flow is very high. The small rivers are carrying water only in spring after snow melting, but the duration of floods do differ highly. The tributaries to the main rivers do not have permanently water and in summer they dry out at in partly.

The territory is characterised by a large number of lakes. The largest lakes, namely Aksuat Lake (in years of high water levels up to 22.000 ha) and Sarimoin Lake (12600 ha) are located in the Turgai Depression. Also there are numerous lakes in Sapsinagash Depression (ancient water spillway), however these are mainly saline lakes. The majority of lakes are flat patelloid depressions with depths that rarely exceed 2,5-3 m. All lakes are fed mainly by atmospheric precipitation. The whole water system of Tugai Depression is enclosed and has no outflow to any river leading to the ocean. Thereupon the water level of these lakes may fluctuate in a wide range up to complete desiccation. A new big flood might stop the drying out process and renew the system. The cycles of drying out and filling of the lakes last between 7 to 15 years. According to the degree of the content of salt in the water, the lakes can be divided, as follows: so called “solotschak lakes” with very high salinity and no higher plant life; so-called “sors” without vegetative cover and with low salinity, rimmed by a narrow stripe of reed; and fresh water lakes with abundant aquatic vegetation.

KSNR Hydrography

This cluster of the proposed World Heritage Site occupies territories mainly in the western part of the Nura River inland basin with Tengiz Lake at its end. The basin forms part of the Middle-Asian area of subsurface drainage, has a very scarce river drainage system (only 0,022 km river /km² lake) but at the same time it is characterised by a large number of lakes (2,03% of the area of the drainage system are lakes). Only a small north-west part of the considered territory is drained by steppe rivers, which carry their spring waters to the Arctic Ocean after they flow into the Terissakan river. On the present territory of the cluster the lower reaches of Nura and Kulanutpes River, as well as about 20 small streams that end in the depression with no outflow. Due to the highly continental and arid climate the rivers and streams are shallow and contain little water. Among them only Nura river has a permanent current, others usually dry-up in summer or break-up into not flowing deeps.

In this cluster of the site more than 60 fresh and saline lakes of different salt content are situated. The salt in the water of the lakes are manly chlorides. In few cases sulfate-chloride salts are predominant in the lakes. The fresh water lakes have often an

outflow and most of them are situated in the delta of Nura River. The vast area of the delta amounts to 47.100 ha with an average depth of 1,6 m and has its own name – Korgalzhyn Lake (see Picture 1.), Picture 12.).

Many lakes lie in the bottoms of inland depressions and can be characterised by their shallowness (with depth of only 1-3 m), which results in high fluctuations water body size. In spring the lakes are flooded, but in summer they become much smaller and can dry out. Saline lakes become solonchaks (white alkali soils) and “sors” (see Picture 15.)Picture 18.), while fresh lakes are overgrown with reed, rush and couch-grass (see Picture 13.).

On the territory of KSNR the biggest lake of the Kazakh steppe zone is situated: Lake Tengiz. In accordance with annual water content its square of salty Lake Tengiz varies between 1.136 to 1.590 km², with maximum depth of 6,7 m, and water salt content differ from 22 to 127 g/litre. The saline lakes named Tuz Lake and Aktaylak lake, are famous for their sodium chloride resources and medicinal mud (see Map 4.) and Picture 15.)Picture 18.)). The mud is not being used due to its remoteness from settlements, while sodium chloride does not correspond with state standards and thus has no industrial significance. In the western part of the property water reservoirs are formed as a result of damming spring streams. Once they were used as watering places for cattle. Nowadays they are a gathering place for waterfowl.

Weak drainage of the territory in combination with poor rainfall causes formation of groundwater with high salt content. The underground runoff goes in direction of Tengiz Lake. In the area, located to the south from the lake there are known four springs with water of high freshwater quality, but it is not used due to their remoteness from inhabited areas.

Climate

The climate of proposed territories is strong continental, which is due to its inland location and remoteness from mild oceanic influence. During the whole year the continental arctic air masses dominate this region. Hot and dry summers change with cold winters with relatively small amount of snow. The characteristic features are aridity and drastic temperature changes (oscillations) over the years, as well as within one year (winter up to about. –40°C, summer up to about. +40°C). Sometimes during spring within 3-6 hours the temperature may drop or rise by 20-25⁰C. The region is characterised by shortage of water, which causes droughts, dust storms, hot winds in summer and snowstorms with blizzards in winter. The aridity is enhanced in areas of clay soils in the region resulting in high evaporation rather than infiltration.

A schematically map with the most important climate diagrams of North- and Central Kazakhstan is shown inMap 17.).

NSNR Climate

The quantity of annual solar radiation varies within the range of 100-140 kkal/cm².

Average air temperature in January is –18⁰C; in July +24,4⁰C. Absolute temperature maximum is +42⁰C, absolute minimum –45⁰C. Spring and autumn does last for not more than 30 days. In spring average daily temperature becomes more than 0⁰C in the first ten-day period of April, while in autumn the temperature drops under this mark in the last ten days of October.

Average annual precipitation amounts 250 mm. The larger part (70%) falls in June and July, the smallest in February and march (see Map 17.). Average thickness of

snow cover is 20cm (Picture 3.). The first snow appears sometimes around the first ten days in November. Due to high temperature and strong winds the greater part of annual precipitation is evaporated, 30% is taken by surface runoff and only 10% is absorbed (also due to clay soils in the region, see above). In the warm season there can be outbreaks of droughts. Average number of days with atmospheric drought from April till October makes 34 (see Map 17.).

The lack of natural barriers in north-south direction opens a free way to air masses and their movement over the territory. The region is famous for its strong and frequent winds. Arctic and Atlantic air masses intrude into its territories. In winter the stable Asian anticyclone leads to the predominance in northern part of region of air currents flowing in south - north and south-west – north-east directions. In this period of the year along the latitude 50⁰ north there appears a zone of high atmospheric pressure, that forms an “axis” of wind division: to the north from which there is predominance of southern and south-western winds and to the south of which - winds of northern and north-eastern directions. In summer the main winds are the winds of high latitudes. Arctic air masses become warmer over the West-Siberian plain, which leads to dry weather. Atlantic air masses bring precipitation causing the summer maximum of rainfall see Map 17.). Cyclones coming from southern desert of Kazakhstan and Middle Asia to the Turgai area result in dust storms and hot winds. In summer dust storms occur around two times a month. Atmosphere circulation is most intense in transition periods. The strongest winds are typical for March, weaker ones – for July and August. Average annual wind speed varies from 3-4 to 5-6 m/sec. Maximum average wind speed in March amounts to 11 m/sec, while in August 4- 5 m/sec.

KSNR Climate

Average temperature in January is -17⁰C, in July – + 20⁰C. Absolute minimum equals to - 45⁰C (1969), while maximum – +41,5⁰C (June, 1988).

Annual precipitation in the region is about 280 mm with maximum in summer in the form of heavy rains and downpours. In general rainfalls have irregular character, sometimes 3 or 4 rains can cover the whole summer quantity. Evaporation index approaches 1.000 mm, while moistening ratio falls to 0,5-0,3 (see Map 17.).

Usually winters are long-drawn, with little snow. Average height of snow cover is 20-25cm. Snow distribution over the surface is irregular: it is accumulated in depressions, while elevated places remain bold. The ground is freezing up to 1 Meter. Springs are short (1-1,5 months), but with late frosts (see Picture 4.)& Picture 37.). Summers are temperately hot. With high temperatures and low relative air humidity (30%) rains only moisten the soil surface and are immediately evaporated. Autumns are short with quick temperature drops.

The aridity of the climate is intensified by frequent and strong winds and predominant clay soils hindering infiltration. The predominant winds are south-western and western of zonal circulation. Winds of this direction make 38% from all winds of the region. They become stronger when atmospheric fronts get intensified and are characterised by maximum speeds that can be noted mainly in spring and autumn and during a day around 14-15 p.m. Maximum wind speed equals to 34 m/sec. Average wind speeds change in accordance with seasons. In spring with cyclonic activation they increase, and vice versa, in summer they “slow down” when baric gradients are at a minimum of the year.

Soils

The proposed territory is located in the zone of chestnut soils (see Map 11.).

NSNR Soils

On the territory of property the whole generic range of chestnut soils is presented. Soil cover of different levels of plateau and ancient rills differs by various peculiarities. Tops and slopes of the plateau are characterized by carbonate, heavy-loamy dark chestnut soils. Sandy-loam dark chestnut soils are typical for lower levels of the plateau. Complexes of dark chestnut solonetz-like soils with solonchaks (white alkali soils) are typical for lakeside weakly drained territories and argillaceous parts of rill bottoms. Semihydromorphic and hydromorphic soils are widely spread here. These are mainly meadow chestnut and meadow soils formed in relief depressions owing to supplementary surface and ground humidification.

KSNR Soils

To the west from Tengiz Lake in the Kazakh Rolling Hills zonal chestnut immature soils on eluvial-deluvial loams are formed. Usually they cover the tops and slopes of coniform hills, depression between them show close bedding of dense rocks. Soils are characterized by a short-cut and feeble differentiated profile. Solonetz soils predominate along depressions located between coniform hills.

Within the reserve's territory intrazonal soils on a slightly undulating surface can be found. Argillaceous lacustrial-alluvial deposits created conditions for the formation of meadow-like-chestnut and meadow-chestnut soils that constitute homogeneous complexes and combinations with typical solonchaks and meadow-chestnut solonetz soils. All soils are saline in the first 30 centimeters, rarely in the deeper layer at 30 to 80 centimetres. A high part of soils is saline to a different extent. The lowest parts of relief are occupied by marshy saline soils with a dense cover of reed and sedges.

Solonchaks are widely spread on the territory of the reserve (see Picture 15.). They are formed on saline rocks embedded by closely located highly mineralized ground waters and are covered by Halocnemum associations (see Picture 18.). The "sor" solonchaks are weakly affected by soil forming processes. In spring they are flooded by high waters that leads to the appearance of vast temporary lakes.

Flora of proposed site

The vegetative cover of proposed territory is highly diverse and represents not less than one third of Kazakhstan's plant species and more than a the half of all steppe flora. The vegetation cover is very diverse for a plain territory (Map 9.). On the property's territory are 6 types of vegetation found: 1) steppe, 2) semi-desert, 3) forest, 4) shrubs 5) meadows and 6) marshes. Of special interest are: existence of different types of steppe, typical in the Pontian Steppe and types only found in Kazakhstan (see Picture 4.) Picture 7.) Picture 8.) Picture 16.) and pine forests Picture 6.) reaching very far down to the south into the steppe zone and on the other hand desert plant communities reaching very far to the north (see Picture 9.).

A total of almost 800 species is found on the clusters of the Natural World Heritage Site (see Table 3.) & Table 7.).

NSNR Flora

On the reserve's territory there are approximately 600 species of plants (see Table 3.). The local steppe flora is rich with rare species (*Stipa tirsia*, *Tulipa schrenkii*, *Ornithogalum fisherianum*) (see Table 7.) and Picture 7.) Picture 21.) Saline soil-grounds of the Turgai Depression results in displacement of southern floristic elements to the north. The northern boundary of their distribution areal crosses the proposed territory i.e. leafless globe thistle (*Anabasis aphylla*), *Anabasis salsa* (Map 19.) *Atriplex cana* (Map 20.), potash plant (*Kalidium foliatum*) and *Nitraria sibirica*. Of special interest are northern pine forest elements (*Matteuccia orientalis*, *Thelypteris palustris* and from Orchidaceae family *Malaxis monophyllos*) since they are distributed far south in areas adjacent to the semi-desert zone. Typical elements of riparian "Tugai" forests penetrate from southern territories namely Russian olive (*Eleagnus angustifolia*) and oriental clematis (*Clematis orientalis*). It is necessary to note that within the present territory there is a areal border of western species penetrating to the north (*Cytisus ruthenicus*, *Artemisia lessingiana*, see Table 7.).

Steppe

The dominance of feather-grass steppe with predominance of *Stipa lessingiana* is typical for flat plateaus with carbonate, loamy soils before the Virgin Lands Program during the Soviet times taking big areas under the plough. Xerophyte steppe with *Festuca sulcata* and *Stipa* species communities (with motley-grass species such as *Tanacetum achillaefolium*, *Galatella tatarica* and others). In accordance to their structure and flora the communities are unique and typical for the Pontian steppe zone and especially for the Turgai Plateau. On the eroded parts of its slopes, where Tertiary clays are bedded closer to the surface various steppe communities with dominating of *Tanacetum achillaefolium*, *Agropyron cristatum*, *Psathyrostachys juncea* are formed. On sandy loamy soils the steppe psammophyte formations like motley-grass sheep's fescue community (*Stipa capillata*, *Festuca valesiaca*, *Artemisia marschalliana* *Helichrysum arenarium*) are dominant. On sandy soils and hummocky sands – psammophyte motley-grass sandy feather-grass steppe (*Stipa pennata*, *Agropyron fragile*, *Gypsophylla paniculata*, *Asperula danilewskiana*) are dominant.

Semi-Desert vegetation

It is in this region where southern desert and semi-desert communities penetrate to the northern regions along saline substrata. The widely spread typical plant communities of the deserts are formed by communities with dominance of small shrubs such as *Atriplex cana*, *Anabasis salsa*, black Sagebrush (*Artemisia pauciflora*), camphor-fume (*Camphorosma monspeliaca*) on solonetz soils. For solonchaks the typical communities are: potash (*Kalidium foliatum*), *Halocnemum strobilaceum*, *Halimione verrucifera* (*Chenopodiaceae* family) and various annual salt-worts: glass worts (*Salicornia europaea*), *Ofaiston monandrum*, *Petrosimonia oppositifolia*, *P. triandra*, seablithe (*Suaeda corniculata*)).

Frutescent vegetation

Peculiarity of region's vegetation is formed by steppe shrubs consisted of Russian Almond (*Amygdalus nana*, Picture 22.), cherry (*Cerasus fruticosa*), greenweed (*Cytisus ruthenicus*) (western distribution boundary), as well as species of genus *Rosa* and *Spiraea* (both rose family). Also there are bushes of juniper (*Juniperus sabinea*). Humid habitats are characterized by the presence of willow bushes (species of genus *Salix*) and of Tamaricaceae family along lake coasts (*Tamarix ramosissima*).

Forests

The unique phenomenon of the proposed territory is the presence of forests in the southern steppe zone: boreal (*Pinus sylvestris*, Picture 6.), birch (*Betula pendula*, *B. pubescens*) and aspen (*Populus tremula*) forests can be found. Forests have an enormous esthetical significance in steppe zone (Map 9.). They sprout up here under the following conditions: on sands and rocks with ground water close to the surface. The typical landscape of these territories is the interchange of pine forests, aspen-birch forests and sandy steppe. The famous Naurzum pine forest is the place of the most southern penetration of boreal forests to the boundaries of semi-desert zone and it is regarded as a real place of interest in Kazakhstan. It is of high interest because of the regional endemic species of Kirgiz birch (*Betula kirghisorum*). The majority of forests consist of rare relic and endemic components of northern boreal flora.

Meadow and near-shore aquatic vegetation

Along lake sides and river valleys and around springs the vegetation consists of reeds and sedges (*Phragmites australis*, *Typha angustifolia*, *Scirpus lacustris*) and meadow species (*Juncus gerardii*, *Agrostis gigantea*, *Elytrigia repens*, *Hordeum bogdanii*, *Leymus ramosus*, *Leymus angustus*) typical for the whole steppe zone of Kazakhstan.

KSNR Flora

On the territory of KSNR 350 species of plants are found- one fourth of the flora of Kazakh Rolling Hills area. In respect of the number of species the richest families are the following: Compositae (*Asteraceae*), Chenopodiaceae (*Chenopodiaceae*), Gramineous (*Poaceae*), Cruciferae (*Brassicaceae*) and Legumes (*Fabaceae*). In addition it can be said that over 50% of the halophyte species of Kazakh Rolling Hills are found in the area. Vascular plants are presented by humid and arid elements. The core of coenoflora consists of the following described types.

Endemic species for the Rolling Hills area are presented by Kazakh Milk Vetch (*Astragalus kasachstanicus*), relic species by yellow water lily (*Nuphar lutea*), white water lily (*Nymphaea candida*) and Nitre bush (*Nitraria schoberi*) (Table 4.). The Red Data Book of the Republic of Kazakhstan includes Schrenk Tulip (*Tulipa schrenkii* syn. *gesneriana*). In the present territory the following plants reach the western boundaries of their areal: Volga melilot (*Melilotus volgicus*), Milkvetch (*Astragalus macropus*), Yellow Wild Onion (*Allium flavescens*) and Schrenk Tulip (*Tulipa schrenkii*). On the northern frontier of the territory one can find Lessing-like Sagebrush (*Artemisia sublessingiana*) (Table 7.).

Steppe

On a big part of the the territory there is a predominance of goldilocks - sheep's fescue - feather-grass (*Stipa lessingiana*-*Festuca sulcata*-*Crinitaria tatarica*) steppe. The plants are covering about 60-70% of the soil. One square meter contains on average about 16 species. To the south from Tengiz Lake there is a fragment of fine Sagebrush – sheep's fescue – feather grass (*Stipa lessingiana*-*Festuca sulcata*-*Artemisia gracilescens*) steppe, the communities of which are typical for the small hills characterizing this area. Composition of species varies due to the season of the year. In spring on a square of 100 km² about 20 species of plants can be found, while in autumn only 11. This is due to a high proportion of spring ephemeral plants from Liliaceae and Cruciferae family i.e. *Gagea* species, *Alyssum* species, *Lepidium* species etc.. Feather-grasses are not able to maintain their dominance in the region to

built long grass steppe formations. Communities of sheep's fescue presented by two subformations form the so called short grass steppe are predominant: petrophyto - sheep's fescue and halophyte – sheep's fescue ones. In some places one can meet sheep's fescue shrubby steppe with Wort-leaved Spiraea (*Spiraea hypericifolia*). The property is crossed by western boundary of xerophyte motley grass fescue – feather grass steppe.

Semi-Desert vegetation

The typical vegetation for solonetz soils and solonchaks are haloxerophyte shrubs – communities of Grey sagebrush (*Atriplex cana*), Black Sagebrush (*Artemisieta pauciflora*) and *Halocnemium strobilaceum* formations (Picture 18.).

Meadow and swamp vegetation

In highly humid places the meadows formed by grass communities (*Elytrigia repens*). More salty places are grown with communities of halophyte grass formations (*Puccinellia dolicholepis*). The typical wetland vegetation of the Korgalzhyn Lakes is the following: reed (*Phragmites australis*), in the lakes – pondweed meadows (*Potamogeton pectinatus*, *P. perfoliatus*).

Fauna of proposed site

On the proposed territory one can distinguish species typical for diverse landscapes of Eurasia. The uniqueness of property's fauna lies in mixture of forest, steppe, semi-desert and desert species (Table 1.). At the same time the fauna of zonal steppe landscapes of the proposed territory is a model for Kazakh steppe ecosystem. The property forms part of Holarctic zoogeographical region and belongs to Circumboreal subregion at the border with Mediterranean subregion.

In general the fauna of the proposed territory is representative for the region and including both zonal complexes and elements of north forest and south semi-desert and desert fauna, as well as including a great number of rare and endangered species. Native fauna of the territory consists of elements differed by age and origin. There is a significant number of Kazakh species typical for gramineous steppe. The sites are on the cross roads of important flyways of migrating birds from the Siberian Tundra and Taiga down to South Asia and Africa (Map 14.). Water reservoirs are rich in fish. In spite of intensive economical activity in the steppe region, the property's fauna has not suffered a significant loss, except Great Bustard, Willow Grouse and Saiga Antelope. Moreover the site can be characterized by its stability of populations of common and rare species of animals.

NSNR Fauna

The variety of natural complexes in Central Turgai is extremely high. On the reserve's territory there have been registered 47 species of mammals, 279 species of birds, 10 species of reptile and amphibious animals, 10 species of fish and more than 1000 species of invertebrates (see Table 1.).

Mammals

On the territory of the cluster 29.7% (53 species) of all Kazakh mammals (178 species) can be found. From a total number of 34 families there are represented 17 of them (50%). The prevailing families are: hedgehogs - 2 species out of 3, dogs - 4 out

of 6, martens - 5 out of 15, pigs – 1 out of 1, deers - 2 out of 3, squirrels (Sciuridae family) - 5 of 13, hamsters (Cricetinae family) - 10 out of 27, mice 4 out of 9 and hares (Leporidae family) - 2 out of 3.

The most characteristic groups of mammals in a steppe zone are:

Muridae family: Bobak Marmot (*Marmota bobac*) (see Map 23.) & Picture 25.), Large-toothed Souslik (*Spermophilus fulvus*), Red-cheeked Souslik (*Sp. major*), Little Souslik (*Sp. pygmeus*), Common Hamster (*Cricetus cricetus*), Jerboa family (*Allactaga major*, *Stylodipus telum*), Microtinae subfamily – voles and lemmings (*Lagurus lagurus*, *Microtus arvalis*, *M. gregalis*, *Ellobius talpinus*, etc.); insectivorous: long-eared hedgehog (*Erinaceus auritus*); double-toothed rodents: European hare (*Lepus europaeus*); Carnivora (predators): Siberian Polecat (*Mustela eversmanni*), Corsac Fox (*Vulpes corsac*), Common Fox (*Vulpes vulpes*), Wolf (*Canis lupus*).

Forests are inhabited by: Elk (*Alces alces*), Tartarian Roe Deer (*Capreolus pygargus*), Lynx (*Lynx lynx*), Red Squirrel (*Sciurus vulgaris*), European Hedgehog (*Erinaceus europaeus*), Blue Hare (*Lepus timidus*), Badger (*Meles meles*), Ermine (*Mustela erminea*), Weasel (*Mustela nivalis*), Pine Marten (*Martes martes*) and Raccoon Dog (*Nyctereutes procyonoides*). Lake near sedges and reeds are the habitat of Wild Boar (*Sus scrofa*).

From desert and semi-desert species one can note lesser Fat-tailed Jerboa (*Pygerethmus platiurus*) and Little Earth Hare (*Pygerethmus pumilio*) as well as Saiga Antelope (*Saiga tatarica*) (see Picture 24.) & Map 25.). Except for the Saiga antelope all other species of mammals are permanent “inhabitants” of reserve’s forests.

Birds

Birds present the richest group of vertebrates on the proposed territory - 279 species, which makes up 57% of Kazakhstan's ornithofauna (see Table 1.) & Table 2.), including 158 nesting species, or 40,7% nesting ornithofauna of Kazakhstan. Regarding the steppe and forest-steppe zone of Kazakhstan the proposed site supports 100% Kazakh and 96% Kazakh nesting ornithofauna. The most typical species of the steppe are: Skylark (*Alauda arvensis*) and White-winged Lark (*Melanocorypha leucoptera*), Black Lark (*Melanocorypha yeltoniensis*, Picture 30.), Tawny Pipit (*Anthus campestris*), Wheatear (*Oenanthe oenanthe*), Little Bustard (*Otis tetrax*), Pallid Harrier (*Circus macrourus*, Map 30.), Sociable Plover (*Chettusia gregaria*) (Picture 28.) & Map 31.), Demoiselle Crane (*Anthropoides virgo*, (Picture 27.) & Map 27.), Steppe Eagle (*Aquila nipalensis*, Picture 29.), in some areas one can still meet a great bustard (*Otis tarda*). But they represent only a small part of all bird variety of open landscapes. For humid territories located close to lake basins and “sors”, as well as, for depressions with meadow vegetation and steppe shrubs, the typical species are: Yellow Wagtail (*Motacilla flava*), Stonechat (*Saxicola torquata*), Booted Warbler (*Hippolais caligata*), Brown Shrike (*Lanius collurio*), Quail (*Coturnix coturnix*), Common Partridge (*Perdix perdix*), Montagu’s harrier (*Circus pygargus*), Curlew (*Numenius arquata*). The most variety have the wetland birds: Swans (*Cygnus olor*, *Cygnus cygnus*), Grey-lagged Goose (*Anser anser*), Ducks (Mallard- *Anas platyrhynchos*, Gadwall - *Anas strepera*, Pintail- *Anas acuta*, Shoveller- *Anas clypeata*, Garganey- *Anas querquedula*, Common and Red-crested Pochards - *Aythya ferina*, *Netta rufina*, Tuffed duck - *Aythya fuligula* and others), Rallidae family (rails), including Bald Coot (*Fulica atra*), 4 species of grebes, 12 species of gulls and terns, 3 species of Pelicaniformes, 41 species of Charadriiformes order, Ciconiiformes order and a large number of sparrows. Forests are inhabited by Black Grouse (*Lyrurus*

tetrix), Great Spotted Woodpecker (*Dendrocopus major*), Golden Oriole (*Oriolus oriolus*), Ring-dove (*Columba palumbus*), Turtle-dove (*Streptopelia turtur*), Great Tit (*Parus major*), Azure Tit (*Parus cyanus*), Red-start (*Phoenicurus phoenicurus*), Tree Pipit (*Anthus trivialis*), Swift (*Apus apus*) and others.

Most complete the following groups of birds are represented: grebes, Pelecaniformes, herons, Anatidae family, Falconidae family, Gruiformes, rye-wheat hybrids. Passeriformes order is represented relatively poor. The Falconidae order is one of the most wide-spread groups (28 species or 70% of Kazakhstan's fauna), including 18 nesting species (54,5%): Golden Eagle (*Aquila chrysaetus*), Imperial Eagle (*Aquila heliaca*) and Steppe Eagle (*Aquila nipalensis*, Picture 29.); Pallid Harrier (*Circus macrourus*), Montagu's Harrier (*Circus pygargus*) and Marsh Harrier (*Circus aeruginosus*); Saker Falcon (*Falco cherrug*), Hobby (*Falco subbuteo*), Merlin (*Falco columbarius*), Kestrel and Lesser Kestrel (*Falco tinnunculus*, *F. naumanni*) and Red-legged Falcon (*Falco vespertinus*); White-tailed Eagle (*Haliaeetus albicilla*), Common Buzzard (*Buteo buteo*), Long-legged Buzzard (*Buteo rufinus*), Black Kite (*Milvus migrans*), sparrowhawk and goshawk (*Accipiter nisus*, *A. gentilis*). A great number of species use the present territory during their migration period for resting and feeding, while some species, as for instance, Strigiformes order (snowy owl - *Nyctea scandiaca*) and Falconidae family (rough-legged buzzard - *Buteo lagopus*) over winter here. Also there are species requiring special protection and conservation, as well as birds that belong to game species.

Reptiles and Amphibians

In total there are 10 species, including 4 species of Amphibians – Picked Frog (*Rana arvalis*), Toad Frog (*Pelobates fuscus*) and Green Toad (*Bufo viridis*); 6 species of reptiles – Renard's Viper (*Vipera ursini*), Sand Lizard (*Lacerta agilis*), *Eremias arguta* and *Eremias velox*.

Fish

Lakes and steppe rivers –“karasu” are inhabited by 10 species of fish. Species well adjusted to cyclical fluctuations of water level in lakes, are most numerous, namely the Crucian Carp and the Goldfish (*Carassius carassius*, *Carassius auratus*). In most of rivers one can find also Tench (*Tinca tinca*), Perch (*Perca fluviatilis*), Pike (*Esox lucius*) and Roach (*Rutilus rutilus*). In dry years these species can live also in lakes, into which they get with high floods. Sari-Kopa Lake is famous for its valuable game species of Common Carp (*Cyprinus carpio*).

With Table 1.) in section 0 a checklist of all vertebrates of the proposed site is given.

Invertebrate animals

One can meet here both typical steppe species and species of adjacent landscape zones: forest, semi-desert and desert species. Of certain peculiarity can be considered intrazonal invertebrate communities (saline and fresh water species). The fauna of the most investigated class of invertebrates are the insects. On the reserve's territory more than 1000 species have been found. The list of beetles (*Coleoptera*) belonging to ground beetles (*Carabidae*) shows approximately 180 species. Lamellicorn beetles (*Scarabaeidae*) 88 species are recorded. There are more than 100 species of weevils (*Curculionidae*), 39 species of ants (*Hymenoptera*, *Formicidae*) and many others.

Rare species

In the Tersek forests a mammal species from the Kazakh Red Data Book the Pine Marten (*Martes martes*) can be found. Among birds there are 33 species listed in the Kazakh Red Data Book, including 18 nesting species: Dalmatian and Eastern White Pelicans (*Pelecanus crispus*, *Pelecanus onocrotalus* see *Picture 11.*), *Picture 39.*), *Picture 38.*) & *Map 26.*), Whooper Swan (*Cygnus Cygnus*, *Picture 37.*), White-headed Duck (*Oxyura leucocephala*, *Map 28.*), Spoonbill (*Platalea leucorodia*, *Picture 41.*), Common Crane (*Grus grus*), Demoiselle Crane (*Anthropoides virgo*, *Picture 27.*) & *Map 27.*), White-tailed Eagle (*Haliaeetus albicilla*), Golden Eagle (*Aquila chrysaetos*), Empire Eagle (*Aquila heliaca*), Steppe Eagle (*Aquila nipalensis*, *Picture 29.*), Saker Falcon (*Falco cherrug*), Great Bustard (*Otis tarda*), Little Bustard (*Otis tetrax*), Sociable plover (*Chettusia gregaria*, (*Picture 28.*) & *Map 31.*), Pallas's Sand Grouse (*Syrrhaptes paradoxus*), Eagle Owl (*Bubo bubo*), Great Black-Headed Gull (*Larus ichthyaeetus* *Picture 35.*), that makes up 57.1 and 36.7% from all species registered in the Red Data Book of Kazakhstan; 8 migratory species: Bewick's swan (*Cygnus bewickii*), Red-breasted Goose (*Branta ruficollis*, *Picture 40.*), White-eyed Duck (*Aythya nyroca*), Common Scoter (*Melanitta fusca*), Siberian Crane (*Grus leucogeranus*), Osprey (*Pandion haliaetus*), Peregrine (*Falco peregrinus*), Slender-billed Curlew (*Numenius tenuirostris*); 7 species of strolling and migratory birds: Greater Flamingo (*Phoenicopterus roseus*, *Picture 34.*) & *Map 29.*), Little Egret (*Egretta garzetta*), Squacco Heron (*Ardeola ralloides*), glossy ibis (*Plegadis falcinellus*), Black bellied Sand-grouse (*Pterocles orientalis*), Rat-tailed Eagle (*Haliaeetus leucoryphus*), Short-toed Eagle (*Circaetus gallicus*) (compare with Table 2.).

The proposed territory is the nesting place for other endangered species not registered in the Red Book of Kazakhstan, but by IUCN i.e. Lesser Kestrel (*Falco naumanni*, IUCN "vulnerable") and Pallid Harrier (*Circus macrourus* IUCN "near threatened"), the latter is common for this area (see *Map 30.*). During the period of seasonal migrations the territory is visited by one more endangered species – lesser White-fronted Goose (*Anser erythropus*). Twelve species are included into International Red Data Book of IUCN (compare Table 2.). It is worthwhile mentioning that the present region appears to be a key territory of Kazakhstan for the conservation of the following nesting species: White-tailed Eagle, Empire Eagle, Saker Falcon, Great Bustard and Sociable Plover (*Picture 28.*) & *Map 31.*) and migrating bird species: Bewick's Swan and Red-breasted goose (*Picture 40.*). The number of White-tailed Eagle in Naurzum Nature Reserve amounts up to 18 nesting pairs per year, that makes 16,4-18.9% of all nest records in Kazakhstan. There is a population of Imperial eagle including 37-40 nestling pairs or 5-10% of total Kazakhstan's nesting records with a unique nest density of 191 pairs per 1000 square kilometres in the forest territory. There has been preserved a stable population of Saker falcon (one out of few in Kazakhstan) counting 16-20 pairs, the total number of this species was estimated in the year 2000 with about 150-200 pairs. The population of Little Bustard has been entirely restored. Its density equals to 5,5 birds per 1 square kilometre. It is possible to rehabilitate the population of Great Bustard, as well. Lakes of Naurzum Nature Reserve in combination with neighbouring Suli, Kulagol and Sankebai Lakes are regarded as one of two places (the second is Volga's delta), where Siberian cranes (IUCN "critical endangered", Table 2.) stop for a long period of time (up to 2 weeks and more) in the course of their migration route from nesting places in Siberia to wintering areas in Iran.

When the lakes are flooded they serve as a very important nesting and moulting place for waterfowls, as well as, places where they can stop while migrating. One of the greatest Eurasian migration ways of waterfowls, gatherings from vast territories of tundra and forest-tundra, from Finland and Norway on the west up to Yamal and Taimir peninsulas on the east, crosses the present territory (see Map 14.). In accordance with certain estimations during autumn migration only the total number of geese (Common, White-fronted and Red-breasted Geese) amounts here to 2- 2.5 million, also the region is visited by *Anser erythropus* (23 - 53% of Eurasian population) and by Red-breasted Goose (90-100 % of population).

Invertebrates

In respect to rare species of invertebrate animals, registered on the list for inclusion to the Red Data Book of Kazakhstan Republic (adopted by the government of the Republic of Kazakhstan in June 19, 1998), the property's territory is inhabited by *Saga pedo* Pall. and Steppe Hairy flower Wasps (*Scolia hirta* Schrenck); from species, registered in the Red Data Book of USSR (1984), except the above mentioned species, the registered species are the following: Bumble Bee (*Bombus muscorum* Fabr.), Robber Fly (*Satanas gigas* Eversmann), *Eudia pavonia* L., Blue Underwing (*Catocala fraxini* L.), Swallowtail (*Papilio machaon* L.), *Iphiclides podalirius* L., *Parnassius apollo* L..

KSNR Fauna

Within the KSNR cluster 375 species of vertebrate animals can be found (Table 1.). Only 314 bird species have been recorded, 43 of which are considered rare and endangered in Kazakhstan and world wide. They are registered in the Red Data Books of Kazakhstan and IUCN (Table 2.).

Mammals

The property is inhabited by 41 species of mammals that makes up almost half of the native fauna of Kazakh Rolling Hills and includes 5 species registered in the Red Data Book of IUCN (Table 2.). Most of the mammals are rodents (55%), because this animal group evolved in arid areas. Here one can find indicators of arid landscapes: Bobak Marmot (*Marmota bobak*, Picture 25.) & Map 23.), registered in the Red Data Book of IUCN ("conservation dependent", Table 2.), Steppe Lemming (*Lagurus lagurus*) and endemic for the Kazakh Steppe Zone the Southern Birch Mouse (*Sicista subtilis*). From eastern steppe species it is worth to mention the Striped hairy-footed Hamster (*Phodopus sungorus*).

In addition to steppe species there are desert and forest ones. The common and widely spread desert species are represented by the Long-eared Hedgehog (*Erinaceus auritus*) and the Northern Mole-vole (*Ellobius talpinus*), as well as, by Kazakh desert species such as the Great Jerboa (*Allactaga jacalus*) and Turan desert species such as the Small Five-toed Jerboa (*Allactaga elater*).

Forest species are presented by widely spread mammals: Common Shrew (*Sorex araneus*), Small Shrew (*S. minutus*) and Pygmy Shrew (*S. minutissimus*), European Water-shrew (*Neomys fodiens*) and Common Vole (*Microtus arvalis*). One can meet also taiga species: Blue Hare (*Lepus timidus*), northern Red-backed Vole (*Clethrionomus rutilus*) and Root Vole (*Microtus oeconomus*).

A great number of small mammals attract predatory animals to this area. These are palaeartic species like: Wolf (*Canis lupus*), Fox (*Vulpes vulpes*), Badger (*Meles*

meles), Ermine (*Mustella erminea*), Weasel (*Mustella nivalis*). The typical species for the steppe zone are: Steppe Polecat (*Mustella eversmanni*) and a desert species of Corsac Fox (*Vulpes corsac*), included into the Red Data Book of IUCN. Vast reed shrubs serve as a living space for the southern mesophyllous species of Wild Boar (*Sus scrofa*). Since now the quantity of the latter species remained unchanged (to 180-200 individuals).

Birds

Ornithologically the proposed territory is an extraordinary interesting region. Till the year 2003 a total of 314 species of birds were recorded, including 37 species registered in the Red Data Book of Kazakhstan and 16 species included into the Red Data Book of IUCN (Table 2.). Nesting bird species number 126. Among reproducing species there are 17 rare and extremely endangered species, as well as, endemics for the Rolling Hills (3 species) and relict (7 species). In migration periods there stop 219 species, among them 14 of them have been registered in the national and international Red Data Books.

Since 1976 Tengiz-Korgalzhynsk Lakes is considered as a wetland site of international importance and became RAMSAR Wetland with the categories 1a, 2a, 2c and 3a (Document 16.)). Rich in food sources the vast lakes of the property attract waterfowl and waders (112 species = 87% of the whole number of species in Kazakhstan).

On the extensive water areas stop large numbers of birds during their summer moulting and autumn migration: tens of thousands of water birds (Widgeon - *Anas penelope* – 40000, Mallard - *Anas platyrhynus* – 20000-40000, Common Pochard - *Aytea ferina* – 150000, Red-crested Pochard - *Netta rufina* – 50000, ducks, bald coots - *Fulica atra* (40000), ruffs - *Philomachus pugnax* (100.000), Red-necked Phalaropes - *Phalaropus lobatus* (50.000-80.000) (some can be seen in the Film included under section 7a).

In steppe areas there are a lot of endemic species of the steppe zone to find: Black and White-winged Larks (*Melanocorypha yeltoniensis*, *M. Leucoptera* Picture 30.) & Map 33.), Lesser Kestrel - *Falco naumanni* and Pallid Harrier - *Circus macrourus* Map 30.). The last two species are included into the Red Data Book of IUCN. The common species, registered in the Red Data Book of Kazakhstan are: Sociable Plover - *Chettusia gregaria* (flocks up to 120 birds, (Picture 28.) & Map 31.), Common Crane - *Grus grus* (flocks up to 3000 birds) and Demoiselle Crane - *Anthropoides virgo* (flocks up to 5000 birds; Picture 27.) & Map 27.).

The winter silence in the reserve is livened up by a small quantity of birds with only 30 species. Along with several permanent species like Common Partridge (*Perdix perdix*), Black Lark (*Melanocorypha yeltoniensis*), Bearded Tit (*Panurus biarmicus*), there are northern birds that spend the winters within the property: Snow Owl (*Nyctea scandiaca*), Rough-legged Buzzard (*Buteo lagopus*), Snow Bunting (*Plectrophenax nivalis*), Shore Lark (*Eremophila alpestris*), Bohemian Waxwing (*Bombycilla garrullus*), Lesser Redpoll (*Carduelis flammea*), Chaffinch (*Fringilla coelebs*) and others.

The property's territory is crossed by the boundaries of nesting habitats of several species. The northern boundary is the one of the relict species such as Asian Plover (*Charadrius asiaticus*), Stone Curlew (*Burhinus oedicephalus*) and Black-winged Stilt (*Himantopus himantopus*), the southern boundary Black-winged Pratincole (*Glariola*

nordmanni, Picture 31.) & Map 32.)) and Marsh Sandpiper (*Tringa stagnatilis*) (Table 2.).

Amphibians and Reptiles

These animal groups are not widely spread in this area. Amphibians are represented by only two species. Both of them live on the borders of their areal. Within the territory the areal border of the Green Toad (*Bufo viridis* - northern border line) and Piked Frog (*Rana arvalis* – southern border line). Reptiles are represented by 4 species. Sand lizard (*Laserta agilis*) and Renard's Viper (*Vipera ursini*) are the common representatives in the local fauna. *Eremias arguta* and *Elaphe dione* are rare species and are living on the site on the northern border of their areal (Table 6.)

Fishes

The Korgalzhynsk Lakes are rich with fish, in the other saline lakes, including Tengiz Lake no fish can be found. The fish fauna of Korgalzhynsk Lakes has got 14 species, among them 11 are native and 3 acclimatized species. The latter spread out via the Nura River and are not observed every year. Crucian Carp (*Carassius carassius*), Perch (*Perca fluviatilis*) and Roach (*Rutilus rutilus*) are most numerous species of the present lakes. Among the native Dace (*Leuciscus leuciscus*) and Ruff (*Acerina cernua*) can be found very often. Pike (*Esox lucius*), Ide (*Leuciscus idus*) and Goldfish (*Carassius auratus*) are of intermediate abundance. The distribution of fish along the lake stretches is fairly equal. All fish are characterized by a good growth rate and high fatness. The growth rate of roach was determined as the highest in the populations of this species in Kazakhstan. In general the state of fish fauna is good and balanced from the point of feed provision and relationship “predator – victim”.

Invertebrates

The world of invertebrate animals shows more than 1500 species in over 160 families out of more than 15 orders. Alone beetles have been counted with 288 species, dragonflies count 30 and fresh-water molluscs 14 species. The emperor moth (*Saturnia pavonia*) is listed in the IUCN Red Book. Four species are recorded out of the Kazakh red book i.e. the Emperor Dragonfly *Anax imperator*, the Mantis species *Bolivaria brachyptera*, Scollid Wasp (*Scolia hirta*) and predatory bush cricket (*Saga pedo*).

Rare species

The territory of KSNR is crossed the northern areal boundary of Steppe Pika (*Ochotona pusilla*, Map 24.) – endemic for the Steppe Zone in Kazakhstan and Russia and registered in the Red Data Book of IUCN (Table 2.). In the steppe next to Lake Tengiz lambing of Betpakdalinsk-Arissk population of Saiga Antelope (*Saiga tatarica*) takes place. This species is listed in the Red Data Book of IUCN and conserved by CITES (Picture 24.), Map 25.) & Table 2.).

On the islands in Lake Tengiz the most northern population of the Greater Flamingo (*Phoenicopterus ruber*), a relic species, can be found. The species is registered in the Red Data Book of Kazakhstan. 10.000-14.000 pairs of flamingo nest here simultaneously, while the total number can rise up to 60.000 birds (see Picture 10.), Picture 34.), Map 29.) & Table 4.). The adjacent areas are inhabited by maritime relict species such as Pallas' Gull (*Larus ichthyoetus*, several hundreds of birds, see Picture 35.), Slender-billed Gull (*Larus genei*, several hundreds of birds), Caspian tern (*Sterna caspia*), Kentish plover (*Charadrius alexandrius*).

It is difficult to access the reed beds of Korgalzhyn Lakes which serve as a nesting place for relict species like the Dalmatian Pelican (*Pelecanus crispus* – around 500 nestling pairs; see *Picture 11.*, *Picture 39.*) & *Map 26.*) and White-headed Duck - *Oxyura leucocephala* (2.000 birds, *Map 28.*). According to the counts up to 10% of the world population of Dalmatian Pelican and around 10-20% of world population of White-headed Duck can be found here. Both species are registered in the Red Data Books of Kazakhstan and IUCN (Table 2.). They are protected by the Convention on International Trade on Endangered Species of Wild Fauna and Flora (CITES). Under the conservation of CITES there are some more globally endangered species registered in this area. During the migration period one can meet here more than 100 Red-breasted Geese (*Branta ruficollis*, *Picture 40.*). To spot migrating Slender-billed Curlew (*Numenius tenuirostris*) and White Cranes (*Grus leucogeranus*) during this time is also possible.

From time to time one may meet the Great Bustard (*Otis tarda*) and Little Bustard (*Tetrax tetrax*), taken under the conservation of the Red Data Books of Kazakhstan and IUCN.

From 31 species of Falconiformes order, found on this territory, 11 species are registered in the Red Data Book of Kazakhstan and 7 species – in the Red Data Book of IUCN. Among the nesting species one can name the Steppe Eagle (*Aquila nipalensis*, see *Picture 29.*), Lesser Kestrel (*Falco naumani*), Pallid Harrier (*Circus macrourus*), the rest of the species is only met during migration. Among the latter it is worth mentioning rare species registered under CITES such as White-tailed Eagle (*Haliaeetus albicilla*), Empire Eagle (*Aquila heliaca*) and Peregrine (*Falco peregrinus*).

2b. History and Development

The first traces of human activity on the proposed territory date to Palaeolith that was more than 100 thousand years ago. Neanderthal men (Mustear culture) were hunting, fishing and collecting vegetable food. Cattle breeding and primitive farming appeared in late Stone Age around 8000-3000 years B.C. In the Bronze Age (2000-1000 B.C.) the tribes of steppe Kazakhstan created their own andronic culture. In vast areas under the influence of climatic changes towards climatic aridity there appeared nomad cattle-breeders. In 1000 B.C – the first half of 1000 A.D. the Kazakh steppe were invaded by issedons – nomadic sako-usunsk tribes, which founded hat their pastures for cattle-breeding here for many centuries.

In the first half of the 19th century summer pastures were passed by both northern Kokchetavsk Kirgiz tribes and southern nomadic tribes coming from the banks of Syrdaria River. Near to Tengiz steppe the first intense settling took place only in the second half of the 19th century. Along the shores of Korgalzhyn Lake such people as arginzs, kipchaks and naimans founded their settlements and spent the winter in that area. Everywhere a semi-nomadic cattle-breeding live style was practiced. The lands were useless for agriculture, however in some areas irrigation of arable land took place, adopted from Karakalpaks and Tashkent people and later forgotten. While the nomad people exerted almost no influence on the nature, the settling of nomads in combination with significant migrations of peasants from central parts of Russia at the end of the 19th century, as well as, the new types of economic activity affected greatly the landscape and wild life of the present region. In the 20th century the human influence over nature not only increased, but also acquired a negative character. During the Soviet Virgin Land Program in Kazakhstan (1954-1960) vast

areas of steppe were totally destructed by the plough (Map 18.). The intensive ploughing up of new territories was accompanied by a massive growth of the population, squares of arable lands and livestock; steppe were crossed by hundreds of roads; lakes were used for fishing, hunting and reed storage, etc. However, these processes had almost no influence on the proposed territory. The natural environment, fairly complete complex of plants and animals typical for natural ecosystem could be conserved over the time. The creation of nature reserves of category 1a according to the classification of IUCN (NSNR and KSNR) guaranteed the conservation of the natural environment of vast steppe territories under the Kazakh law on protected areas (Document 1.).

History of foundation and development of reserves:

NSNR:

Naurzum State Nature Reserve was founded in July 30th, 1931 in accordance with the Resolution of Union of People's Commissars of RSSR (Document 2.)). On the basis of the Resolution of the Council of Ministers of Kazakh SSR № 404 on July 9th in 1968 and by decision of Kustanai regional executive committee NSNR received 2000 hectares of steppe territory with an village on it, as a result of which the total area of the present reserve amounted to 87.694 hectares. In addition a 2 km buffer zone was established around the reserve. With the Statute of Naurzum State Nature Reserve (approved by the Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Agriculture of the RK, No. 17, July 2nd 1998) the reserve was rounded up to 877.100 ha till the enlargement in 2004 (see Document 3.)).

With the Decree of the Government of the Republic of Kazakhstan from 26th of January 2004; No. 79 to assign land for permanent use to the "Naurzum State Nature Reserve" by the Prime Minister of the Republic of Kazakhstan the enlargement of the Naurzum Nature reserve for 103687 hectares was confirmed (see Document 6.), Map 3.) & Map 35.)). The Oblast administration did already confirm the enlargement in October 2001(see Document 4.)). In addition a two kilometre buffer zone and an ecological corridor was established to connect the three parts of the reserve as stated in the Resolution by the Naurzum Akimat from 8. January 2004 (see Document 5.), Map 3.). This sums up to a total buffer zone of 116726,5 hectares and a core zone of 191381 hectares (see Section1f).

KSNR:

The first environmental activities date to the beginning of the Virgin Lands Programm in Kazakhstan. In March of 1957 Tengiz-Korgalzhynsk Lakes were declared a hunting reserve. In March of 1958 there was founded Kurgaldzhin Virgin Lands Reserve with the area of 15000 hectares of steppe on the right bank of the Kon River and along the southern coast of Korgalzhyn Lakes. Later numerous reorganisations took place on the present territory. Not gaining a foothold, the reserve was liquidated. The lakes were given a contradictory status of either reserved-hunting, or forestry-hunting economy centres. New regulations allowed the active use of natural resources, as well the arrangement of "big hunts" without any shooting limits and restrictions of influence over the wetland. In April 16, 1968 Kurgaldzhinskiy state reserve was founded (Document 7.)). In a short period of time all negative consequences of economic activity were eliminated: the settlements and live farms were moved beyond the reserve's boundaries, the reed factory was closed. Since 1974 the fishing industry has been liquidated and a 2 km buffer zone has been

established (Document 8.)). At first time the area of the reserve was 177.200 ha, including 147.600 ha of lakes. During the next 30 years the reserve was enlarged twice. Nowadays the total area amounts to 258.947 ha (see Section 1f). During Soviet times in 1976 Tengiz-Korgalzhynsk Lakes were included on the list of wetlands of international significance under the Ramsar Convention (Document 16.)). In 2000 the lakes became member in the international network «Living Lakes» (Document 15.)).

3. Justification for Inscription

3a. Criteria under which inscription is proposed (and justification for inscription under these criteria)

(ix) – Integrity: The proposed site contains outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh and salt water ecosystems and communities of plants and animals:

The site is a outstanding example of a large area, with no nature destructions and which has conserved the steppe and wetland ecosystem in the “Kazakh Rolling Hills” and “Turgai Plateau” in their natural conditions. As the protected areas are large in size they are able to guarantee the integrity of ecological processes necessary to conserve the fauna and flora of the Kazakh steppes and lakes. An outstanding model of undisturbed natural steppe and wetland ecosystems can be observed, which has got great scientific significance for long-term ecosystem surveys and conservation.

The big steppe territories on the proposed site do support a valuable peace of undisturbed steppe fauna and flora. The rare Schrenk Tulip (*Tulipa schrenkii*) and other members of the Lilly family does together with Fescue and Feathergrass species form typical Pontian steppe communities. Important for containing the natural processes are the presence of grazing animals such as ground squirrels, Bobak Marmot (*Marmota Bobak*, LR) and Saiga antelope (*Saiga tatarica*, CR).

As the site of the proposed site is situated at the cross road of two important flyways of birds i.e. Central-Asian and Siberian-South-European. The proposed site is also the habitat of the largest population of waterfowl in Asia with a total number of 120 breeding species and a total breeding number of up to 500.000 water birds. Two times a year it serves as a resting place for millions of migrating birds. Numbers of migrating birds passing through the proposed site exceed 15 million birds including such rare species as Siberian Crane (*Grus leucogeranu*, CR), Red-breasted Goose (*Branta ruficollis*, VU), Lesser white-fronted goose (*Ancer erythropus*, VU).

On the background of extensive farming activities and other processes of destruction of the steppe biome, the territory of the site is of outstanding value for the protection of virgin steppe. In the Pontian Steppe zone stretching from the Black Sea to the Altai Mountains no bigger protected territory is existing which is protecting natural steppe and forest steppe ecosystems in a strict nature reserve (IUCN Category 1). Steppe ecosystem do cover about 200.000 ha with 120.000 ha pure natural unploughed steppe and thus do contribute to its outstanding universal value. The nomination presents the typical humus building gramineous Kazakh steppe located in the western part of Kazakh Rolling Hills and Turgai Plateau. There are only natural processes running on the site. The property has preserved its natural condition and appearance. The value of

the steppe ecosystem is rather connected with its processes, than absolute numbers of species. Large areas are necessary to conserve this processes, which again are contained in the proposed site.

As for the wetlands ecosystem. Only the Wetlands of Tengiz-Korgalzyn cover over 200.000 ha. Looking at a total of 250.000 ha strictly protected wetlands we look again on the largest wetland in the Pontian steppe zone. Some Ramsar sites in Russia are bigger, but have no strict protected status. The size and quality of the included wetlands of the proposed site are there for to be considered as outstanding.

(x) – Biodiversity: The proposed site contains the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science or conservation:

The territory contains natural habitats of high importance and significance from the point of view of conservation of biodiversity. Many endangered steppe and wetland species run through a part or the whole lifecycle on the territory of the proposed site This shows the outstanding universal value of the property for its high biodiversity and high concentration of waterfowl in the wetlands along the Asian flyways.

As the steppe ecosystem has undergone intense economic transformation and were drastically destroyed in the last decades. The property presents a large territory of virgin steppe sufficient for the conservation of rare and zonal elements of steppe flora and fauna. The proposed site supports a great variety of steppe formations typical only for the Kazakh region of the Pontian steppes with a unique flora (more than 700 species of vascular plants, including species of: feather-grasses, tulips, wild onions, etc.) and fauna as Bustard species, Sociable Lapwing (CR) Black Lark (*Melanocorypha yeltoniensis*), White-winged Lark (*M. leucoptera*), Steppe Eagle (*Aquila nipalensis*), Pallid Harrier (*Circus macrorus*, LR), Bobak Marmot (*Marmota bobak*, LR), Saiga Antelope (*Saiga tatarica*, VU), Steppe pika (*Ochotona pusilla*, VU), Corsac Fox (*Vulpes corsac*, Vu) and others.

The wetlands support many rare and endangered species of outstanding scientific value such as Siberian Crane (*Grus leucogeranus*, CR), Lesser White-fronted Goose (*Anser erythropus*, VU), White-Headed Duck (*Oxyura leucocephala*, EN), Ferruginous Duck (*Aythya pyroca*, LR), Demoiselle Crane (*Anthropoides virgo*), and Red-breasted Goose (*Branta ruficollis*, VU) and Dalmatian Pelican (*Pelicanus crispus*, LR). A close interplay of partly temporary salty, brackish and freshwater lakes support a unique flora and fauna. Vast reeds cover the very productive freshwater lakes, supporting a rich fish and invertebrate fauna. A specific salt lake and salt marsh ecosystem is formed supporting with its productive invertebrate fauna big wader and Greater Flamingo (*Phoenicopterus ruber*) populations.

On isolated pine woods can be found the nesting places of such rare predatory birds such as: White-tailed Eagle (*Haliaeetus albicilla* LR), Golden Eagle (*Aquila chrysaetos*), Saker Falcon (*Falco cherrug*) and the biggest local nesting population of Imperial Eagle (*Aquila heliaca*).

The dimensions of the proposed property are adequate for the conservation of viable populations of plants and animals, as well as some parts the important flyways of wetland and other groups of birds.

In 1976 the Korgalzhin-Tengiz Lake system was included into the network of Ramsar wetlands and became member of the world wide operating network “Living Lakes” in the year 2000. This does in addition stress the outstanding wetlands value of the site. Due to the recommendations of IUCN given after the expert visit in summer 2002 the site is not proposed for nomination of criterion (vii) and (viii) (see Document 29.)).

3b. Statement of Outstanding Universal Value

On a global aspect the steppe ecosystem has to be considered as an endangered biome of our planet. Less than 1% of this ecosystem is protected in the world (IUCN 1998, see section 3c.). As most grasslands are high value arable lands they are generally under anthropogenic pressure. In Kazakhstan the steppe zone occupies 44% of the republic’s territory. All land-reclamations of 1950s-1960s in Kazakhstan were natural steppe biomes with a unique flora and fauna (Map 18.). The proposed site does conserve a fine part of the steppe ecosystem, which was predominantly used only by herders till the middle of the past century. The history of the Kazakh people is intensively intertwined with this ecosystem, which served for centuries as summer pastures for their herds.

The proposed territory supports valuable parts of natural Pontian steppe types (Udvary Biogeographical Province No. 2.29.11). Fescue and Feather-grasses are predominant graminaceous species stretching as a grass ocean till the horizon. The rare Schrenk Tulip (*Tulipa schrenkii*, Kazakh Red Data Book), together with wild onions and other bulb plants are covering the steppes in spring with millions of flowers (see Picture 4.), Picture 7.) & Picture 23.).

On the site rare animal species of the Pontian steppe ecosystem listed in the Red Book of IUCN conduct parts or all their life cycle e.g. Great Bustard (*Otis tarda*, VU), Sociable Plover (*Chettusia gregaria*, CR), Imperial Eagle (*Aquila heliaca*, VU), Pallid Harrier (*Circus macrourus*, LR), Little Bustard (*Tetrax tetrax*, LR), Steppe pika (*Ochotona pusilla*, VU), Boback Marmot (*Marmota bobak*, LR) and Corsax Fox (*Vulpes corsac*, VU). For the critically endangered migratory Saiga Antelope (*Saiga tatarica*, CR) the proposed site is an important place during their seasonal migrations. Saiga does have some calving grounds on the territory, known to be most sensitive as this is the only time in their life cycle when this antelope is not migrating (see Maps of Areal in Section 7c).

Due to the extensive use of the Kazakh steppes the habitat of the fauna and flora steppe species has been diminished to a large extent (about 70 to 80%). All mentioned rare steppe species depend on large areas of natural steppe, which is included in the proposed nomination.

In addition the site presents a unique natural phenomenon of deep penetration of pine forests in the steppe and semi-desert zone. Thus these forests are very important for the conservation of populations of rare predatory birds, among which there is the biggest population of imperial eagle (*Aquila heliaca*, VU) (more than 30 nestling pairs), as well as, the stable populations of saker falcon (*Falco cherrug*), Red-footed Falcon (*Falco vespertinus*) White-Tailed Eagle (*Haliaeetus albicilla*, NT) and golden eagle (*Aquila shrysaetos*) found on the territory of the site (see Picture 29.)& Picture 33.).

About the half of the proposed territory is covered by a system of fresh and salt water lakes located on major flyways of water birds. The wetlands resemble some of the largest in the Kazakh steppe zone with Tengiz-Korgalzhynsk Lakes (with a total wetland area of approx. 200.000 ha) and Naurzum Lakes (with a total area of 40.000 ha). Being at the cross roads of Central-Asian and Siberian-South-European

flyways of migrating birds the lakes are of wetlands of international significance. In October 1976 Tengiz-Korgalzhynsk Lakes was included into the Ramsar Convention list of Wetlands with international significance (see Document 16.). Such critically endangered species as Siberian crane (*Grus leucogeranus*, CR) and Slender-billed Curlew (*Numenius tenuirostris*, CR), are passing through the proposed territory. The numbers of birds found during migration both from nesting and migratory populations together are reaching very high numbers for a series of rare species: White-headed duck (*Oxyura leucocephala*, EN) numbers up to 5000 individuals (40% of world population), Dalmatian Pelican (*Pelecanus crispus*, VU) up to 4000 individuals (10% of world population), Red-breasted Goose (*Branta ruficollis*, VU) up to 6000 individuals (5% of world population) and Lesser white-fronted Goose (*Anser erythropus*, VU) with up to 1000 individuals (4% of World population) (SCHIELZEETH ET. AL, in review 2006) (see Picture 10.), Picture 11.), Picture 35.), Picture 37.), Picture 38.), Picture 39.) & Picture 41.).

The numbers are mainly given for hydrologically stable Korgalzhyn-Tengiz lake system, which is supporting food for 10-15 million birds over the year. In addition the northern nesting place of the Greater Flamingo (*Phoenicopterus ruber*) in the world. In wet years when the Naurzum lakes are filled with water over 500.000 water birds are nesting on the site. In October 1976 Tengiz-Korgalzhyn Lakes were included to the Ramsar Convention list of Wetlands with international significance. With the ratification of the Ramsar Convention Naurzum lakes will also be included as international important wetland as quantity and quality of waterbirds are exceeding the criteria by several times.

Thus all the upper listed features do confirm the outstanding universal value of the site. It not only does protect intact steppe territory, but also internationally important wetlands in an extent which is not found through out the Pontian steppe zone. Both steppes and wetlands have been highly under pressure as fertile steppe soils have been ploughed and water in the dry steppe zone is scarce with a high need of good management. The sites are effectively protected and managed to preserve outstanding valuable parts of the ecosystems in natural condition for generations to come.

3c. Comparative analysis (including state of conservation of similar properties)

From a global view the site belongs to the temperate latitude grasslands. Grasslands are transitional ecosystems getting forested with more moisture or turning to desert with less (IUCN, 1998). Climatic condition for grasslands do exist on every continent except Antarctica as shown on Map 13.). The proposed site is situated in the eastern

Part of the Palaearctic realm in the Biogeographical province of the Pontian steppe (No. 2.29.11 after IUCN, 1975). This grassland zone is the second in size after the Mongolian-Manchurian steppe (see Table 1.). Latitude grasslands enjoy a very poor protection through out the world, as they support in general very fertile soils and are easy to convert in arable land for crop production. With only 0,69% of protected territory in this

Table 1.) Temperate Latitude Grasslands		Size in km²
1.	Mongolian-Manchurian steppe	2.605.123
2.	Pontian Steppes	1.945.402
3.	Prairie grasslands of North America	2.442.342
4.	Eastern grasslands and savannas of Australia	527.831
6.	Argentinian pampas	512.152
	Total	8.032.850

Biogeographical province it is one of the least protected provinces in the world

(IUCN, 1998). A review of the sites in the Pontian steppe zone revealed that by far not all protected areas in the zone have steppe or wetlands value. Quite often people protected forest islands standing out of the steppe often like islands on small mountains. In fact Mountain Areas are over represented on the WH list (IUCN 2004). This is connected with an obviously inherited longing for structure after roaming over flat land for hundreds of Kilometers. Steppe ecosystems do give such striking impressions as mountains for instance do and reveal their beauty only after a second look better even from air. That is why historically, protected areas have not played a significant role in the management and use of temperate grassland ecosystems. In fact, it is only recently that grasslands in temperate climates have been perceived as a valued ecosystem that is worth to be protected (IUCN 1998). In addition grasslands are ideal for agriculture, as they have fertile soils (in fact Steppe Chernosem is counted as the most fertile soil in the world) and are easy to take in use, as no trees have to be cut. That is the reason why in Australia and North America grasslands have almost vanished. Only tiny parts of maybe 0.1% are virgin grasslands in these regions (IUCN 1998). A massive loss of steppe ecosystem occurred during the “New Land Campaign” carried out in the 50ies of the last century. Throughout the Pontian Steppes virgin land was ploughed in a large extent. Only in Kazakhstan a territory of about 25 Million steppe was ploughed from 1954 till 1960 (Map 18.) (Wein, 1985). Fortunately there is still intact steppe territory left in Kazakhstan and some of the best parts can be found on the proposed site. Looking at the whole Pontian steppe zone there is no protected area with IUCN Category 1 bigger in size as the one proposed with over 200.000 ha Steppe (of which 120.000 ha is in entirely natural stage) the proposed site (compare Table 8.).

As for the wetlands. In the dry continental climate of Central Asia and throughout the biogeographical province water is a precious good. Lake Tengiz can be counted as the small brother of Lake Aral, which is ecological lost and even these days drying out more and more. As Kazakhstan has only in 2006 signed the Ramsar convention no detailed review on all wetlands in the region could be made so far, but a review of the existing protected wetlands throughout the Pontian Steppes shows that the Korgalzhyn-Tengiz lakes together with the Naurzum lakes certainly are the biggest strictly protected wetland in the region. This review excludes coastal wetlands along the Black Sea as they are not directly comparable with the enclosed water bodies of the proposed site. That is also concerning the only World Heritage site in the Biogeographical province, which is not directly comparable with the proposed site. Only two Russian Ramsar sites (Chany Lakes 357600 and Tobol Ishim 1217000) are bigger in size, but do not enjoy higher national protection (compare Table 8.).

Looking at two lake systems of the proposed sites, a Ramsar nomination will also include not only the Nature Reserves alone, but adjacent protected sites, too.

The in Table 8.) reviewed sites have been chosen in relevance of having wetlands and/or steppe values. These values have not could not been given a graduation as the data available does not allow this. Focus was made on criterion (ix) and (x). As most protected areas have been organized to protect rare fauna and flora and their habitat, information was available through the WCMC Database, other National Internet Sources and Literature both in Russian and English. A list of reviewed literature and databases is given with Table 8.) and is discussed here:

Romania

The Danube Delta is the only World Heritage Site in the Pontian Steppe zone. It does protect an unique Delta Ecosystem comparable with the deltas of Ural and Volga at

the Caspian. Latter is priority WH site after IUCN recommendation (IUCN 2002), but both belonging to the Aral Sea Biogeographical province (Udvardy No. 2.43.14). In addition the Ukrainian part of the Delta could be added to the existing WH site, as they enjoy partly nature protection status, too. The Delta has unquestionable outstanding universal value, but does not represent the predominant Pontian steppe ecosystems i.e. shallow lakes and steppes (see Table 8.).

Moldavia

In Moldavia 3 protected areas have been reviewed. The two Ramsar sites (Lower Prut Lakes and Lower Dniester) and one national Nature reserve (Kontry). All three have some grasslands between broad leaved forest. The reserves are with 5 to 60 thousand hectares relatively small. There are no bigger undisturbed grasslands left in the country, as they have been suspect to intensive agriculture. Kontry nature reserve is manly forested. The two Ramsar sites are important for migratory and breeding waterfowl, which they support (see Table 8.).

Ukraine:

Four comparable Reserves are found in the country. All have high steppe value, but are with 1600 to 70.000 ha small in size and in addition clustered in even more smaller parts many of the being well smaller than 1000 ha in size. Even though Ukraine is after Kazakhstan containing most of the Pontian steppes, they have almost been all ploughed due to their high quality Chernosem soils ideal for crop growing. The four reviewed sites manage to conserve only tiny bits and are islands in an intensely used cultural landscape. There is no potential to add relevant natural steppe to the existing reserves or even found new reserves as virgin steppe has virtually vanished. In the Ukraine up to 88% of the steppe has been converted to agricultural use, with only 3–5% remaining in its natural state (IUCN 1998).

There are 17 Ramsar sites situated along the coastline of the Black Sea and adjacent to the Danube Delta. They protect mostly shore near lagoons and bays which are important for nesting and especially migratory water fowl. They have few or no steppe value. Nationally protected areas along the coastline are found 3 Zakasniks and 3 Nature Reserves (Zapovedniks). The Nature reserves are all part of a Ramsar Site. The Tshornomorski Zapovednik has been reviewed due to both steppe and wetland values. It is with 70.000 ha relatively small and the wetlands are parts of the coast line of the Black sea. The Ukrainian part of the Danube Delta includes 3 areas with Ramsar Status and should be rounded up with the existing World Heritage site in Romania (see above). As we are looking on land locked water bodies in the Pontian Steppe zone we did not review this sites in detail, as they are difficult to compare (see Table 8.).

Russia:

In the southern part of the Russian federation a number of protected areas matching steppe and wetland values can be found. There have been reviewed 21 sites two of them belonging to an different Biogeographical Zone (Mongolian-Manshurian Steppes, see below). There are two big Ramsar Sites in the east of the province situated, which have bigger size as the proposed area, but no national protection status. There are no strictly protected areas with similar wetlands value to find in Russia so far, even though the potential to create such is existing.

For the steppe values a similar situation as in Ukraine is due to the Russian steppes, too. The existing protected are often to a large extend more forest than steppe, as

forests in a empty Steppe landscape are from an esthetic point of few certainly important. Classical steppe reserves are also small and clustered (Orenburgsky Zapovednik (21653 ha); Central Chernozem (6287). The biggest protected steppes can be found in the Chernie Zemli Zapovednik with 121900 ha in the semi-desert and dry-steppe zone north of the Caspian Sea in Kalmykia. This is already an transition area to the Aral Biogeographical Province, which is characterized by small shrubs of the Chenopodiacea family and Artemisia species. This territory is also important for Saiga antelope. The for nomination proposed site does thus resemble a more characteristic part of the Pontian Steppes (see also Table 8.).

Kazakhstan:

In Kazakhstan 22 comparable sites of the Pontian steppes have been reviewed. The high number does show the importance of this province for Kazakhstan, as over 40% of the Country is covered by grasslands! Concerning the steppe values the Koktshetau National Park (ca. 100.000 ha) and the Zaksniks Erementauski (35.000 ha), Atbasarski (ca. 75.000 ha), Vostatschny (100.000 ha) ha Zakasnik do have significant steppe areas under protection. The protection regime of National Parks and Zakasniks does allow land use to some extend and therefore the absolute numbers do not tell the whole story. Potential strict protected areas in this protected sites are presumably much smaller. In and network of steppe reserves they reserve highest attention for further development, but have now not sufficient status to guarantee the integrity of the sites.

As for the Wetlands we have with Sarykopa (85200) and Turgaisky Zakasniks (348000) big and important wetlands in the region, with no higher protection status. As the protection status for Sarykopa will be updated till 2008 it could be included to this proposed site, too. In the north four Zakasniks have wetlands value: Lepsinski (25800 ha), Mikhailowsky (76800 ha), Smirnovsky (240000 ha), Sogrovski (134100 ha). These Zakasniks or Wildlife Reserves do have a low protection status and are used mainly for hunting. There are no other wetland bigger wetland sites under protection in the Steppe zone of Kazakhstan (compare Map 5.) Protected areas of Kazakhstan). As the inventarisation of Ramsar sites will start after the assignments of Kazakhstan to the Convention this year, it is expected to get several more important wetlands nominated throughout the steppes.

Mongolian-Manchurian steppe:

The Biogeographical zone of the Mongolian-Manchurian steppe is certainly the most similar zone to the Pontian steppe zone. The Zone does cover parts of South-East Russia, most parts of Mongolia and the Manchurai in China. All countries do support a protected area system covering the main ecosystems in the region.

The Mongolian-Manchurian steppes are different from the Potian Steppes, as they are almost not influenced by the Atlantic Ocean. They are more influenced by the South-East Asian monsoons with rainfalls mainly in during summer times.. These steppes do support a closely related fauna and flora, but with different background species. This is concerning in the first place a different mammal fauna grazing the steppes i.e. Mongolian antelope (*Gazella gutturosa*), Mongolian Marmot (*Marmota sibirica*) etc.. The major bird flyways passing through this zone do connect East-Siberia with China and South-East Asia.

The predominant grass species are also out of the genus *Stipa* and *Festuca* with partly background species also found in Central Asia i.e. *Stipa valesiaca*, *Stipa capillata*, but also different ones like *Festuca lenensis*, *Stipa galerosa* and others. Due to few winter

and spring rainfalls ephemere bulb plants form the lily family are lacking and results in a different composition of the herbal flora in general (WALTER, BRECKELE 1994). Only natural and mixed World Heritage Sites are present in this zone at the moment: Uvs Nuur Basin transboundary natural site in Mongolia and Russia (Total WH site 1.068.9 00 ha nominated in 2003) a Biosphere Reserve in Russia and several national protected areas in Mongolia as well as . This site does include some shallow salt lakes as well as Mongolian steppes. High amounts of migration water birds and a unique steppe fauna and flora are of outstanding universal value of this site(see Table 8.), IUCN 2005).

A selection of protected areas and Ramsar Sites are given in Table 8.). A deeper analyse would have to be made to decide the outstanding universal value of one or the other site, but certainly the steppe of the Dornod National Park (over 500.000 ha) does qualify for World Heritage, as entirely unchanged steppe has been protected here. This is mainly due to the water lack in the park, which makes it very difficult to use for herding. The Mongolian Antelope is mobile enough to overcome this.

China

The inner Mongolian or Manchurian steppes do also contain some protected areas which have to be mentioned here. Only MAB Reserves and Ramsar sites have been identified with some steppe and wetlands values. No classification could be made. See Table 8.). for further details. Neither the steppes or the wetlands are comparable with this proposed nomination as they belong to a different biogeographical province.

Conclusion:

As stated by the IUCN on future priorities for a credible and complete list of natural and mixed sites (IUCN, 2004) there are major gaps in the WH coverage of the following biomes: TropicalGrassland/Savanna; Lake Systems; Tundra and Polar Systems; Temperate Grasslands; and Cold Winter Deserts. The proposed nomination does cover two of these priority biomes as steppes and lakes are concerned. On a world wide scale the proposed site does resemble a outstanding part of steppes and lakes in the Pontian steppe province. As could be shown above there are comparable sites in this zone, but the proposed site is certainly a superlative in the province both due to biodiversity and integrity of the site of wetland and steppe habitat. This view is shared with IUCN 2005 (C. Magin) and could here be confirmed with a deep analyse of the protected areas of the Pontian Steppe province.

3d. Integrity and Authenticity

The proposed site including parts of Turgai Steppes and Kazakh Rolling Hills are not only the habitat of endangered, rare, endemic and relict species of plants and animals, but they are also representing a natural and non-modified biotope of steppe, pine forest and wetlands complexes. Within the proposed site the complete ecological sequence of ecosystems are represented and covering a total of **661 299 ha** sufficient size to support the typical natural processes of steppe, semi-dessert and wetlands is provided. Out of 200.000 ha natural steppe and forest steppe 120.000 ha (over 60%) is in natural stage and has never been plought or transformed other wise.

In general the proposed site has few influence introduced species. The muskrat was introduced in 1944 and did well acclimatise throughout the steppe zone. In addition fish species have been introduced to the lake systems e.g. common carp, carp-bream and pike-perch. The species did not get invasive and the integrity of the ecosystems is still preserved to a large extend.

Key species for the integrity of the steppe ecosystem is the Saiga antelope. After extensive poaching in the past years Kazakhstan is now putting great effort in the conservation of this species. The yearly budget for its direct conservation via mobile ranger units exceeds 800.000 USD. The planned extensions in the West and South of lake Tengiz will protect calving grounds of this species (**Fehler! Verweisquelle konnte nicht gefunden werden.**). As for all migratory species including the birds the proposed site is the important key stone in the Kazakh steppe to contribute to the protection to this species (crossing of two major flyways of migratory waterfowl see Map 14.).

The nomination of the site “Saryarka - Steppe and Lakes of Northern Kazakhstan” includes land , which has not been influenced or even transformed by humans. Due to its dimensions the proposed site has no match in the whole Pontian steppe zone in Eurasia (see section 3c).

4. State of conservation and factors affecting the property

4a. Present state of conservation

Both the KSNR and NSNR have the category of a strict nature reserve, with no use of wild animals and plants and only very restricted access for tourists to the site as stated in the law on protected natural territories (see Document 1.). As all land of the core zones is state owned and no permanent settlements are found here the conservation can be guaranteed in the long run. The buffer zones and the eco-corridor at NSNR are not necessarily state owned. In this zones hunting is forbidden over the year and agriculture is only allowed in terms of herding and hay cutting. The buffer zone has by law a minimum of 2 km, but can be larger where necessary. Ranger stations situated on the territory are allowed to use the vicinity of their station to have a garden, keep a working horse and some cattle for subsistence. The protection is guaranteed with armed rangers using motor vehicles and boats. The big Lake Tengiz with its enormous size and no fish population is not attractive for poachers and with its vast mudflats along the coastline generally very difficult to access. Strict protection is here given due to the natural conditions the ecosystem provides.

The National Plans to enlarge the existing network of nature reserves, does reflect the general good political climate for nature conservation in Kazakhstan (see Programme on the development of the network on nature protection areas in Kazakhstan till 2008.**Fehler! Verweisquelle konnte nicht gefunden werden.**). The Kazakh economy is growing fast (Gross Domestic Product (GDP) for 2005 about 9%) due to the growing carbon-hydrogene marked in South. This will enable Kazakhstan to enhance and sustain the management of its natural heritage in the future.

For both areas management plans are existing (Document 12.), Document 13.), see Document 17.) and will be further developed within the running GEF UNDP and UNEP projects (see Document 1.) & Document 22.)). As shown in section 5f and 5j finances and staff allocated for the site have been rising constantly for the past years and will be growing along with the planned enlargements of the territory and need identified by the running UN projects.

4b. Factors affecting the property

The proposed properties are located in a poorly populated area (mean density 1.4 persons per square km) agricultural (grazing and crop cultivation).

Potential pressures are:

- overgrazing by cattle entering the reserve from the buffer zones
- water pollution via streams entering the lake systems
- stream regulation (dams, reservoirs etc.)
- cultivation of crops in the catchment areas of the wetlands
- poaching on wild animals

Any economic action in the nature reserves is prohibited. The region where the proposed property is located has a very weak economy and is one of the poorest areas in Kazakhstan.

i. Development Pressures

Overgrazing is mainly found near settlements as the steppe ecosystem is only well adapted to migrating herds. As there are few inhabitants living in the vicinity of the reserves and cattle numbers are low, overgrazing is no problem in the reserves.

An additional factor of pressure is breaches of the protection regime by inhabitants of nearby settlements, i.e., cutting dead wood, uncontrolled grazing, and penetration into the protected area. Nowadays the cause of the breaches is due to the low income of local inhabitants. Reducing agricultural production results in poaching (waterfowl, wild boar, marmot, muskrat) and illegal fishing. Opened frontiers and trade liberalisation have increased pressure to some CITES species (predatory birds and Saiga). Enhanced management and protection measures as shown in section 5c, 5f and 5j help to ease the pressure on wild animals.

NSNR: Naurzum Region has 15.2 thousand square kilometres with a population of only 17 914 people (= 1.2 person per square km). There were 101 enterprises, i.e., 41 state-owned and 60 private (August 1st, 2000), including 89 small, 11 middle-sized, and 1 large ones. All enterprises are unprofitable (May 1st, 2000) The unemployment rate is 57.9 %.

The Region is rural without any industry. It was a big agricultural producer before the crisis. In 1990, the area used for agriculture was 1.441.000 hectares, of which 277 975 hectares where crop fields and the rest pasture and hay cutting grounds; only the state farms had more than 48 000 head of cattle and more than 175 000 head of sheep. In 2000, the arable land was about 120 000 hectares, and livestock was down to 14 692 head. Most of the domestic animal now are private owned i.e. 13 650 (93 %), 692 in state farms and 350 at farmers. Sheep-breeding as an industry is not existing anymore. The number of sheep reduced over 16 times to 10 865 head, including 354 in state farms, 361 at farmers, and 10 150 household. Moreover, there were 7682 heads of pigs (6240 household, 640 in state farms, and 62 at farmers) and 2550 head of horses (2390 household, 120 in state farms, and 40 at farmers).

During the transformation times forest trees were planted in a small area of the nature reserve, burnt forest areas were cut, and haying was practised in some areas. This actions could now be stopped due to a bettering of the situation.

KSNR: Korgalzhyn Region is 931 097 hectares, the population is 16 536 people (January 1st, 2001), the population density is 1.4 person per square kilometre. The people migrate out of the region since the early 90ies. There were 20 state-owned, 21 middle-sized and 220 small private enterprises in 2000. Including 137 farms, which are registered as mixed agricultural producers (crop growing and livestock production). Out of them, 48 farms are comparatively efficient, 60 produce nothing, and 49 are unprofitable. The unemployment is 65%. Inhabited areas form a rare network. Two villages are near the border of the proposed property (Abay – 506 persons, Nygman – 172 persons).

The Region is completely agricultural. There are some minerals but of no commercial

importance. The agriculture accounts for 96% of the total production. The agriculture is of low efficiency serving only the local needs. The agricultural area is 656 527 hectares, including arable lands – 107 804 hectares, fallow lands – 137 778 hectares (cultivated in 1990), grazing lands – 382 750 hectares, hayfields – 28 195 hectares. From the arable lands are actually used only 30% for crops, 20 % as pastures, 40% for haying. Livestock has reduced 3 times over the past 10 years. There were 49 919 head in 1990, and only 16 964 head in 2000. Cattle has reduced 4 times till 2000 and there are now only 8546 head left, including 8420 household and 126 in state farms. Sheep and goats numbers have reduced 2.5 times and are now 4217 head, including 4187 household and 30 in state farms. Horse numbers increased 1.8 times and are 3601 head, including 3576 household and 25 in state farms. Pig numbers have reduced 2 times and are 600 head, all household.

In the vicinity of the property, the reestablishment of the traditional economy as the most harmonious at present is prospective – sheep and horse breeding.

Land users are prohibited to practice any activity causing damage to the environment in the existing and projected buffer zones of the reserve. Moderate grazing and haying are permissible as a kind of steppe protection, which is historically pressured by ungulate animals. Grazing and haying are prohibited in the buffer zone during nesting period of birds in spring and early summer.

Agriculture around the nature reserve does not cause damage to the property.

ii. Environmental pressures

External pressure to landscapes of the property is generally low because of lack of industries and large settlements near the property. Air pollution is low as well. Damages can be caused by changing the hydrological regime of the area and water pollution.

Water Regime Regulation of Water Bodies of NSNR

Streams only in spring bring melt water to the lakes of NSNR. Hence dams on the streams block the natural water regime of the area to provide water for stock and small scale irrigation. Naturally the fluctuation in the lake systems is very high and the ecosystem can be described as being in near natural hydrological conditions.

Pollution of Water Bodies of NSNR

Livestock and other agricultural wastes (including fertilisers and other chemicals) come to the lakes of NSNR with meltwater. In the past years fertilizers have been almost not in use and cattle numbers have been decreasing rapidly resulting in a significant enhancement of the situation since the early 90ies.

Water regime KSNR

On the recommendation of IUCN from 2003 (see Document 29.) a detailed study on the situation of water resources in the Nura basin was made, to give answers to the question on the quantity and quality of water reaching KSNR. Here a summary is given for a more detailed insight please see Document 19.).

Most of Northern Kazakhstan is a semi-arid grassland area, therefore water supply is a critical factor for wetlands like Tengiz lake. Transition processes in post-soviet Kazakhstan include fundamental changes in natural resource valuation and use, such as water.

This documentation:

characterizes the hydrology of the Tengiz Basin;

analyses human impact on the natural hydrological system of Nura River (including water quantity, quality and runoff dynamics) during soviet times, at present as well as planned activities for the future;

presents ongoing and planed projects focusing on the maintenance of a secure long-term water supply of Korgalzhyn nature reserve;

Mayor findings are:

Quantity of water for KSNR

Almost half of the surface water supply for the proposed world heritage site is not coming from Nura naturally, but from the rivers Kulanotpes and Kon. After 1990 water diversion of these rivers for irrigation has decreased from about 18% to approximately 5% and is unlikely to increase anymore, due to a partial depopulation of their catchment areas and the inefficiency of the irrigation systems;

Analysing the total period Nura flow has been monitored, the runoff has even increased, most likely due to additional water from the Irtysh-Karaganda canal.

The existing reservoirs near Karaganda have only capacity to store a limited share of the runoff water of Nura in most of the years, especially during the spring flood, when about 85% of the runoff has been monitored. An improvement of reservoir capacity could not change this situation substantially in a medium term;

Preventing the spill over of Nura into Ishim river, what naturally reduces the overall Nura flow by estimated 20-30%, could be an easy option to increase water for the nature reserve if needed;

The Government of Kazakhstan decided not to divert water from the Nura basin to solve the issue of growing water demands of the new capital Astana, but completed the construction of an additional canal from the Irtysh-Karaganda canal into the Ishim basin instead;

Quality of water in the Nura Basin

The pollution of the Nura basin is critical due to heavy metals, oil products, and other chemicals. The main pollutants are mercury and its combinations, which pertain to Toxicity Class 1. Mercury containing wastes have come to the river for many years with sewage of the chemical plant (“Karbid”) in Temirtau as a result of accidents and old technological processes. Technogenic silts of the river are annually carried by flood waters downstream Temirtau. It is likely that they have reached the lakes of KSNR and threaten its biocoenoses. Unfortunately, the accumulation of mercury, other heavy metals and pollutants in biological objects and environment has not been surveyed in KSNR. Hydrological observation of water quality in the water bodies of the reserve is not carried out because the hydrological post on Korgalzhyn Lake (Sultan-Keldy Reach, Karazhar Ranger station) was closed.

But since 1990 water quality of Nura has improved significantly, due to decline of industrial production and irrigated agriculture. Emission of mercury has stopped completely;

However, water quality seems to be the biggest issue for the Nura River. The Government of Kazakhstan in cooperation with the World Bank is implementing a 40 million US \$ project to clean up Nura from mercury (2003-2009). This project has started and is implemented at the moment (Document 20.);

An improved enforcement of existing environmental regulations is likely to lead to the reduction of other pollutants;

Management and Monitoring

To improve water management in the Nura basin, the Government of Kazakhstan extended competences of the Nura River Basin Management Authority in 2003;

The Government of Kazakhstan is setting incentives for efficient water use by pricing;

The legal framework is improving. The new water code was signed in 2003. A GEF/UNDP wetland project (2003-2007) aims to establish a national law on wetland protection (see Document 1.);

Fostering sustainable land use systems will contribute to the improvement of the water quality;

Research and monitoring projects are implemented or will be implemented during the next few years to further improve decision making processes and the protection of Korgalzhyn Nature Reserve;

As far as more than one million people are living in the Nura basin and the biggest industrial centre of Kazakhstan is located there too, it would be ambitious to call the hydrological regime of Nura to remain “completely natural”. However, as shown in this documentation, most of the ecologically important natural key characteristics of Nura, such as: overall water quantity, spring floods and annual variation of runoff (except of water quality), surprisingly survived soviet time and will be maintained.

The Government of Kazakhstan is taking action to improve the situation for Korgalzhyn Nature Reserve. The remaining risks are extremely low.

Climate Change for area of the nominated site

For the past years, the temperature regime of the area has considerably changed. The mean annual temperature increased 0.6°C. March, July, and November got colder, while the mean monthly temperatures of December, January, February, April, and August increased. Winters got warmer by 2–4°C, with frequent thaw, haze, and mist. As a result, the snow height became lower. In summer and autumn, droughts became more frequent. However on the background of climate change, the state of natural populations, communities, and ecosystems are comparatively stable.

iii. Natural disasters and risk preparedness

Steppe and forest fires regularly occur in NSNR and KSNR caused mainly by dry thunder storms and humans. At NSNR a fire fighter station is established on the reserve site and in the administrative center of the region. Annual contracts are made with enterprises in nearby areas for mutual fire protection. Fires in KSNR are suppressed by own means and with the help of the State Fire Service of Akmola Province if required. As fire is part of the steppe ecosystem, it is not destroying the vegetation totally, as it is adopted to such events. Due to anthropogenic factors these days fires occur more often and from a management point of view it makes sense to regulate them.

Snow and dust storms caused by wind of near 30 m/sec., hail, and thunderstorms do not present a foreseeable threat to the property and do not require eliminating consequences. The forecast of storms is carried out by the Centre of Hydrometeorological Monitoring in Astana.

There are no foreseeable outbreaks of diseases in the area. The control of epizootic in KSNR is carried out by the Akmola Sanitary and Epidemiological Station since 1975. In connection with a expected bird flu pandemic for humans viral surveys on the migratory birds have been intensified. As waterfowl populations are the natural reservoir for bird flu viruses, there is no higher risk for wild animals.

iv. Visitor/tourism pressures

The current number of visitors in NSNR does not exceed 2000 a year. There are sites for licensed hunting and fishing in the Sary-Kopinskiy Reserve. A highway runs near the central office of NSNR and the reserve is easy of access the most part of a year..

KSNR deals with public education. It has a museum of nature located in Korgalzhyn outside the reserve. Only a small part of the museum visitors also visit the protected area. Since year 2000 in average about 1000 tourists visit the site, that number includes 4 to 5 small international visitor groups mainly interested in the ornithofauna. The visitors are channelled on many one tour leading from the scientists station Karazhar to small Tengiz and back to Korgalzhyno. Thus about 10% of the territory are accessible for tourists. The very short session and harsh and unpredictable climate restricts the numbers to the reserve naturally. Such journeys are not popular among local people because of comparatively severe climate.

On both sites pressure by visitor numbers are not significant. For more information on this topic please compare section 5h.

v. Number of inhabitants within the property and the buffer zone

There are no inhabited areas within NSNR and KSNR. In buffer zone of KSNR are two small villages situated with a total of not more than 1000 inhabitants (see section 4bi for details).

There are no highways and even paved roads. Ground roads cover less than 0.5% of the property. The roads are poorly maintained. Many of them are overgrown and just invisible. The roads are used for observation and tourism. In spring and autumn, the roads are almost impassable, in winter, impassable at all.

5. Protection and Management

5a. Ownership

Steppe and Lakes of North Kazakhstan proposed site, including the clusters NSNR and KSNR is state property. The property is managed by an authorised state executive body – The Committee of Forestry and Hunting of the Ministry of Agriculture located in Astana:

Committee for Forestry and Hunting at the Ministry for Agriculture of Kazakhstan

010000 Astana, Steet Abaja, House 25

Tel: +7 (3172) 328240

Fax: +7 (3172) 328240

e-mail: reserve@minagri.kz

Director: Naursbay Haderkiev

Deputy Director: Igor Koval, Khairbek Musabaev

Lands are assigned to the nature reserves for their use only. They are not leased, and must not be used for exploitation of their natural resources. Lands and properties of the national nature reserve fund are not privatised (Law of Protected Areas, Part 1, Article 5, Document 1.)).

The lands of the buffer zone are state property and consist of agricultural lands and reserve lands. The agricultural lands are partly used by local farmers. Any actions to cause substantial changes of the natural conditions are prohibited within the buffer zone. The regime of the buffer zone is controlled by the administration of the nature reserve.

5b. Protective designation

The proposed property includes protected state nature reserves (see Document 1.)). The legislation of Kazakhstan specifies nature reserves as higher category of protected areas of nationwide significance (Law of Protected Areas, Part 7, Article 34) and state ownership (Law of Protected Areas, Part 1, Article 5). Nature reserves have the status of nature conservation institution with a protection regime to conserve and study the natural state and development of natural processes, typical and unique ecosystems, biodiversity, and genetic base of vegetation and wildlife (Law of Protected Areas, Part 7, Article 34). Following actions are prohibited in nature reserves (Law of Protected Areas, Part 5, Article 23 and Part 7, Article 35):

- C1. Building of properties which are not related to the purposes and functioning of protected areas
- C2. Any surveys for raw materials
- C3. Storing production and consumption waste and radioactive materials
- C4. Use of water pools for sewage water
- C5. Use of vegetation for economic purposes, including haying, and grazing, as well as hunting and commercial fishery
- C6. Introduction of animals and plants

- C7. Any chemical, biological, or physical impact on environment
- C8. Any action which can change natural landscapes or break the stability of ecosystems

With the changes in the law on protected natural territories from January 23rd 2001 it is now possible for the rangers and others to use the natural resources of the property in a limited way. The reserves' administration has to give the permit in every single case and is controlled by the Committee for Forestry, Fishery and Hunting. (Document 1.)

The legal status of the proposed properties is specified by the state acts, as follows:

- General:**
- Law of the Republic of Kazakhstan *On Protected Areas*, N 162-1 ZRK, July 15, 1997 (Document 1.)
 - Law of the Republic of Kazakhstan *On Environment Conservation*, July 15, 1997 (Document 1.)
- NSNR:**
- Decree of the Council of People's Commissars of the Russian Federal and Socialist Soviet Republic *on the boundaries of Naruzum State Nature Reserve of national significance*, No. 826, July 30, 1931 (Document 2.)
 - Statute of Naurzum State Nature Reserve (approved by the Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Agriculture of the RK, No. 17, July 2nd 1998) (Document 3.)
 - Decree of the Government of the Republic of Kazakhstan from 26th of January 2004; No. 79 to assign land for permanent use to the "Naurzum State Nature Reserve" of the Committee for Forestry and Hunting at the Ministry of Agriculture of the Republic of Kazakhstan by the Prime Minister of the Republic of Kazakhstan (Document 6.)
 - Resolution on the Ecological Corridor connecting the three parts of Naurzum Zapovednik, 8. January 2004 by the Naurzum Raion Akimat (Document 5.)
- KSNR:**
- Decree of the Council of Ministers of Kazakh SSR *on the transformation of the Korgalzhyn State Hunting Territory into Korgalzhyn State Nature Reserve*, N 214, April 16, 1968 (Document 7.)
 - Decree of the Executive Committee of the Tselinograd Oblast Soviet of Workers' Deputies "On Establishment of the Boundaries and Regime of the Buffer Zone of Korgalzhyn State Nature Reserve", April 25, 1974 (Document 8.)
 - Decree of the Government of the Republic of Kazakhstan *On Assignment of Lands to Korgalzhyn State Nature Reserve*, No. 767, June 15, 1999 (Document 9.)
 - State Act AN # 2000329 issued by Korgalzhyn Region of Akmola Province of the Republic of Kazakhstan on tenure of 2 437 280 000 hectares within the boundaries according to the land use plan, No. 311, January 7, 1994 (Document 10.)

Both nature reserves are preparing to become the status of biosphere reserves.

5c. Means of implementing protective measures.

The reserves are safeguarded by a special ranger service which is provided by the staff of the reserves and operates according to law on protected areas and the developed management plans for the reserves and the whole site (Document 1.), (Document 12.) & Document 17.)). The territory of the proposed property is safeguarded by the rangers of the nature reserves. The director of the nature reserves is himself the chief ranger of the reserve. The rights of rangers to safeguard nature reserves may be handed over to other employees of a nature reserve who have no position of state rangers. The given rights are handed over by employee consent with a written request and Director's order approved by an executive body – Committee of Forestry and Hunting of the Ministry of Natural Resources and Environmental Protection. Public inspections established by governmental or non-governmental environmental organisations may be enlisted in safeguarding nature reserves.

The legislation of the Republic of Kazakhstan gives the following rights to the reserves' rangers:

- C1. To examine authorising documents of people being in a nature reserve
- C2. To visit any places in a reserve and the buffer zone to control the environmental legislation of the Republic of Kazakhstan
- C3. To examine documents authorising the right for environmental operation in the protection zone of a nature reserve
- C4. To hold up any activity of a person or executive in a nature reserve or buffer zone which contradicts the legislation
- C5. To arrest persons violating the environment legislation of the Republic of Kazakhstan in a nature reserve or buffer zone, draw up a statement of a breach, and convey an infringer to order-maintaining bodies
- C6. To examine vehicles of persons arrested in a nature reserve or buffer zone, confiscate vehicles, implements of unauthorised activities, illegal products with drawing up relevant confiscation documents in prescribed manner
- C7. To built up a camp the nature reserve or buffer zone
- C8. While fulfilling the duties, rangers may carry arms and use special means according to the current legislation of the Republic of Kazakhstan

As well as the above-mentioned general rights the major state ranger and the deputy major state ranger have the following rights within a nature reserve and protection zone:

- C1. To prohibit any economic or other activities which are not in compliance with the regime of a nature reserve or protection zone
- C2. To impose an administrative penalty for a violation of the environment legislation of the Republic of Kazakhstan
- C3. To send in documents on violations of the environment legislation of the Republic of Kazakhstan to order-maintaining bodies
- C4. To put in claims to infringers of the environment legislation of the Republic of Kazakhstan to compensate for losses voluntarily or to prosecute

The ranger service is carried out by patrolling. There are seven ranger stations, a mobile patrol group, and a fire and chemical station to protect the area from fire in NSNR, and four ranger stations and a mobile patrol group in KSNR.

Agency with management authority

All clusters of the proposed site are managed by the
Committee for Forestry and Hunting

at the Ministry for Agriculture of Kazakhstan

010000 Astana, Steet Abaja, House 25

Tel: +7 (3172) 328240

Fax: +7 (3172) 328240

e-mail: reserve@minagri.kz

Director: Naursbay Haderkiev

Deputy Director: Igor Koval, Khairbek Musabaev

Management and methodical provision of the protected areas are exercised also by the upper mentioned committee.

Direct management of the proposed properties is exercised by the administrations of Naurzum and Korgalzhyn State Nature Reserves:

Naurzum Zapovednik

Kostanay Oblast,

Narzum Raion,

457930,

Village Karamendy

Steet Lesnaja, House No. 5

Tel.: +7 (31454) 91141

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e-mail: naurzum@oopt.kz

Director Myrsabek Shanbosynov

Deputy Director Maria Seynelova

Korgalzhyn Zapovednik

Akmola Oblast,

Korgalzhyn Rayon,

474210 Korgalzhyn village

Tel: +7 (31637) 21650

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e-mail: korgalshin@kepter.kz; korgalzhyn@oopt.kz

Director Murat Aytshanov

Deputy Director Alexej Koshkin

Tel: +7 (31637) 21945

e-mail: karazhar@mail.ru

5d. Existing plans related to municipality and region in which the proposed property is located

There are no specific plans by the local authorities on different development issues including the nature reserve. The reserve itself does have development programmes and plans as indicated in section 5e.

On a national level the National Action Plan for Nature Protection in the frame of the State Programm 2030 has been issued in 1998. Strategies for Biodiversity conservation (1999) and the development of protected areas from 2006 till 2008 (see **Fehler! Verweisquelle konnte nicht gefunden werden.**) have been compiled and include the nature reserves proposed for inscription.

To enhance the development of the rural areas the “Years of Auls/Villages” were called out from 2003 till 2005, opening easier access for local farmers to small credits for business development.

The property is included in several international biodiversity projects. Mentioned are the international partners of the reserves if any:

- a) Integrated Conservation of Priority Globally Significant Migratory Bird Wetland Habitat. - A Demonstration on three sites. (UNDP/GEF) working at KSNR (see Document 1.)
- b) Development of a Wetland Site and Flyway Network for Conservation of the Siberian Crane and Other Migratory Water birds in Asia (UNEP/GEF) working at NSNR (see Document 22.)
- c) Development of the Network of Protected Wetlands in Kostanai Province to Protect Waterfowl working also on NSNR (WWF)
- d) Biodiversity Protection of Central Asia (emergency measures) (WWF)
- e) Isolation of dangerous electric power lines at KSNR (GPF/NABU)
- f) Monitoring of the Number of Waterfowl and other wetland birds KSNR (NABU, UNDP, UNEP)
- g) GEF – Econet Project: Analysis of Distribution of Protected Areas in Central Asia. (GEF/WWF).
- i) Project for the Clean up of the Nura River (Worldbank) (see Document 20.)
- j) Project on “The inventory and protection of the Important Bird Territories in Kazakhstan”, 2005-2010, run by ACBK with the support of RSPB and Darwin Initiative.
- k) Project on “Conserving a flagship steppe species – critically endangered Sociable Lapwing”, 2004-2008, carried out by RSPB in collaboration with ACBK and BirdLife.

5e. Property management plan or other management system

The properties are managed according to the statutes of the nature reserves (Document 3.) & Document 11.) and do bring out development plans every three years (see Document 12.) for KSNR and Document 13.) for NSNR) to get better planning for the protected areas management.

The statutes and the development plans specify the following functions and management needs of the nature reserves:

- Safeguarding the area (including water bodies) to protect biodiversity
- Investigate, develop and implement new scientific methods to conserve landscapes
- Monitoring of the environment within the nationwide environment monitoring system
- research work in the reserves

- Providing environmental education and study trips
- Recreation and tourism
- Taking part in the state environmental expertise of projects and distribution of business and other properties, developing sustainable nature management in the region
- Training of scientists and experts in environmental conservation

In addition yearly workplans are developed to implement and plan aims formulated in the 3 year development plans. All this plans are adopted by the Committee for Forestry and Hunting. Questions are discussed on scientific and technical councils organized under the supervision of the committee.

In thematic research plans adopted for Naurzum and Korgalzhyn State Nature Reserves till year 2010 research actions are more specifically outlined.

In addition plans to extend Korgalzhyn State Nature Reserve and update Sarykopa Zakasnik to a Nature Reservation are included in the Programme on the development of the network on nature protection areas in the Republic of Kazakhstan in the years 2006 till 2008 from the Committee of Forestry and Hunting (see **Fehler! Verweisquelle konnte nicht gefunden werden.**, Map 38.) and Map 5.).

5f. Sources and levels of finance

NSNR and KSNR are mainly funded by the Ministry of Agriculture of the Republic of Kazakhstan from the national budget. Due to economic difficulties funding was poor in the 90ies, but could be enhanced during the past two years. Even taking a high inflation rate into account the budget could be risen by several times. For the years 2004 and 2005 a total of about 380.000 USD (50 Million Tenge) was the budget for KSNR and 300.000 USD(38 Million Tenge) for NSNR (see Table).

Table Budget development over the past years in thousand Tenge (Exchange Rate 2004 and 2005 about 1USD to 130 Tenge)

Korgalzhyn State Nature Reserve							
Years	1999	2000	2001	2002	2003	2004	2005
Total Budget	4 412,0	4 159,0	5 506,0	8 899,0	11 042,0	49 679,0	49 496,0
Salaries	2 412,0	2 643,0	3 220,0	4 025,0	4 025,0	8 250,0	8 358,0
Buildings	0	0	0	0	0	35 090,0	32 810,0
Repair and maintainance	0	0	0	0	0	1 200,0	1 919,0
acquisition of technique	0	0	0	0	0	13 463,0	7 827,7
Naurzum State Nature Reserve							
Years	1999	2000	2001	2002	2003	2004	2005
Total Budget	5 233,0	5 794,0	7 663,0	7 663,0	19 713,4	33 172,7	37 779,9
Salaries	2 721,0	2 813,0	4 419,0	4 419,0	4 479,0	8 510,0	11 207,0
acquisition of technique	0	0	0	0	9 050,4	10 297,8	10 335,9

Moreover there are other sources of finance national budget going into the State reserves.

The Committee for Forestry and Hunting is the governmental implementation agency of the GEF/UNEP Siberian Crane Wetlands Project conducting nature conservation work in the Kostanai Oblast including the NSNR. Within this project the management plan for the reserve will be participatory updated and implemented; Sustainable, alternative livelihood projects for local communities developed, protected area staff trained and awareness among all stakeholders on wetlands conservation raised. The project is running in Kazakhstan from 2005 till 2009 with an overall budget of 3,7 Million USD (GEF 1 Bln, Government 2,5 Bln., Third party 0,2 Bln.) (see Document 22.)).

In addition the Committee for Forestry and Hunting is the governmental implementation agency of the GEF/UNDP Project on "Integrated Conservation of

Priority Globally Significant Migratory Bird Wetland Habitat” conducting nature conservation work in the wetlands in Kazakhstan. One of the wetlands is Korgalzhin Zapovednik. Within this project the legal framework for wetlands conservation will be strengthened, training for the protected area staff conducted, a participatory update of the management plan for the reserve and ways of its implementation developed, sustainable, alternative livelihood projects for local communities developed, and awareness among all stakeholders on wetlands conservation raised. The project is running from 2003 till 2010 with an overall budget of 36 Million USD (GEF 8,7 Bln, Government 24,3 Bln., Third party 3 Bln.). As three wetland sites are concerned 12 Million USD will be invested in the KSNR (see Document 1.)). The here shown governmental financial part is “in kind” funding and will be covered by the state budget of the Ministry of Agriculture and Nature Protection. Income by tourists and fees are not substantial to the reserves, but might become important for KSNR as it can attract tourists from the capital. Tourist numbers are relatively low on both sites so far (see section 5h).

5g. Sources of expertise and training in conservation and management techniques

There are 59 employees in NSNR (see section 5j). Every year, there are trainings (24 to 48 hours) to maintain the inspection service (legislation, observation of wildlife, area monitoring, population survey); consulting of the inspection service when visiting ranger stations (examination of daily records, other documents, spring and autumn revisions); attestation of the safeguard service.

There are 51 employees in KSNR (see section 5j). The scientific and technical council of the nature reserve regularly hears and adopts programmes, plans and accounts of employees in research, public relation work, tourism, nature protection and other activities. There is a seminar of for state rangers on nature protection issues. Training is made by experts according to plans adopted by the Council.

In addition the GEF funded projects are conducting a series of training seminars for researchers and technical staff. A know-how exchange between the existing nature reserve is enhanced and staff members of the reserves are invited to participate in trainings and workshops abroad. This helps to widen the horizon of the staff, as business trips have been almost impossible during the 90ies due to slim budgets (see section 5f).

5h. Visitor facilities and statistics

The law of the Republic of Kazakhstan *On Protected Areas* (Part 6, Article 28) specifies the use of protected areas for research, public relation work, education, tourism, recreation and limited economic activities. In addition the three years development plans do go into detail on this topic (Document 1.), Document 12.) & 0).

At NSNR a small nature museum is existing and six excursion routes across the reserve and buffer zone. Visitor numbers are generally low due to the remoteness of the area. An average of 300 visitors are coming to the Museum. Local schools are using the facility quite intensly. One third of the museum visitors are going to the reserve on one of the excursion routes, too. Visitors are mainly local only few international visitors come to the territory (see following table).

Table: Visitor Numers for NSNR

Years	Visitors to the Nature Museum	Tourists total	Tourists local	Tourists international
2000	280	120	110	10
2001	140	100	92	8
2002	140	150	144	6
2003	150	90	85	5
2004	441	59	44	15
2005	300	74	26	48

The visitor facilities of KSNR are specified by *Regulations of Research, Enlightenment, and Environmental Tourism in Korgalzhyn State Nature Reserve*. Visits of organised groups are controlled by the department located in the property office in Korgalzhyn.

There are two environmental routes in KSNR for visitors with the capacity of not more than 12 persons in a group. Both routes are 130 km long each intended for two-day trips.

Route 1 (Korgalzhyn-Karazhar-Ablayskaya Dam – Lake Aktaylyak-Korgalzhyn) partially crosses the protected area and protection zone.

Route 2 (Korgalzhyn – Nygyman – Korgalzhyn) lies within the buffer zone.

The routes run on steppe roads, which are not paved yet. The only exception is Korgalzhyn-Karazhar ground road, which has traffic signs and relevant information on the side of the road.

There is a small guesthouse for 12 persons on the ranger station Karazhar in the reserve. A cafe and shop are opened when tourists are there. The nature reserve is in contact with the state health, search, and rescue services during the whole year.

Visitor numbers to the nature museum are over 1000 per year, also used mainly by schools and universities from Astana. Part of the tourists visit the reserve. In average 250 people a year.

International tourist groups are coming in small numbers regularly to the site. These are mainly tourists interested in the bird fauna of the reserve. The Internetforums www.ecotourism.kz and www.lonleyplanet.com do give out information in English for tourists interested in the area.

Table: Visitor Numbers for KSNR

Years	Visitors to the Nature Museum	Tourists total	Tourists local	Tourists international
2000	1000	275	250	25
2001	1500	331	316	15
2002	2000	151	119	32
2003	1040	291	235	56
2004	1050	299	225	74
2005	350	89	47	42

In 2005 the museum at KSNR has been on repair since Summer. That explains the low visitor numbers in this year.

In general visitor numers are low due to poor public relation work and poor facilites for visitors such as guest houses.

5i. Policies and programmes related to the presentation and promotion of the property

UNDP project did launch a information site on protected areas in 2005 in Russian (www.oopt.kz). This site does give contact infos and a general overview of fauna, flora and physio-geographical features. The site is now the official site of the Committee of forestry and Hunting and is maintained by the Ministry of Agriculture. In addition there is English information available on KSNR at www.ramsar.org, www.livinglakes.org, www.wetlands.kz and www.ecotourism.kz.

Both reserves do bring out regularly information brochures on the reserve. In connection with the GEF funded projects this type of information has been enhanced. Events like the Flamingo Festival or Marsh on Parks do attract the press, TV and radio reporting on the reserve.

Key role for the promotion of the sites do play the nature museums. At KSNR the museum will be rebuilt and transformed to a modern visitor center with a café and souvenir shop.

In the development plans of the two reserves actions on public relation work are lined out in detail (Document 12.) & Document 13.)).

5j. Staffing levels (professional, technical, maintenance).

The staff of NSNR consists of 59 employees, including 5 researchers and 40 rangers (see table below).

The staff of KSNR consists of 51 employees including 5 researchers and 32 rangers (see table below).

In general the staff numbers have ben risen in 2004 by almost two times. A similar development as was observed for the budget did take place (see section 5f). As the ranger numbers have been risen by 3 times the to be rangered place did fall from about 30000 to 10000 ha (equals a square of 10x10 Kilometers). This is a very positive development and does help the direct protection of the sites.

Table showing the staffing levels of tha past years at the nature reserves:

	KSNR		NSNR	
	1999-2003	2004-2005	1999-2003	2004-2005
Direction	5	3	5	2
Science department	5	5	5	5
Ranger department	13	32	14	40
Ecological Information	3	6	1	5
Finance department	not existing	4	not existing	3
Fire fighting station	no	no	7	2
Technical personal	5	1	5	2
Total	31	51	37	59
Additional Workers on Contrachts	0	8	6	29

6. Monitoring

States Parties shall include the key indicators proposed to measure and assess the state of conservation of the property, the factors affecting it, conservation measures at the

property, the periodicity of their examination, and the identity of the responsible authorities.

The dynamic of water bodies, productivity and state of vegetation on monitoring sites, the number and state of populations of rare and model species of birds and mammals are monitored for many years in the property. There are a cadastre of species, card index, herbarium, and collections. Man-made pressures are observed (fire, erosion, breaches of the protection regime, etc.). Monitoring is conducted by workers of research departments at NSNR and KSNR and ranger services throughout the year. It is assisted by relevant research institutions, including experts from foreign countries. Monitoring is carried out within annual “Nature Annals of the Reserves” in a standardized programme. The reports are provided by the reserves administration to the committee for forestry and hunting.

Within the GEF projects the annual monitoring programme is enhanced and supported by national and international scientists. This will lead to more internationally comparable data, which will be made available to a broader community nature conservationists in the world.

6a. Key indicators for measuring state of conservation

1. Status of waterfowl (quantity and species numbers)
2. Number of typical and rare species (mammals, birds, fish)
3. Status of the population of main fish species
4. Status of hydrocoenoses of protected lakes
5. Phenological data of seasonal phenomena of flora and fauna
6. Biodiversity and structures of plant communities

Investigations of the forests are carried out regularly (every 10 years) in NSNR. Including the analysis of the status of the ecosystems, forest in particular, changes in the composition of species, area, and boundaries of the forests, and some information about other types of ecosystems (lakes, steppe).

6b. Administrative arrangements for monitoring the property

Monitoring is based on prospective and annual thematic research plans and the following state mandatory observation:

- C1. Observation according to “Nature Annals” Programme
- C2. Counts of the number of waterfowl on routes and permanent observation posts
- C3. Counts of the number of wild boar
- C4. Annual phenological observation of animals (mammals, birds, fish) and plants

6c. Results of previous reporting exercises.

Meteorological and hydrological observation is based on data of a hydrological post of the Akmola Hydrometeorological and Environmental Monitoring Centre in KSNR and on data of a state meteorological station located near the central office of NSNR. These data are analysed and included into yearly “Nature Annals.”







Air counts of large waterfowl and mammals was carried out in co-operation with international organisations, including NABU (since 1997). The number of small mammals and their reproduction was investigated by the Akmola Sanitary and Epidemiological Service in from 1975–1998.

The status of the environment within the site is stable. Its functions as an optimal environment for its flora and fauna and can provide habitat for many species now and in future.

7. Documentation

7a. Photographs, slides and, where available, film/video

Picture Documentation „Saryarka - Steppe and Lakes of Northern Kazakhstan“

	
<p>Picture 1.) Korgalzhyn Lakes with ice (Korgalzhynsky Zapovednik), Winter 2000, A. Koshkin</p>	<p>Picture 2.) Lake Tengiz under ice (Korgalzhynsky Zapovednik), Winter 2001, T. Dieterich</p>
	
<p>Picture 3.) Forest Steppe in Winter (Narzumsky Zapovednik), <i>Pinus sylvestris</i>, March 1984, E.A. Bragin</p>	<p>Picture 4.) Steppe during Spring covered with tulips (Korgalzhynsky Zapovednik), <i>Tulipa schrenkii</i>, May 1999, T. Dieterich</p>
	
<p>Picture 5.) Clay hills at Terceke (Narzumsky Zapovednik), <i>Juniperus sabinea</i>, <i>Pinus sylvestris</i>, October 2000, T.M. Bragina</p>	<p>Picture 6.) Naurzum Pine Forest (Narzumsky Zapovednik), <i>Pinus sylvestris</i>, July 1998, E.A. Bragin</p>



Picture 7.) Steppe with feathergrass near Tersek Pine Forest (Narzumsky Zapovednik), *Stipa lessingiana*, *Pinus sylvestris*, June 1999, T.M. Bragina



Picture 8.) Rainbow over short grass steppe (Korgalzhynsky Zapovednik), *Festuca sulcata*, August 1997, T. Dieterich



Picture 9.) Singing Sands at the edge of the Naurzum forest (Narzumsky Zapovednik), July 1994, E.A. Bragin



Picture 10.) Colony of Greater Flamingos on island in Lake Tengiz (Korgalzhynsky Zapovednik), *Phoenicopterus ruber*, July 1996, M. Lenk



Picture 11.) Colony of Dalmatian Pelicans in the Reed beds of Korgalzhyn Lakes (Korgalzhynsky Zapovednik), *Pelecanus crispus*, May 2000, T. Dieterich



Picture 12.) Korgalzhyn Lakes from Air (Korgalzhynsky Zapovednik), July 1996, M. Lenk



Picture 13.) Shore line with reed belt at the Korgalzhyn Lakes (Korgalzhynsky Zapovednik), *Phragmites communis*, July 1999, T. Tennhardt

Picture 14.)



Picture 15.) Solontshak (Korgalzhynsky Zapovednik), July 1998, T. Dieterich



Picture 16.) Short grass steppe in autumn with spider webs (Korgalzhynsky Zapovednik), *Festuca sulcata*, Autumn 2000, A. Koshkin



Picture 17.) Steppe with *Ephedra* (Naurzumsky Zapovednik), *Ephedra distachya*, July 1997, E.A. Bragin



Picture 18.) *Halocnemium* a typical salt tollerant species (Korgalzhynsky Zapovednik), *Halocnemium strobilaceum*, July 1997, T. Dieterich



Picture 19.) Volga pheasant's eye a typical steppe species (Naurzumsky Zapovednik), *Adonis wolgensis*, April 1984, E.A. Bragin



Picture 20.) Yellow pasqueflower in spring, *Pulsatilla flavescens*, April 1985, E.A. Bragin



Picture 21.) Schrenks Tulip in full blossom with different colors, *Tulipa schrenkii*, May 1999, T. Dieterich



Picture 22.) Russian Almond in blossom (Naurzumsky Zapovednik), *Amygdalis nana*, May 2001, T.M. Bragina



Picture 23.) Wild Onions as a typical steppe feature, *Alium delicatulum*, July 1998, T. Dieterich



Picture 24.) Saiga antelope rare and typical steppe species, *Saiga tatarica*, July 1998, O. Belalov



Picture 25.) Steppe Marmot at the entrance of its burrow, *Marmota boback*, June 1997, T. Dieterich



Picture 26.) Domestic Horses roaming free on the steppes, *Equus caballus*, May 1999, T. Dieterich



Picture 27.) Demoiselle crane in blossoming steppe, *Anthropoides virgo*, May 1999, G. Eichhorn



Picture 28.) Sociable Plover with young, *Chettusia gregaria*, May 1985, E.A. Bragin



Picture 29.) Steppe Eagle in flight, *Aquila nipalensis*, August 1999, G. Eichhorn



Picture 30.) Black Lark, Male sitting in steppe, *Melanocorypha yeltoniensis*, May 2000, T. Tennhardt



Picture 31.) Black-winged Pratincole, *Glareola nordmanni*, May 1999, G. Eichhorn



Picture 32.) Merlin, *Falco columbarius*, June 1993, E.A. Bragin



Picture 33.) Red-footed Falcon on nest with young, (Naurzumsky Zapovednik), *Falco vespertinus*, July 1985, E.A. Bragin



Picture 34.) Greater Flamingo in flight, *Phoenicopterus ruber*, May 2000, T. Tennhardt



Picture 35.) Great Black-headed Gull in flight, *Larus ichthyaetus*, July 1999, G. Eichhorn



Picture 36.) Thousands of Gees resting on Korgalzhyn Lakes, October 1999, G. Eichhorn



Picture 37.) Whooper Swan in early spring on Korgalzhyn Lakes, *Cygnus cygnus*, Spring 1998, A. Koshkin



Picture 38.) Eastern White Pelican colony,
Pelecanus onocrotalus, July 1989, E.A.
Bragin



Picture 39.) Dalmatian Pelican colony,
Pelecanus crispus, May 1978, E.A. Bragin



Picture 40.) Red-breasted Goose in flight,
Branta ruficollis, October 1999, G. Eichhorn



Picture 41.) Eurasian Spoonbill, *Platalea leucorodia*, July 1978, E.A. Bragin

IMAGE INVENTORY AND PHOTOGRAPH AND AUDIOVISUAL
AUTHORIZATION FORM

Id. No	Format	English	Scientific name	Date, Author
1.	Slide Scan (JPG)	Korgalzhyn Lakes with ice (Korgalzhynsky Zapovednik)	---	Winter 2000 A. Koshkin
2.	Slide Scan (JPG)	Lake Tengiz under ice (Korgalzhynsky Zapovednik)	---	Winter 2001 T. Dieterich
3.	Slide Scan (JPG)	Forest Steppe in Winter (Narzumsky Zapovednik)	<i>Pinus sylvestris</i>	March 1984 E.A. Bragin
4.	Slide Scan (JPG)	Steppe during Spring covered with tulips (Korgalzhynsky Zapovednik)	<i>Tulipa schrenkii</i>	May 1999 T. Dieterich
5.	Slide Scan (JPG)	Clay hills at Terceke (Narzumsky Zapovednik)	<i>Juniperus sabinea, Pinus sylvestris</i>	October 2000 T.M. Bragina
6.	Slide Scan (JPG)	Naurzum Pine Forest (Narzumsky Zapovednik)	<i>Pinus sylvestris</i>	July 1998 E.A. Bragin
7.	Slide Scan (JPG)	Steppe with feathergras near Tersek Pine Forest (Narzumsky Zapovednik)	<i>Stipa lessingiana, Pinus sylvestris</i>	June 1999 T.M. Bragina
8.	Slide Scan (JPG)	Rainbow over short gras steppe (Korgalzhynsky Zapovednik)	<i>Festuca sulcata</i>	August 1997 T. Dieterich
9.	Slide Scan (JPG)	Singing Sands at the edge of the Naurzum forest (Narzumsky Zapovednik)	---	July 1994 E.A. Bragin
10.	Slide Scan (JPG)	Colony of Greater Flamingos on island in Lake Tengiz (Korgalzhynsky Zapovednik)	<i>Phoenicopterus ruber</i>	July 1996 M. Lenk
11.	Slide Scan (JPG)	Colony of Dalmatian Pelicans in the Reed beds of Korgalzhyn Lakes (Korgalzhynsky Zapovednik)	<i>Pelecanus crispus</i>	May 2000 T. Dieterich
12.	Slide Scan (JPG)	Korgalzhyn Lakes from Air (Korgalzhynsky Zapovednik)	---	July 1996 M. Lenk
13.	Slide Scan (JPG)	Shore line with reed belt at the Korgalzhyn Lakes (Korgalzhynsky Zapovednik)	<i>Phragmites communis</i>	July 1999 T. Tennhardt
14.	Slide Scan (JPG)	Solontshak (Korgalzhynsky Zapovednik)	---	July 1998 T. Dieterich
15.	Slide Scan (JPG)	Short grass steppe in autumn with spider webs (Korgalzhynsky Zapovednik)	<i>Festuca sulcata</i>	Autumn 2000 A. Koshkin
16.	Slide Scan (JPG)	Steppe with Ephedra (Naurzumsky Zapovednik)	<i>Ephedra distachya</i>	July 1997 E.A. Bragin
17.	Slide Scan (JPG)	<i>Halocnemium</i> a typical salt tollerant species (Korgalzhynsky Zapovednik)	<i>Halocnemium strobelaceum</i>	July 1997 T. Dieterich
18.	Slide Scan (JPG)	Volga pheasant's eye a typical steppe species (Naurzumsky Zapovednik)	<i>Adonis wolgensis</i>	April 1984 E.A. Bragin
19.	Slide Scan (JPG)	Yellow pasqueflower in spring	<i>Pulsatilla flavescens</i>	April 1985 E.A. Bragin
20.	Slide Scan (JPG)	Schrenks Tulip in full blossom with different colors	<i>Tulipa schrenkii</i>	May 1999 T. Dieterich
21.	Slide Scan (JPG)	Russian Almond in blossom (Naurzumsky Zapovednik)	<i>Amigdalis nana</i>	May 2001, T.M. Bragina

22.	Slide Scan (JPG)	Wild Onions as a typical steppe feature	<i>Alium delicatulum</i>	July 1998 T. Dieterich
23.	Slide Scan (JPG)	Saiga antelope rare and typical steppe species	<i>Saiga tatarica</i>	July 1998 O. Belalov
24.	Slide Scan (JPG)	Steppe Marmot at the entrance of its burrow	<i>Marmota boback</i>	June 1997 T. Dieterich
25.	Slide Scan (JPG)	Domestic Horses roaming free on the steppes	<i>Equus caballus</i>	May 1999 T. Dieterich
26.	Slide Scan (JPG)	Demosille craine in blossoming steppe	<i>Anthropoides virgo</i>	May 1999 G. Eichhorn
27.	Slide Scan (JPG)	Sociable Plover with young	<i>Chettusia gregaria</i>	May 1985 E.A. Bragin
28.	Slide Scan (JPG)	Steppe Eagle in flight	<i>Aquila nipalensis</i>	August 1999 G. Eichhorn
29.	Slide Scan (JPG)	Black Lark, Male sitting in steppe	<i>Melanocorypha yeltoniensis</i>	May 2000 T. Tennhardt
30.	Slide Scan (JPG)	Black-winged Pratincole	<i>Glareola nordmanni</i>	May 1999 G. Eichhorn
31.	Slide Scan (JPG)	Merlin	<i>Falco columbarius</i>	June 1993 E.A. Bragin
32.	Slide Scan (JPG)	Red-fooed Falcon on nest with young (Naurzumsky Zapovednik)	<i>Falco vespertinus</i>	July 1985 E.A. Bragin
33.	Slide Scan (JPG)	Greater Falmingo in flight	<i>Phoenicopterus ruber</i>	May 2000 T. Tennhardt
34.	Slide Scan (JPG)	Great Black-headed Gull in flight	<i>Larus ichthyaetus</i>	July 1999 G. Eichhorn
35.	Slide Scan (JPG)	Thousands of Gees resting on Korgalzhyn Lakes	---	October 1999 G. Eichhorn
36.	Slide Scan (JPG)	Whooper Swan in early spring on Korgalzhyn Lakes	<i>Cygnus cygnus</i>	Spring 1998 A. Koshkin
37.	Slide Scan (JPG)	Eastern White Pelican colony	<i>Pelecanus onocrotalus</i>	July 1989 E.A. Bragin
38.	Slide Scan (JPG)	Dalmatian Pelican colony	<i>Pelecanus crispus</i>	May 1978 E.A. Bragin
39.	Slide Scan (JPG)	Red-breasted Goose in flight	<i>Branta ruficollis</i>	October 1999 G. Eichhorn
40.	Slide Scan (JPG)	Eurasian Spoonbill	<i>Platalea leucorodia</i>	July 1978 E.A. Bragin
41.	Film (mpeg Format)	Saryarka - Steppes and Lakes of Northern Kazakhstan	---	Spring, Summer 2000 M. Freude and T. Bragina

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7b. Texts relating to protective designation, copies of property management plans or documented management systems and extracts of other plans relevant to the property

Document 1.) LAW OF THE REPUBLIC OF KAZAKHSTAN # 162-1 "ON SPECIALLY PROTECTED NATURAL TERRITORIES", dated July 15, 1997 (including amendments introduced by the RK laws # 381-1, dated May 11, 1999; # 151-II, dated January 23, 2001)

Specially protected natural territories, including objects of the environment existing on such territories and having ecological, scientific and cultural value shall be considered the national wealth of the Republic of Kazakhstan. The present Law shall determine legal, economic, social and institutional framework governing operations of specially protected natural territories.

CHAPTER I. GENERAL PROVISIONS

Article 1. Concept of Specially Protected Natural Territories

Specially protected natural territories stand for land plots, waters, forests and subsoil enjoying legal status of special protection or regulated mode of economic activities providing conservation and rehabilitation of the State natural reserve fund.

Article 2. State Natural Reserve Fund

1. The State natural reserve fund shall include a set of environmental objects taken by the Government under its protection as having special ecological, scientific and cultural value and representing natural standards, unique pieces and relics of the genetic stock, and also as the subject matter for scientific surveys, enlightenment, education, tourism and recreation.

2. The State natural reserve fund shall cover the following objects:

- zoological, including rare and endangered species of animals; valuable species of animals; typical, unique and rare animal communities;
- botanical, including rare and endangered species of plants; valuable species of plants; typical, unique and rare plant communities;
- forests, including forests of specially protected natural territories; original samples of wood work; afforestation for protecting fields;
- dendrological, including specific trees or groups of trees of scientific, cultural and historical value; original samples of garden and park related culture;
- hydrological, including water basins of special state importance or of specific scientific value;
- geological, geomorphological and hydrogeological, including subsoil segments of special ecological, scientific, cultural and other value;
- soil, including typical, unique and rare types of soil in various soil zones;
- landscape, including typical, unique and rare landscapes; standard units of the untouched nature, landscapes of special recreation importance.

Article 3. Legislation of the Republic of Kazakhstan in the Field of Specially Protected Natural Territories

1. Legislation of the Republic of Kazakhstan in the field of specially protected natural territories shall regulate public relations with the objective of conserving and rehabilitating the State natural reserve fund and also for arranging efficient utilization of specially protected natural territories as well as for consolidating legitimacy in this area.

2. Legislation of the Republic of Kazakhstan in the field of specially protected natural territories shall be based on the Constitution of the Republic of Kazakhstan and shall include the Law of the Republic of Kazakhstan "On Environmental Protection", this Law, other legislative acts and regulations.

Article 4. Principles of the Republic of Kazakhstan Legislation on Specially Protected Natural Territories

Legislation of the Republic of Kazakhstan on specially protected natural territories shall be based on the following principles:

- conservation of the State natural reserve fund, biological diversity and natural ecological systems;
- purpose-oriented use of specially protected natural territories;
- effective use of specially protected natural territories with the objective of developing science, culture, enlightenment and education;
- development of tourism and recreation while taking into account social and economic factors and also interests of the local population;
- state support of activities aimed at utilizing and conserving specially protected natural territories;
- state regulation and control in the field of specially protected natural territories;
- payment for using specially protected natural territories;
- recovery of damage incurred as a result of breaching the legislation on specially protected natural territories;
- participation of the population and public associations involved in the area of specially protected natural territories;
- accessibility of information on the status of the State natural reserve fund and specially protected natural territories;
- international cooperation based on international law.

Article 5. Ownership in Specially Protected Natural Territories

Specially protected natural territories shall be under the State ownership. Land plots and the objects listed in the State natural reserve fund and existing on such land shall not be subject to privatisation.

CHAPTER II. RIGHTS AND OBLIGATIONS OF CITIZENS AND PUBLIC ASSOCIATIONS INVOLVED IN THE FIELD OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 6. Rights and Obligations of Citizens in the Field of Specially Protected Natural Territories

1. The citizens shall have the right to:

- use specially protected natural territories in accordance with the established procedure, participate in activities aimed at conserving and rehabilitating the State natural reserve fund;
- set up public associations and public funds of specially protected natural territories;
- submit proposals related to establishment of specially protected natural territories;
- take part in public experts' examination of specially protected natural territories;
- appeal to the government agencies and associations with letters, complaints, declarations and proposals concerning specially protected natural territories and demand such appeals to be considered.

2. The citizens shall be obligated to conserve the nature and treat natural wealth with care, and comply with the legislation on specially protected natural territories.

3. Foreign citizens and stateless individuals shall enjoy the rights and bear obligations on specially protected natural territories set forth for the citizens of the Republic of Kazakhstan unless otherwise stated by the Constitution, laws and international treaties ratified by the Republic of Kazakhstan.

Article 7. Rights and Obligations of Public Associations Involved in the Area of Specially Protected Natural Territories

1. Public associations shall have the right to:

- draft and promote programs on specially protected natural territories; protect the rights and interests of citizens; involve them into nature conservation activities on a voluntary basis;
- submit proposals to the authorized agencies on developing and adopting regulations governing specially protected natural territories;
- submit proposals and participate in drafting programs for developing and siting specially protected natural territories, and elaborating justifications for setting up such specially protected natural territories;
- call for conducting State expertise and carrying out public examination of specially protected natural territories;
- in accordance with the set forth procedure take part in works on nature conservation, rehabilitation and use of the State natural reserve fund on specially protected natural territories;
- execute public control on specially protected natural territories;
- set up public funds of specially protected natural territories;
- in accordance with the established procedure get information from state agencies and organizations on specially protected natural territories;
- raise issues on taking legal steps against organizations, officials and citizens found guilty, file claims for recovering damages incurred to the citizens as a result of breaching legislation on specially protected natural territories;
- in accordance with the established procedure exercise other rights stipulated under the legislative and other regulatory and legal acts.

2. Public associations shall be obligated to carry out their activities in the field of specially protected natural territories in compliance with the legislation of the Republic of Kazakhstan.

CHAPTER III. COMPETENCE OF THE STATE AUTHORITIES IN THE FIELD OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 8. Competence of the Republic of Kazakhstan Government

In the field of specially protected natural territories the Government of the Republic of Kazakhstan shall:

- develop principal provisions on uniform state policy, strategic and tactical measures for implementing such policy;
- develop national programs and submit them to the President of the Republic of Kazakhstan for approval;
- guide operations of the ministries, state committees and central executive agencies not part of the Government, local executive authorities, ensure execution by them of laws and acts of issued by the President of the Republic of Kazakhstan and the Republic of Kazakhstan Government;
- approve the list of objects of Republican and International importance included in the State natural reserve fund as well as establish the procedure on limited economic use of such objects on specially protected natural territories;
- approve the list of specially protected natural territories of Republican and International importance;
- set up the procedure on attributing land plots to specially protected natural territories and reserving land for creating such specially protected natural territories;
- approve programs for developing specially protected natural territories;
- approve model provisions on specially protected natural territories;
- facilitate specially protected natural territories of Republican importance;
- set up the procedure on demolishing (removing) alien buildings, structures and objects existing on specially protected natural territories, including withdrawal (repurchase) of land plots for establishing and expanding specially protected natural territories involving land of all categories and also on leasing out land plots, buildings and facilities on specially protected natural territories for scientific, tourist and recreational activities;
- set up the procedure for leasing out buildings and facilities on specially protected natural territories for research, cultural and enlightening, educational, tourist and recreational purposes;
- approve provision on state funds of specially protected natural territories, set up the procedure and terms on collecting payments for using such territories and services provided by them;
- determine the procedure for keeping state records and state cadastre of specially protected natural territories;
- approve provision on State inspection of specially protected natural territories;

- carry out international cooperation and set up the procedure on operations of foreign entities and citizens in the field of specially protected natural territories;
- exercise other powers in accordance with the legislation of the Republic of Kazakhstan.

Article 9. Competence of the Central Executive Agency of the Republic of Kazakhstan for Environmental Protection

The central executive agency of the Republic of Kazakhstan for environmental protection shall:

- coordinate the activities of central and local executive authorities and provide methodological guidance in the area of nature conservation activities relevant to specially protected natural territories;
- in accordance with the established procedure develop natural and scientific and also feasibility studies, model and specific provisions on specially protected natural territories;
- elaborate development of programs for specially protected natural territories;
- approve rules and methodological instructions on issues concerning specially protected natural territories;
- manage specially protected natural territories of Republican importance and ensure conducting scientific and research work on such territories as well as nature conservation and rehabilitation activities;
- maintain the state cadastre of objects included in the State natural reserve fund and specially protected natural territories;
- carry out State control over specially protected natural territories;
- practice international cooperation in the field of specially protected natural territories.

Article 10. Competence of the Ministries, State Committees and Other Central Executive Agencies Not Part of the Government

Ministries, state committees and other central executive agencies not part of the Government within the limits of their competence shall:

- prepare proposals on programs for developing specially protected natural territories and submit such proposals to the central executive agency of the Republic of Kazakhstan for environmental protection;
- facilitate development of studies to justify creation of specially protected natural territories, ensure arrangement of the State ecological expertise and coordinate such studies with the central executive agency for environmental protection ;
- exercise other powers in accordance with the legislation of the Republic of Kazakhstan.

Article 9. Competence of the Central Executive Agency of the Republic of Kazakhstan for Environmental Protection

The central executive agency of the Republic of Kazakhstan for environmental protection shall:

- coordinate the activities of central and local executive authorities and provide methodological guidance in the area of nature conservation activities relevant to specially protected natural territories;
- in accordance with the established procedure develop natural and scientific and also feasibility studies, model and specific provisions on specially protected natural territories;
- elaborate development of programs for specially protected natural territories;
- approve rules and methodological instructions on issues concerning specially protected natural territories;
- manage specially protected natural territories of Republican importance and ensure conducting scientific and research work on such territories as well as nature conservation and rehabilitation activities;
- maintain the state cadastre of objects included in the State natural reserve fund and specially protected natural territories;
- carry out State control over specially protected natural territories;
- practice international cooperation in the field of specially protected natural territories.

Article 10. Competence of the Ministries, State Committees and Other Central Executive Agencies Not Part of the Government

Ministries, state committees and other central executive agencies not part of the Government within the limits of their competence shall:

- prepare proposals on programs for developing specially protected natural territories and submit such proposals to the central executive agency of the Republic of Kazakhstan for environmental protection;
- facilitate development of studies to justify creation of specially protected natural territories, ensure arrangement of the State ecological expertise and coordinate such studies with the central executive agency for environmental protection ;
- in coordination with the central executive agency for environmental protection approve individual provisions governing specially protected natural territories placed under their competence, provide for drawing up passports for such territories and also their registration;
- manage specially protected territories placed under their competence and also provide for performance of all activities required by the legislation;
- arrange maintenance of state records concerning specially protected natural territories under their competence and present such records to the central executive agency for environmental protection;
- create security services and provide for state control over specially protected natural territories under their competence;
- carry out international cooperation in the field of specially protected natural territories.

Article 11. Competence of Local Representative and Executive Bodies

1. Local representative bodies shall:

- consider and coordinate programs for developing specially protected natural territories;
- approve expenditures of local budgets subject to spending for the needs of specially protected natural territories of local importance;
- hear reports of the heads of executive bodies on the status and performance of specially protected natural territories under their competence and located within the limits of their relevant administrative and territorial units;
- within the limits of their competence pass mandatory rules on protecting objects of the State natural reserve fund and protection status of specially protected natural territories. Such rules shall become effective within not less than two weeks after their publication.

2. Local executive bodies shall:

- carry out state control over the state and performance of specially protected natural territories located within the limits of their relevant administrative and territorial units;
- submit proposals on programs for developing specially protected natural territories, coordinate development of studies to justify creation of such territories;
- upon agreement with the central executive bodies approve lists of objects included in the State natural reserve fund and those on specially protected natural territories of local importance;
- according to the established procedure ensure reserve of land plots for specially protected natural territories;
- take decisions on establishing security zones around specially protected natural territories and also prohibiting within the limits of such zones any activities producing negative impact on the position of ecological systems on such territories;
- arrange specially protected natural territories of local importance;
- provide financing from local budgets for activities related to specially protected natural territories.

CHAPTER IV. ARRANGEMENT OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 12. Objects of the State Natural Reserve Fund and Types of Specially Protected Natural Territories

1. The following objects shall be included in the State natural reserve fund:

- zoological, including rare and endangered species of animals, valuable animal species, typical and rare animal communities;
- botanical, including rare and endangered species of plants, valuable species of plants, typical and rare plant communities;
- forestry, including forests of specially protected natural territories, original wood work samples and field protective afforestation;
- dendrological, including individual trees or groups of such trees of scientific, cultural and historical value, original samples of garden and park- related culture;
- wetlands of international importance, natural and artificial water basins, sea water areas serving as natural habitat for typical flora and fauna, especially for waterfowl;
- geological, geomorphological and hydrogeological, including subsoil segments of special ecological, scientific, cultural and other value;
- landscape, including typical, unique and rare landscapes, standard sites of the untouched nature, landscapes of recreational value;
- water basins of national or other specific scientific value.

2. Depending on the purpose of creating, protection status and specifics of utilizing objects of the State natural reserve fund the following types of specially protected natural territories shall be established in the Republic of Kazakhstan:

- State natural preserves, including biosphere preserves;
- State national natural parks;
- State natural reserves;
- State natural parks;
- State natural monuments;
- State protected zones;
- State natural preserves;
- State zoological parks;
- State botanical gardens;
- State dendrological parks;
- State natural preserves-supporters.

Legislation of the Republic of Kazakhstan may provide also for other types of specially protected natural territories.

Article 13. Categories of Specially Protected Natural Territories

1. Depending on the value of the objects listed in the State natural reserve fund, specially protected natural territories shall be subdivided by categories into specially protected natural territories of local and national importance.

2. Elimination of specially protected natural territories from the lists of specially protected natural territories of local importance shall be permitted only under decisions taken by local executive bodies agreed upon with the central executive agency for environmental protection, whereas elimination from the lists of specially protected natural territories of Republican importance shall be permitted only by resolutions issued by the Government of the Republic of Kazakhstan.

Article 14. Schemes for Developing and Siting the Network of Specially Protected Natural Territories

1. Regional and Republican schemes for developing and siting the network of specially protected natural territories shall determine the need for creating such territories in the future while taking into account social and economic situation and also the state of the environment.

2. Schemes for developing and siting the network of specially protected natural territories shall be drafted in accordance with the uniform system.

Article 15. Reserve of Land Plots for Specially Protected Natural Territories

1. In accordance with the approved programs for developing and siting the network of specially protected natural territories, land plots shall be reserved with the intention of creating such territories.

2. While reserving land for specially protected natural territories restrictions shall be assumed for utilizing such territories so as to ensure conservation of the objects listed in the State natural reserve fund.

Article 16. Justification of Establishing Specially Protected Natural Territories

1. Specially protected natural territories shall be created in accordance with natural, scientific and feasibility reports developed under uniform methodology.

2. Natural and scientific feasibility studies shall specify the unique nature and importance of the objects listed in the State natural reserve fund, provide assessment of the ecological state of the natural complexes, and based on that proposals shall be made on conserving, rehabilitating and using such objects and also there shall be provided justification for selecting the type and category of specially protected natural territory, its borders, size of the area and functional zones.
3. Feasibility study and the incorporated scheme for allotment of land plots shall determine:
 - borders and size of land plots transferred to the specially protected natural territory; – costs related to repurchasing land plots from owners of such land plots and (or) for recovering losses resulting from their withdrawal;
 - functional zoning of the territory, protection status and terms on regulated recreational and limited economic use of natural resources within the limits of such zones;
 - activities and expenses related to arrangement, maintenance and development of specially protected natural territories.
4. Designs for natural and scientific and feasibility studies, schemes for allotment of land plots shall be subject to State ecological expertise and approval by the central executive agency for environmental protection.

Article 17. Taking Decisions on Creating Specially Protected Natural Territories

Decisions on creating specially protected natural territories shall be taken by the Government of the Republic of Kazakhstan or local executive bodies on recommendations made by the concerned central executive bodies subject to availability of positive conclusions on natural and scientific and feasibility studies provided by the state ecological expertise and the central executive agency for environmental protection;

Article 18. Passport of Specially Protected Natural Territory

1. Executive agencies to whose jurisdiction specially protected natural territories are transferred shall draw up a passport of the established type for each such territory and register it with the central executive agency for environmental protection.
2. The following details shall be indicated in the passport of specially protected natural territory:
 - the name of the specially protected natural territory;
 - location with the map and layout, outline of borders, area under the specially protected natural territory and security zone of such territory;
 - list of objects existing on the specially protected territory and listed as such in the State natural reserve fund with the indication of their quantitative parameters;
 - dedicated zones and protection modes, commitment to comply with such modes on the specially protected natural territory;
 - types of use of specially protected natural territory;
 - name and address of the nature conservation institution or the executive agency managing such specially protected natural territory.
3. Passports of specially protected natural territories shall be kept in the nature conservation institution, by the executive agency managing such territory, and also in the central executive agency for environmental protection.

Article 19. Legal Position of Individual Types of Specially Protected Natural Territories

State natural preserves, including biosphere preserves, state national natural parks, state natural reserves, state natural parks, state zoological parks, state botanical gardens, state dendrological parks, state natural preserves-supporters shall be legal entities in the form of a state institution.

Article 20. Symbols of Specially Protected Natural Territories

1. Specially protected natural territories having the status of legal entities may have their own symbols (like flags, pendants, emblems, etc.), which should include full or abbreviated official name of such specific territory.
2. Specially protected natural territories shall enjoy exclusive rights with respect to their symbols and may allow other legal and physical persons to use such symbols on a paid basis.
3. Symbols of specially protected natural territories and the procedure of granting permits to use such symbols shall be established by executive bodies managing such territories.

Article 21. Peculiarities of Using Land Plots, Waters, Forests and Subsoil of Specially Protected Natural Territories

1. Land plots, waters, forests and subsoil on specially protected natural territories shall be incorporated into special categories of land plots, waters, forests and subsoil.
2. Withdrawal of land plots, waters, forests and subsoil on specially protected natural territories for other needs shall not be allowed.
3. Use of land plots, waters, forests and subsoil on specially protected natural territories shall be carried out in accordance with this Law and special legislation of the Republic of Kazakhstan.

CHAPTER V. CONSERVATION AND REHABILITATION OF THE STATE NATURAL RESERVE FUND ON SPECIALLY PROTECTED NATURAL TERRITORIES

Article 22. Legal Status of Protecting Specially Protected Natural Territories

1. Legal status of special protection or regulated mode of economic activities shall be introduced for specially protected natural territories.
2. Legal status of special protection shall be subdivided into:
 - 1) inhibited regime;
 - 2) ordered regime.

The inhibited regime shall assume prohibition of any economic or any other activities violating the natural state of the environment on specially protected natural territory or specially dedicated land plots. The ordered regime shall assume implementation of economic or any other activities on specially protected natural territory or specially dedicated land plots only during certain seasons, during certain period of time and only to the extent that such activities do not threaten conservation of objects listed in the State natural reserve fund and do not aggravate reproduction of such objects.

3. Regulated mode of economic activities on specially protected natural territory or specially dedicated land plots shall assume limited use of natural resources for economic purposes.

Article 23. General Rules on Protection of Specially Protected Natural Territories

1. The following activities shall be forbidden on specially protected natural territories:
 - siting and construction of populated settlements; industrial facilities; agricultural and reclamation works; construction of power, transport and communication, military and defence facilities; other facilities and structures not related to the objectives and operations of specially protected natural territories;
 - stockpiling and disposal of industrial wastes and consumption wastes and also of radioactive materials;
 - use of water basins for discharging waste water;
 - use of potentially dangerous chemical and biological substances making hazardous physical impact on the environment;
 - exploration and extraction of minerals; construction and operation of underground facilities not related to mining mineral resources;
 - felling woods for major use; laying-in of oleoresin and secondary forest materials and wood sap;
 - operations that may lead to changing the natural look of protected landscapes or violating sustainability of ecological systems.
2. Depending upon the mode of protection of specially protected natural territories citizens' stay on such territories shall be limited and regulated by individual provisions on each such territory.

Article 24. Security Zones of Specially Protected Natural Territories

1. In order to protect from adverse impact around specially protected natural territories there may be established security zones prohibiting any activities within the limits of such zones that would produce negative impact on the state and reproduction of ecological systems on such territories.
2. The size of the area, its boundaries, operation mode and the order of utilizing natural resources of the security zones shall be established by local executive bodies upon coordination with the central executive agency for environmental protection. Land under security zones shall be marked on the location by specific signs.

Article 25. Preventive Measures on Specially Protected Natural Territories

1. In order to prevent and liquidate adverse impact on the environment of specially protected natural territories the following preventive measures may be implemented:
 - prevention and liquidation of natural disasters, warning of, timely location and liquidation of fires;
 - prevention and liquidation of hazardous impact of water;
 - protection of plants, timely detection and liquidation of hot beds of harmful pests and forest diseases and their control, felling wood for sanitary and other purposes (forest clearing due to road construction, cutting swaths through woods, arranging fire-control breaks);
 - assurance of sanitary and epidemiological safety of the population and also veterinary surveillance, regulation of animal population with the objective of preventing epidemic and epizootic.
2. Preventive measures on specially protected natural territories shall be conducted in compliance with the protection modes and based on recommendations of scientific institutions and as agreed with the executive bodies managing such territories.

Article 26. Rehabilitation of the State Natural Reserve Fund on Specially Protected Natural Territories

1. In order to rehabilitate the State natural reserve fund on specially protected natural territories the following activities may be implemented:
 - land conservation, including protection of land from erosion and reclamation of previously deteriorated land;
 - maintenance of favourable water basin regime, protection of water from pollution, obstruction and depletion;
 - rehabilitation of forests and afforestation with the objective of preventing erosion processes and also for improving ecological situation;
 - conservation of the habitat and conditions for reproduction, and also of migration tracks and points of animal concentration;
 - conservation, reproduction, rearing and rehabilitation of rare and endangered species of animals and plants in the natural environment;
 - primary cultivation, breeding and germination of wild plant species.
2. Rehabilitation activities on specially protected natural territories shall be conducted in compliance with protection modes and based on recommendations of scientific institutions and as agreed with the authorities exercising state control in the area of environmental protection.

Article 27. Arrangement of Rehabilitation of the State Natural Reserve Fund on Specially Protected Natural Territories

Arrangement of rehabilitation of the State natural reserve fund, protection measures related to preventing and liquidating adverse impact on ecological systems of specially protected natural territories shall be carried out by special services from the nature conservation institutions, state agencies managing such territories, or by the engaged organizations.

CHAPTER 5-1. ARRANGEMENT OF PROTECTION OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 27-1. Protection of Natural Complexes and Objects of State Natural Preserves, including Biosphere Preserves, State National Natural Parks and State Natural Reserves

1. Conservation of natural complexes and objects of the state natural preserves, including biosphere preserves, state national natural parks, state natural reserves shall be carried out by the State inspection on conservation of such territories, whose employees shall be included in the staff of such state institutions.
2. Directors of state natural preserves, including biosphere preserves, state national natural parks, state natural reserves and deputy directors shall be chief state inspectors and their deputies, accordingly, on conservation of territories of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves.

Article 27-2. Rights of State Inspectors on Protection of State Natural Preserves, Biosphere Preserves, State National Natural Parks and State Natural Reserves

1. In accordance with the Republic of Kazakhstan legislation employees of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves acting as state inspectors on protection of such specially protected natural territories shall have the right to:

- check whether individuals on the territory of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves have permits providing them with the right to stay on specific specially protected natural territories;
- check documents on the right to nature use and carry out other activities on the territory of security zones adjoining the territory of state natural preserves,

including biosphere preserves, state national natural parks and state natural reserves;

- detain individuals on the territory of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and security zones of such territories for having breached the Republic of Kazakhstan legislation on specially protected natural territories and deliver such violators to the law-enforcement agencies;

- send materials on individuals brought in guilty for violating the established mode of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and also on imposing administrative responsibility on such individuals;

- confiscate tools, transport means and relevant documents used for illegal nature use from violators of the Republic of Kazakhstan legislation on specially protected natural territories;

- inspect vehicles on the territory of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and security zones of such territories;

- visit freely any object located on the territory of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and security zones of such territories to check on compliance with the requirements of the legislation of the Republic of Kazakhstan on specially protected natural territories;

- hold up economic and any other activities irrelevant with the mode of special protection of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and security zones of such territories;

- file claims against physical and legal persons in favor of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves on recovery of damage incurred to natural complexes and objects of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves and security zones of such territories as a result of violating the established protection status;

- in cases stipulated by the legislation send to the law-enforcement agencies materials on breaching the laws of the Republic of Kazakhstan on specially protected natural territories.

2. State inspectors on protection of the territory of State natural preserves, including biosphere preserves, state national natural parks and state natural reserves in performing tasks imposed under this Law shall be allowed to carry service arms and use special means while executing service-related responsibilities

3. State inspectors on protection of territories of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves shall be provided by iron-clad vests and other means of individual protection.

4. In accordance with the Republic of Kazakhstan legislation State inspectors on protection of territories of State natural preserves, including biosphere preserves, state national natural parks and state natural reserves shall be subject to mandatory state insurance.

Article 27- 3. Protection of the Territory of State Natural Parks, State Natural Preserves and Other Types of Specially Protected Natural Territories

1. In accordance with the procedure stipulated by legislative acts and regulations of the Republic of Kazakhstan protection of the territory of state natural preserves shall be exercised by central executive agencies managing such preserves.

2. In accordance with the procedure stipulated by legislative acts and other regulations of the Republic of Kazakhstan protection of the territories of state natural parks and other specially protected natural territories of local importance shall be exercised by executive bodies managing such territories.

3. Employees involved in exercising protection of the territories of the state natural preserves, state natural parks and other specially protected natural territories of local importance shall enjoy same rights as the state inspectors on protection of the territories of state natural preserves, including biosphere preserves, state national natural parks and state natural reserves.

CHAPTER 6. USE OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 28. Purposes for Using Specially Protected Natural Territories

Specially protected natural territories may be used for following purposes:

- 1) scientific;
- 2) cultural and enlightening;
- 3) educational;
- 4) tourist and recreational;
- 5) limited economic.

Article 29. Use of Specially Protected Natural Territories for Scientific Purposes

1. Scientific and research works in the following main areas can be carried out on specially protected natural territories:

- inventory and study of objects listed in the State natural reserve fund, development of scientifically grounded measures on protecting and rehabilitating such objects;

- study of the natural course of natural processes and also the impact of protection modes on ecological systems;

- ecological and other types of monitoring and maintaining "nature chronicles";

- development of scientific framework for nature conservation activities, environmental protection and efficient nature use ;

- development of scientific framework for restoration of the population of rare and endangered species of wild animals and plants.

2. Methodological guidance and coordination of research works on specially protected natural territories shall be carried out jointly by the central executive agencies involved in environmental protection and science.

Article 30. Use of Specially Protected Natural Territories for Cultural and Enlightening Purposes

1. Specially protected natural territories can be used for the following cultural and enlightening purposes:
- advocating natural and scientific knowledge and also achievements in the field of nature conservation, environmental protection and efficient use of nature ;
 - demonstrating natural non-living objects, plants and animals and also objects of historical and cultural heritage;
 - familiarizing with the activities of nature conservation institutions.
2. Museums, lecture rooms, expositions, demonstration sites and other facilities required may be established for holding cultural and enlightening activities on specially protected natural territories;
3. Protection, conservation and use of historical and cultural monuments located on specially protected natural territories shall be carried out in accordance with the legislation of the Republic of Kazakhstan on conservation and use of historical and cultural heritage.

Article 31. Use of Specially Protected Natural Territories for Educational Purposes

- Specially protected natural territories can be used for the following educational purposes:
- conducting educational excursions and classes, practical training of schoolchildren and students;
 - training personnel involved in research works, retraining specialists and upgrading their qualification in the field of nature conservation, environmental protection and efficient nature use.

Article 32. Use of Specially Protected Natural Territories for Tourist and Recreational Purposes

1. Specially protected natural territories can be used for familiarizing tourists with natural and cultural, historical sights and sites for active rest.
2. Special sites shall be allotted for tourism and recreation on specially protected natural territories and such sites shall be equipped with tourist pathways, sight camping, bivouac clearings, standing camps, parking lots, hotels, motels, tourist bases, public catering and trading facilities and also other facilities designed for providing cultural and consumer services.
3. Tourist and recreational activities on specially protected natural territories shall be restricted in compliance with the protection modes of such territories and shall be regulated in accordance with the legislation of the Republic of Kazakhstan on tourism.

Article 33. Use of Specially Protected Natural Territories for the Purposes of Limited Economic Activities

1. Use of specially protected natural territories for the purposes of limited economic activities shall be allowed exclusively on specially dedicated land plots with the ordered regime and regulated mode of economic activities.
2. Limited economic use of objects listed in the State natural reserve fund and located on specially protected natural territories shall be allowed only under permits granted by the Government of the Republic of Kazakhstan or by the central executive agency for environmental protection provided within its competence.
3. In special cases only limited and conventional economic activities and associated types of nature use, like handicraft and popular trade on specially protected natural territories, shall be allowed under permits granted by executive bodies managing such territories, provided that such activities do not threaten conservation and reproduction of the State natural reserve fund.

CHAPTER 7. STATE NATURAL PRESERVES

Article 34. Concept of State Natural Preserves

1. State natural preserve shall be a specially protected natural territory designed for conserving and studying typical and unique ecological systems, biodiversity and genetic fund of fauna and flora in their natural state and in the process of their natural development.
2. Inhibited regime of protection excluding exploitation of natural resources for economic purposes shall be established on the territory of all state natural preserves.

Article 35. Peculiarities of Protection Status of State Natural Preserves

1. In addition to general protection measures specified in Article 23 of this Law the following activities shall be prohibited in state natural preserves:
- construction of buildings and facilities, of roads for general use, pipelines, power transmission lines and other communication facilities;
 - state geological studies and different surveys;
 - use of surface and ground water to meet water requirements of agriculture, industry, hydropower production, water transport and also for other economic purposes;
 - felling wood, except for sanitary purposes and the like cutting required for conducting forest protection activities and operations in state natural preserves, laying-in of oleoresin, secondary forest materials and wood sap; secondary use of forests; use of forests for treatment purposes and also sections of the forest fund for the needs of the hunting management;
 - use flora for economic purposes, including hay-making and cattle grazing;
 - hunting, commercial fishing and use of animals for economic purposes and not referred to the objects for hunting and fishing;
 - introduction of plant and animal species new to flora and fauna;
 - application of any chemical, biological and physical agents to the environment;
 - gathering collections and conducting research works involving removal of animals and plants from their natural environment without a special permit;
 - stay of citizens without special permits and in places not dedicated for visiting.
2. Land plots for running individual households shall be granted to the employees of state natural preserves by local executive bodies outside such state natural preserves or within the limits of their protected, sanitary and security or other safeguard zones.

Article 36. Peculiarities of Arranging Research Works in State Natural Preserves

1. State natural preserves shall carry out research works through arranging on-site observations all the year round with the help of research centers, laboratories and units created in such preserves. Under the established procedure the research centers,

laboratories and units of state natural preserves may acquire the status of scientific institutions with their personnel enjoying the rights of scientific workers.

2. Scientific boards comprised of senior scientists and experts, representatives of scientific institutions and public associations shall be established in state natural preserves.

3. Scientific data bank, scientific collections, funds, libraries and archives shall be created in state natural preserves. State natural preserves may publish scientific, popular-science and other literature on the issues of nature conservation.

Article 37. Peculiarities of Using State Natural Preserves for Cultural and Enlightening, Educational, Tourist, Recreational and Other Purposes

1. In accordance with the procedure established by the authorized agency in state natural preserves, on dedicated sites not containing specifically valuable ecological systems and objects, the following activities shall be permitted:

- facilitation and arrangement of ecological excursion routes, tourist pathways and camping, siting open museums and expositions;
- sports and amateur fishing ;
- picking up mushrooms, nuts, berries, medicinal herbs, hay-making for the needs of the personnel of such preserves and also citizens permanently living on such territories;
- grazing private cattle belonging to the personnel of such preserves and also to other citizens permanently living on such territories.

Article 38. State Natural Biosphere Preserves

1. State natural biosphere preserves can be established on the basis of the existing or newly created state natural preserves for the purposes of conducting global ecological monitoring.

2. Biosphere test sites with various protection status and operation mode can join state natural biosphere preserves for the purposes of carrying out research works aimed at approving and introducing methods of efficient nature use and in doing so not to destroy the environment and deplete biological resources.

3. Individual provisions on state natural biosphere preserves shall be approved in compliance with the international agreements ratified by the Republic of Kazakhstan.

Article 38-1. State Natural Preserves - Supporters

1. State natural preserve - supporter shall be a specially protected natural territory of the Republican importance with the inhibited regime of protection designed for rehabilitating and studying unique natural complexes upset as a result of man-involved activities and no longer able to regenerate themselves in a natural way.

2. Protection status, arrangement of scientific activities and use of state natural preserves - supporters for cultural and enlightening, educational and tourist purposes shall be exercised in accordance with the procedure contemplated for state natural preserves.

CHAPTER 8. STATE NATIONAL NATURAL PARKS

Article 39. Concept of State National Natural Park

1. State national natural park shall be a specially protected natural territory designed for conservation, rehabilitation and multi-purpose use of natural, historical and cultural complexes and objects of special ecological, recreational and scientific value.

2. State national natural parks shall be referred to the category of those of Republican importance.

Article 40. Zoning and Peculiarities of Using the Territory of State National Natural Parks

1. Depending on their protection status and objectives of using natural complexes the following functional zones and sub-zones shall be distinguished in state national natural parks:

- 1) with inhibited regime;
- 2) with ordered regime, including sub-zones:
 - for recreational use;
 - designed for administrative and production purposes;
 - for servicing visitors and tourists;
 - for limited economic activities.

2. Any economic activity, recreational use shall be prohibited within the limits of the protected zones of state national natural parks and such zones shall enjoy the status corresponding to the one of special security applied to the territories of state natural preserves.

In the zones with the ordered regime conditions shall be secured for conserving natural complexes and objects, and on the territory of such zones there shall be permitted strictly regulated use of objects, including in the sub-zones for recreational purposes; limited economic activities, designed for administrative and production purposes and servicing visitors; and also sports and amateur hunting and fishing shall be allowed as well as constructing and operating recreational centres, hotels, campings, museums and other facilities for providing services to tourists.

3. Both land plots granted to state national natural parks for permanent use and those assigned to such parks without withdrawing them from landowners and land users may be included into zones for limited and traditional economic activities.

4. Scientific and research works, cultural and enlightening and educational activities shall be held in accordance with the procedure stipulated for state natural preserves.

CHAPTER 8-1. STATE NATURAL RESERVES

Article 40-1. Concept of State Natural Reserves

1. State natural reserve shall be a specially protected natural territory with different protection status designed for conserving and rehabilitating landscape and biological diversity and ensuring sustainable development and balanced use of natural resources on such territory.

2. State natural reserve shall be referred to the category of those enjoying Republican importance.

Article 40-2. Peculiarities of Territory Zoning and Protection Status of State Natural Reserves

The following functional zones shall be distinguished in state national reserves:

- 1) zone of the protected core shall include part of the territory with inhibited regime of protection representing the area the least upset by man's intervention and designed for conserving landscape and biological diversity in its natural development ;
- 2) buffer zone shall be established around the protected core and shall enjoy ordered regime of protection and it shall be designed for mitigating the impact of economic and recreational activities on the core zone;
- 3) zone for rehabilitating upset landscapes shall include severely degraded plots test-sites with low potential for natural restoration and it shall be designed for implementing measures on reconstructing landscape and biological diversity and also rehabilitating their economic importance. Rehabilitation zone shall have inhibited or ordered regimes of protection;
- 4) zone for sustainable development of state natural reserves shall not have special protection status and shall be established without withdrawing land plots from land users. However, all types of economic activities on the territory of the zone that may cause negative changes in the core zone environment and in the buffer zone of the natural reserve shall be prohibited. In such zone preference shall be given to developing efficient forms of agricultural and forestry farming, local trade and tourism based on principles of balanced use of natural resources.

Article 40-3. Peculiarities of Facilitating and Managing State Natural Reserves

State natural reserves can be established on the basis of the existing state natural preserves and state national natural parks or they can incorporate such territories into a comprehensive specially protected natural territory under uniform management.

CHAPTER 9. STATE NATURAL PARKS

Article 41. Concept of State Natural Park

State natural park shall be an analogue of state national natural park with same objectives and performing same functions but referred to the category of specially protected natural territory of local importance enjoying the status of a nature conservation institution.

Article 42. Zoning and Peculiarities of Using State Natural Parks

1. Same zones as in state national natural parks shall be distinguished in state natural parks.
2. State natural parks shall be used in the same manner and on the same terms as state national natural parks.
3. Executive bodies managing state natural parks shall be entitled to determine specifics of operating such specially protected natural territories while taking into account specific natural, social and economic factors as well as interests of the local community.

CHAPTER 9. STATE NATURAL MONUMENTS

Article 43. Concept of State Natural Monument

1. State natural monument shall be a specially protected natural territory with inhibited regime and designed for conserving individual objects of the State natural reserve fund in their natural state.
2. State natural monuments may be zoological, botanical, forestry, dendrological, hydrological, geological, geomorphological, hydrogeological, soil, landscape and comprehensive.
3. State natural monuments may be of local and Republican importance.

Article 44. Peculiarities of Creating State Natural Monuments

1. State natural monuments shall be created on land plots without withdrawing such lands from landowners and users of such land plots.
2. Executive bodies managing State natural monuments shall transfer such monuments to the landowners or users of land plots against their commitment to conserve such specially protected natural territories.
3. Expenditures related to protecting and rehabilitating state natural monuments shall be recovered to the landowners or users of land plots from the established source for financing operations of specially protected natural territories.

Article 45. Peculiarities of Protecting and Using State Natural Monuments

1. Any activity upsetting natural state and safety of state natural monuments shall be prohibited.
2. In accordance with the established procedure state natural monuments can be used for scientific, cultural and enlightening, and educational purposes.

CHAPTER 11. STATE PROTECTED ZONES

Article 46. Concept of State Protected Zone

1. State protected zone shall be a specially protected natural territory with differentiated protection status designed for conserving objects of the State natural reserve fund on land plots saved for state natural preserves and state national natural parks or for conserving and rehabilitating specifically valuable natural resources.
2. State protected zones may be of local and national importance.

Article 46-1. Procedure of Creating State Protected Zones

Decisions on establishing state protected zones of the Republican importance shall be taken by the Government of the Republic of Kazakhstan, while on those of local importance decisions shall be taken by local executive bodies as recommended by the central executive agency for environmental protection based on scientific studies agreed with all concerned state agencies.

Article 47. Peculiarities of Protecting and Using State Protected Zones

1. Any activity that may lead to changing the look of protected landscapes or upsetting sustainability of ecological systems or may threaten conservation and reproduction of specifically valuable natural resources shall be prohibited in state protected zones.

2. In state protected zones there may be distinguished segments with inhibited and ordered regimes and also those with regulated mode of economic activities. Apart from mandatory general measures of special protection special ecological requirements for each state protected zone shall be introduced.
3. State protected zones can be used for all purposes stipulated for specially protected natural territories while taking into account the specifics of their protection status and ecological requirements.

Article 48. State Protected Zone in the Northern Part of the Caspian Sea

1. Water area eastwards from the northern part of the Caspian Sea with the deltas of the Volga (within the limits of Kazakhstan) and the Ural rivers shall be included into the state protected zone of the northern part of the Caspian Sea designed for conserving fish stock and providing optimal habitat and also ensuring natural reproduction of sturgeon and valuable types of fish.
2. In state protected zone of the northern part of the Caspian Sea opportunities shall be provided for developing fish farming, water transport, state geological studies, survey and also for producing raw hydrocarbons while taking into account special ecological requirements.

CHAPTER 12. STATE NATURAL RESERVES

Article 49. Concept of State Natural Reserve

1. State natural reserve shall be a specially protected natural territory with the ordered regime or regulated mode of economic activities designed for conserving and reproducing one or several objects of the State natural reserve fund.
2. State natural reserves may be zoological, botanical, hydrological, geological, geomorphological, hydrogeological, soil, landscape and comprehensive. State natural reserves shall have the status of specially protected natural territories of Republican importance.

Article 50. Peculiarities of Creating State Natural Reserves

- I. State natural reserves shall be created on land plots without withdrawing them from landowners or users of land plots. The landowner or land user shall be obligated to provide with the right to limited purpose-oriented use of the land plot on which such state reserve shall be located.
2. The central executive agency managing state natural reserves shall facilitate measures aimed at protecting and rehabilitating objects of the State natural reserve fund existing on the territory of such reserves through involving special services and using the sources established for financing activities of specially protected natural territories.

Article 51. Peculiarities of Protection Status and Use of State Natural Reserves

1. Any activity threatening conservation of objects of the State natural reserve fund or worsening reproduction of such objects shall be prohibited in state natural reserves.
2. In accordance with the established procedure state natural reserves can be used for scientific, cultural and enlightening, educational and also for limited economic purposes. Landowners and users of land plots may carry out economic activities in state natural reserves while complying with the established restrictions.

CHAPTER 13. STATE ZOOLOGICAL PARKS

Article 52. Concept of State Zoological Park

1. State zoological park shall be a specially protected natural territory enjoying the combined status of nature conservation and scientific and research institution with differentiated by zones protection status and designed for conservation, reproduction and use of fauna.
2. State zoological parks may be of local and Republican importance.

Article 53. Zoning and Peculiarities of Protecting State Zoological Parks

1. In accordance with the established procedure land plots, as a rule from the land of the local communities, shall be provided to state zoological parks for permanent use.
2. The following zones shall be distinguished in state zoological parks:
 - 1) exposition - for keeping and breeding animals and also for showing animals to visitors;
 - 2) research - for carrying out research works;
 - 3) public - for servicing visitors;
 - 4) administrative, production and economic.
3. Any action not relevant to implementing the tasks of state zoological parks and which may cause death of the animals maintained in such parks shall be prohibited.

Article 54. Breeding Animals in State Zoological Parks

1. State zoological parks shall form and ensure conservation of animal collections comprised of local and world wide fauna.
2. In accordance with the established procedure state zoological parks shall carry out import and export operations involving animals, exchange them with other zoological type institutions.
3. Veterinary and animal science services, nurseries for breeding rare and endangered species of animals shall be created in state zoological parks.

Article 55. Peculiarities of Using State Zoological Parks

1. State zoological parks shall be used for scientific, cultural and enlightening, and also educational purposes.
2. Research works dealing with keeping and breeding animals in captive and semi-captive conditions shall be carried in state zoological parks. State zoological parks may create scientific data base, funds, museums, lecture rooms, libraries and archives, and also publish scientific, popular-science and other literature on issues relating to the activities of such institutions.
3. State zoological parks may have experimental farms, workshops, zoological stores and other objects required for economic activities relevant to the type of operations of such institutions.

CHAPTER 14. STATE BOTANICAL GARDENS

Article 56. Concept of State Botanical Garden

1. State botanical garden shall be a specially protected natural territory enjoying combined status of nature conservation and scientific and research institution with differentiated by zones protection status and designed for conserving, reproducing and also using flora.
2. State botanical gardens may be of local and Republican importance.

Article 57. Zoning and Peculiarities of Protecting State Botanical Gardens

1. In accordance with the established procedure land plots shall be provided to state botanical gardens for permanent use.
2. The following zones shall be distinguished in state botanical gardens:
 - 1) exposition - for cultivating plants and showing them to visitors;
 - 2) research - for carrying out research works;
 - 3) inhibited - for conserving unique, typical and rare communities of natural flora;
 - 4) public - for servicing visitors;
 - 5) administrative, production and economic.
3. Any action not related to implementing the tasks relevant to the activities of state botanical gardens and which may cause destruction of plants cultivated in such gardens shall be prohibited.

Article 58. Cultivation of Plants in State Botanical Gardens

1. State botanical gardens shall form and provide conditions for conserving collections of natural and cultural plants comprised local and world wide flora.
2. In accordance with the established procedure state botanical gardens shall carry out import and export operations involving plants and also exchange them with other botanical type institutions.
3. Collection and experimental sites, herbaria, nurseries and seed funds shall be created in state botanical gardens.

Article 59. Peculiarities of Using State Botanical Gardens

1. In accordance with the established procedure state botanical gardens shall be used for scientific, cultural and enlightening and educational purposes.
2. Research works dealing with primary cultivation, selection and breeding valuable, rare and endangered species of natural flora and introduced cultural plants shall be carried out in state botanical gardens. State botanical gardens may create scientific data base, funds, museums, lecture rooms, libraries and archives, and also publish scientific, popular-science and other literature on the issues related to the activities of such institutions.
3. State botanical gardens may set up experimental economic bases for conducting production tests of recommended and introduced plants and reproduction of such plants with the objective of introducing them for use in the national economy.
4. State botanical gardens may have experimental farms, workshops, specialized stores for selling plants and other objects required for economic activities relevant to the type of operations of such institutions.

CHAPTER 15. STATE DENDROLOGICAL PARKS

Article 60. Concept of State Dendrological Park

1. State dendrological park shall be a specially protected natural territory enjoying the status of nature conservation institution with differentiated by zones protection status and designed for conserving, reproducing and using dendritic and shrub species.
2. State dendrological parks may be of local and Republican importance.

Article 61. Zoning and Peculiarities of Protecting and Using State Dendrological Parks

1. Zones similar to state botanical gardens shall be distinguished in state dendrological parks while taking into account designation and protection status of such dendrological parks.
2. State dendrological parks shall be used for scientific, cultural and enlightening and also educational purposes in the same manner and on the same terms as state botanical gardens.

CHAPTER 16. FORESTS OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 62. Concept of Forests of Specially Protected Natural Territories

Forests of specially protected natural territories shall include forests of special target designation, appropriate defence categories enjoying the legal status of special protection or regulated mode of economic activities and also having specific ecological, scientific, cultural and economic value.

Article 63. Defence Categories of Forests of Specially Protected Natural Territories

- Forests of specially protected natural territories shall be subdivided into the following defence categories:
- forests of state natural preserves, state national natural parks, state natural reserves, state natural parks, state natural forestry monuments, state protected zones and state natural preserves-supporters;
 - specifically valuable forestry massifs, including unique forests in terms of species comprised of relict and endemic species; unique forests in terms of productivity and genetic quality; forest performing protection functions in a complex natural environment;
 - forests of scientific importance, including forests representing specimen of achievements of forestry science and practice; forests serving as the subject matter for long-term research works; forestry genetic reserves, including plants and trees; other selected genetic objects;
 - forests with zones for commercial production of nuts, including forests important in terms of serving as a base for storing nuts and setting up hunting management;

- fruit bearing plants natural for artificially created forests in the lands of the forest fund where grow valuable fruit-berry-and-nut bearing species of trees and shrubs in quantities of economic significance;
- sub-alpine forests, including high-mountain forests located at the boundary with the upper woodless part of mountain peaks and ranges which are important in terms of protecting and controlling erosion.

Article 64. Peculiarities of Protecting and Using Forests of Specially Protected Natural Territories

1. Protection status of forests of state natural preserves, state national natural parks, state natural forestry monuments and state protected zones shall be determined by provisions governing specially protected natural territories.
2. Status of specifically valuable forest massifs, forests of scientific importance, and sub-alpine forests shall be set forth on the basis of the specifics of each dedicated specially protected natural territory.
3. Based on the specifics of each dedicated specially protected natural territory for forests of the zones involved in commercial production of nuts and fruit bearing plants there shall be established a regulated mode of economic activities.
4. Types of forest use stipulated under this Law shall be allowed with respect to the forests of specially protected natural territories while taking into account the special target design of such forests.

CHAPTER 17. WATER BASINS OF SPECIAL NATIONAL IMPORTANCE OR OF SPECIFIC SCIENTIFIC VALUE

Article 65. Concept of Water Basins of Special National Importance or of Specific Scientific Value

1. To water basins of special national importance or of specific scientific value shall be referred basins of special target designation enjoying the legal status of special protection or regulated mode of economic activities. Water basins of national importance or of specific value shall include basins specifically valuable for economic activities; transboundary waters, basins characterized by healing factors and recreational properties; basins used as objects for long-term research works; basins posing a potential mud flow danger.
2. Basins of special national importance or of specific scientific value shall be referred to the category of specially protected natural territories of local or Republican importance.

Article 66. Peculiarities of Protecting and Using Water Basins of Special National Importance or of Specific Scientific Value

1. Provision of water basins of special national importance or of specific scientific value for use may be partially restricted or completely prohibited.
2. Peculiarities of protecting and using basins of special national importance or of specific scientific value shall be set forth by individual provision on each such specially protected natural territory.

CHAPTER 18. WETLANDS OF INTERNATIONAL IMPORTANCE

Article 67. Concept of Wetlands of International Importance

1. Wetlands of international importance shall be represented by natural and artificial water basins, including sea water areas serving as natural habitat for typical flora and fauna especially for waterfowl.
2. Wetlands of international importance shall be incorporated into state natural preserves, state national natural parks, state natural reserves and other types of specially protected natural territories.

Article 68. Peculiarities of Protecting and Using Wetlands of International Importance

1. Inhibited and ordered regimes or regulated mode of economic activities ensuring protection and rehabilitation of mainly habitats of waterfowl shall be established for wetlands of international importance.
2. Peculiarities of protecting and using each such wetland of international importance shall be determined by individual provision on such wetland approved in compliance with existing international agreements on this issue.

CHAPTER 19. SEGMENTS OF SUBSOIL OF SPECIAL ECOLOGICAL, SCIENTIFIC, CULTURAL AND OTHER VALUE

Article 69. Concept of Subsoil Segments of Special Ecological, Scientific, Cultural and Other Value

1. Subsoil segments of special ecological, scientific, cultural and other value shall be included in specially protected natural territories having legal status of special protection or regulated mode of economic activities designed for conserving typical, unique and rare geological, geomorphological and hydrogeological objects listed in the State natural reserve fund.
2. To subsoil segments representing special ecological, scientific, cultural and other value shall be referred:
 - geological objects, including natural and artificial exposures representing bearing or typical tectonic structures, rare rocks and minerals, meteorites, retained fossils of fauna and flora;
 - geomorphological objects, including benches, flood plains, caves, gorges, canyons, waterfalls and other forms of relief clearly showing the process of relief formation and, therefore, having specific value for tourism and recreation;
 - hydrogeological objects, including ground waters and outcrops of such waters distinguished by unique and rare properties;
 - segments of subsoil with cliff drawings, ancient workings and other objects showing use of subsoil and having historical, archaeological and ethnographic value.
3. Subsoil segments of special ecological, scientific, cultural and other value shall be referred to the categories of specially protected natural territories of local and Republican importance.

Article 70. Peculiarities of Protecting and Using Subsoil Segments of Special Ecological, Scientific, Cultural and Other Value

1. Any activity threatening conservation of geological, geomorphological and hydrogeological objects listed in the State natural reserve fund and existing in subsoil segments of special ecological, scientific, cultural and other value shall be prohibited.

2. Peculiarities of protecting and using subsoil segments of special ecological, scientific, cultural and other value shall be determined by individual provision on each such specially protected natural territory.

CHAPTER 20. STATE REGISTRATION AND STATE CADASTRE OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 71. State Registration of Specially Protected Natural Territories

1. State registration of specially protected natural territories shall include collecting data on the status of such territories, their geographical location and boundaries, and also information on zoning, their protection status and use of such territories, on quantity and quality changes of the objects existing on such territories and listed in the State natural reserve fund.
2. State registration of specially protected natural territories shall be conducted by nature conservation institutions and executive bodies managing such territories by means of using uniform formats and guidelines for recording and completing such documentation.

Article 72. State Cadastre of Specially Protected Natural Territories

1. State cadastre of specially protected natural territories shall be an official document containing regularly updated information on such territories. Information contained in the state cadastre of specially protected natural territories shall be used for:
 - assessing and forecasting position of specially protected natural territories;
 - drafting schemes for developing and siting specially protected natural territories;
 - exercising state control and resolving disputes related to specially protected natural territories.
2. State cadastre of specially protected natural territories shall be maintained under uniform rules by using unified formats for data recording and keeping and in compliance with the principles of comparability with state cadastres of natural resources. Materials of the state cadastre of specially protected natural territories shall be subject to publishing.

CHAPTER 21. FINANCING AND ECONOMIC ENCOURAGEMENT OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 73. Sources for Financing Specially Protected Natural Territories

Specially protected natural territories shall be financed from:

- resources of the Republican budget ;
- resources of local budgets;
- resources of environmental protection funds;
- resources of specially protected natural territories with the status of legal entities;
- voluntary contributions and donations from legal and physical persons;
- other sources of financing not prohibited under the legislation.

Article 74. Utilization of the Republican Budget Funds for Specially Protected Natural Territories

Funds of the Republican budget shall be used for financing the following activities:

- elaboration of programs for developing the network of specially protected natural territories, and for justifying creation of such territories of Republican importance;
- recovery of losses incurred to the landowner or user of land as a result of withdrawing land plots while facilitating specially protected natural territories of Republican importance;
- keeping state records of specially protected natural territories of Republican importance;
- keeping state cadastre of specially protected natural territories of Republican importance;
- construction of facilities designed for administrative and economic, recreational and tourist purposes;
- conservation and rehabilitation of the State natural reserve fund, scientific, cultural and enlightening, and also educational activities performed on specially protected natural territories of Republican importance.

Article 75. Utilization of the Local Budget Funds for Specially Protected Natural Territories

Funds of the local budget shall be used for financing the following activities:

- development of the network of specially protected natural territories and justification of creating such territories of local importance;
- recovery of losses incurred to the landowner or user of land as a result of withdrawing land plots while facilitating specially protected natural territories of local importance;
- keeping state records of specially protected natural territories of local importance;
- maintenance and setting up specially protected natural territories of local importance; conservation and rehabilitation of the State natural reserve fund, implementation of scientific, cultural and enlightening, and educational activities on such territories.

Article 76. Utilization of Facilities from Environmental Protection Funds for Specially Protected Natural Territories

Facilities of environmental protection funds shall be used for the purposes of specially protected natural territories in accordance with the provisions governing such funds.

Article 77. Paid Use of Specially Protected Natural Territories

1. Use of specially protected natural territories by legal entities and physical persons for scientific, cultural and enlightening, educational, tourist, recreational and limited economic purposes shall be made on a paid basis.
2. It shall be allowed to provide legal and physical persons with buildings and facilities on specially protected natural territories for carrying out scientific, cultural and enlightening, educational, tourist and recreational activities in accordance with the established procedure and on a paid basis

Article 78. Resources of Specially Protected Natural Territories

1. Specially protected natural territories enjoying the status of legal persons may have their own funds raised on the basis of:

- penalties imposed on violators so as to recover the damage incurred by such violators to the State as a result of breaching the legislation on specially protected natural territories;
 - proceeds from sale of confiscated transport and tools designed for illegal use of the State natural reserve fund, and also from sale of illegally obtained produce;
 - charges paid for utilizing specially protected natural territories like for entry (entrance by car), stay and also for services rendered to legal and physical persons;
 - proceeds earned from granting permits for using symbols of specially protected natural territories;
 - voluntary contributions and donations from legal and physical persons;
 - funds from other sources not prohibited under the legislation.
2. The procedure of raising and utilizing resources of specially protected natural territories enjoying the status of legal persons shall be determined by the Government of the Republic of Kazakhstan.
 3. Executive bodies managing such specially protected natural territories and not having the status of nature conservation institution may in accordance with the set forth procedure establish funds of specially protected natural territories.
 4. It shall be forbidden to use special resources and funds of specially protected natural territories for purposes not related to conservation and development of such territories.

Article 79. Economic Encouragement of Specially Protected Natural Territories

In order to provide economic incentives to specially protected natural territories it shall be allowed to exempt them from making payments for using natural resources or under the effective legislation reduce the rate of taxes, charges, and special payments for nature use.

CHAPTER 22. CONTROL IN THE FIELD OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 80. Objectives and Types of Control in the Field of Specially Protected Natural Territories

1. Control in the field of specially protected natural territories shall include observation over the state of territories, checking on performance of measures related to conserving and rehabilitating the State natural reserve fund, and also compliance with the effective legislation.
2. In the field of specially protected natural territories state and public control shall be carried out in the Republic of Kazakhstan.

Article 81. State Control in the Field of Specially Protected Natural Territories

1. State control in the field of specially protected natural territories shall be carried out by:
 - authorized agencies in the field of environmental protection, nature use and specially protected natural territories;
 - local representative and executive agencies.
2. In accordance with the legislation of the Republic of Kazakhstan on environmental protection officials exercising state control in the field of specially protected natural territories shall enjoy the rights of state inspectors in the field of environmental protection.

Article 82. Public Control in the Field of Specially Protected Natural Territories

1. Public control in the field of specially protected natural territories shall be carried out by public associations at their own initiative, under agreements with the nature conservation institutions and specially authorized agencies exercising state control.
2. The procedure of carrying out public control shall be determined by public associations in accordance with charters of such associations and upon coordination with nature conservation institutions and specifically authorized agencies exercising state control.

Article 83. Protective Measures with Respect to Individuals Exercising State Control in the Field of Specially Protected Natural Territories

1. Individuals involved in carrying out state control in the field of specially protected natural territories shall be liable to insurance and shall have the right to indemnification for damage in a case of death or injury at executing official duties.
2. Individuals involved in carrying out control in the field of specially protected natural territories shall have the right to keep, carry and use special means and firearms in accordance with the established order.

CHAPTER 23. DISPUTE SETTLEMENT AND LIABILITY FOR INFRINGEMENT OF LEGISLATION ON SPECIALLY PROTECTED NATURAL TERRITORIES

Article 84. Settlement of Disputes in the Field of Specially Protected Natural Territories

Disputes in the field of specially protected natural territories shall be settled in accordance with the procedure established under the legislation of the Republic of Kazakhstan.

Article 85. Liability for Infringement of Legislation on Specially Protected Natural Territories

Liability for infringement of legislation on specially protected natural territories shall be established in accordance with the laws of the Republic of Kazakhstan.

Article 86. Indemnification of Damage Incurred as a Result of Breaching Legislation on Specially Protected Natural Territories

1. Organizations and physical persons having caused damage to specially protected natural territories, and also to property of nature conservation institutions as a result of breaching legislation on specially protected natural territories shall be obligated to indemnify such damage in full.
2. Indemnification of damages caused as a result of breaching the legislation on specially protected natural territories shall be made voluntarily or by award of damages in accordance with the duly approved rates and methods used for calculating such

damages, in the case of lack of such methods calculation shall be based on actual costs for restoring the State natural reserve fund while taking into account the losses caused.

CHAPTER 24. INTERNATIONAL COOPERATION IN THE FIELD OF SPECIALLY PROTECTED NATURAL TERRITORIES

Article 87. International Cooperation in the Field of Specially Protected Natural Territories

1. International cooperation in the field of specially protected natural territories shall be carried out in accordance with the legislation of the Republic of Kazakhstan and on the basis of generally accepted standards of international law. Executive agencies managing specially protected natural territories, nature conservation institutions and public associations may keep international relations and may in accordance with the established order cooperate with the international organizations on the issues of nature conservation and environmental protection.
2. Pursuant to international treaties and agreements specially protected natural territories of the Republic of Kazakhstan may be incorporated into the category of natural reserves of international importance.

Article 88. International Agreements of the Republic of Kazakhstan in the Field of Specially Protected Natural Territories

In case the standards set forth under international treaties, ratified by the Republic of Kazakhstan, differ from such standards stipulated under the legislation of the Republic of Kazakhstan standards of the international agreements shall be applied.

President of the Republic of Kazakhstan N. Nazarbaev

Document 2.) Decree of the Council of People's Commissars of the Russian Federal and Socialist Soviet Republic on the boundaries of Naruzum State Nature Reserve of national significance, No. 826, July 30, 1931

Translation

This document is not subject for mandatory publishing

Decree # 826

of People's Commissars Council of Russian Federal and Socialist Soviet Republic
(RSFSR)

As of July 30, 1931, Moscow, Kremlin

Concerning boundaries of nature reserves (zapovednik) with national status

According to the Resolution of the Russian Central Executive Committee and People's Commissars Council from June 20th, 1930, #36 page 357 "Concerning development of richness of nature in the RSFSR", the People's Commissars Council declares the following:

Extraction

B. On Naurzum State Nature Reserve

5. To confirm the boundaries of state nature reserve in Naurzum district of Kazakskaya Autonomic Soviet Socialist Republic (ASSR) with a total area of 250 thousand ha, consisting out of 5 clusters which exact boundaries will be confirmed by Narkompross of Soviet People's Commissar of Kazakaskaia ASSR.

Deputy Chairmen of

People's Commissars Council of RSFSR T. Ryskulov

Manager of People's Commissars Council

and Economy Council of RSFSR I. Gerasimov

Document 3.) Statute of Naurzum State Nature Reserve (approved by the Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Agriculture of the RK, No. 17, July 2nd 1998)

Approved by the Ministry of ecology and nature resources of the Republic of Kazakhstan, as of June 26, 1998

Approved by the Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Agriculture of the Republic of Kazakhstan
July 02nd, 1998 #17
Signed by Mr. Kosunov

Translation

GENERAL Regulations

1. Naurzum state nature reserve – is specially protected territory with republic status of nature protection entity, which has nature reserve protection regime. It founded to conserve in natural condition typical, rare and unique nature complexes including their all components.
2. Naurzum state nature reserve (further - nature reserve) aimed for use of its specially protected territories, state nature protection fund for nature protection, scientific and educational purposes based on the right for operational management of transferred state property.
3. Reserve was established by the Regulation of the Peoples Commissars Council of Kazakh SSR, as of 31.07.1931 #973 at the area of 87.71 thousand ha.
4. Performing its activity, reserve management follow provisions of Constitution, laws of the Republic of Kazakhstan, Parliament Resolutions, Acts of the President, and the Government of the Republic of Kazakhstan, as well as normative acts of central executive body of the Republic of Kazakhstan – Forestry, Fishing and Hunting Committee of the Ministry of Agriculture, which manages nature reserve; and typical regulation on state nature reserves and the present regulation.
5. Legal address of reserve: 459730, Kostanay Oblast, Naurzum Rayon, Naurzum village.

1. MAIN GOALS AND FUNCTIONS

6. Main goals of reserve are conservation and rehabilitation of natural ecosystem at protected and neighboring territories, support of ecology balance in the region, determination of laws for natural development of nature complexes and their components, development of scientific basis for nature protection and rational nature use, environmental education.
7. Reserve is entitled to perform the following functions: conservation of ecosystems' unity, as well as their complexes; protection of the territory, including aquatic reserve's territory and protected zone in order to provide determined regime, biodiversity conservation;
Carry out scientific research, development and introduction of scientific methods on nature complexes conservation;
Carry out ecology monitoring within the frames of unified state system of environment monitoring;
Arrange ecology education, conduct study tours;
Participation in state environmental expertise of the projects and schemes on location of businesses and other objects, as well as development of rational nature use regime in the representative region;

Assistance in preparation of the scientific staff and specialists in the area of environment protection.

2. RIGHTS

8. Reserve is legal entity, financed through state budget. It has stamp with state coat of arms of the Republic of Kazakhstan and own title at the state language; opens accounts, including ones in hard currency at the banks of the Republic of Kazakhstan.
9. Lands, mineral resources and aquatic areas with all vegetation and animal resources, historical and cultural objects, located at reserve's territory, are state property of the Republic of Kazakhstan and provided to reserve on the right of permanent land use. Withdrawal of reserve's lands, water, forest and mineral resources, as well as activities violating state property right on reserve's nature resources are prohibited.
10. Reserve's lands, mineral, water and nature resources as reserve's objects are withdrawn from business exploitation and transferred to the category "Lands of specially protected nature territories". Reserve's lands are the lands of nature protection status and should not be used for other purposes, personal or public needs, or transferred for renting. Land plots at reserve's boundaries, as well as buildings located at their territory should not be privatized.
11. Reserve, as specially protected territory, is considered during development of plans and programs on economy and social development of the Republic of Kazakhstan, as well as land management schemes, rayon planning, complex schemes for nature protection. These project documents have to be mandatory approved with authorized body – Forestry, Fishing and Hunting Committee of the Ministry of Agriculture of the Republic of Kazakhstan (further - Committee).
12. Standard passport is made for reserve and registered at the central executive body on environment protection – the Ministry of ecology and nature resources.
13. Reserve has a right to have own symbolism (flags, pennants, emblems and other), which should contain full or official abbreviated title. Indicated symbolism is confirmed and its usage determined by the authorized body – Committee. Reserve has exclusive right for use of its symbolism and have right to issue paid permissions for its use to legal entities and individuals

3. RESERVE MANAGEMENT

14. Reserve management is conducted by authorized body – Forestry, Fishing and Hunting Committee.
15. The head of reserve is director. He is appointed by Committee. Director manages reserve and bears full responsibility for its activity.
16. Director, deputy director, chief accountant and the head of security service are the official personnel of Committee.

4. NATURE PROTECTION REGIME

17. Reserve's regime aimed on support of natural conditions and unity of nature complexes and objects of specially protected territory.
Any activity, contradicting to reserve's goals and function are prohibited at reserve territory, including the following:
Building of constructions, roads of common use, pipelines, electricity transmission lines and other facilities, excluding those necessary to support reserve's activity;
State geology research, minerals prospecting and development, damage of soil surface and minerals exists, baring of rocks;

Use surface and underground waters to meet water needs of agricultural, industry, hydro-energy sectors, water transport and other business needs, as well as other activities influencing hydrological regime of lands;

Felling of forest with main usage status, soft resin laying in, secondary materials and arboreal juices, location of apiaries and other collateral forest use. Use of forest for sanitary purposes and other forest usage;

Use of vegetation for business purposes, including hay making and pasturing;

Industry, sport and amateur hunting, fishing and other use of animal resources;

Acclimatization of exotic plant and animal species;

Use of any chemical, biological and physical influences on nature complexes and their components.

Transit run-through of cattle; presence, driving or walking of unauthorized individuals and transport without special permission outside roads and water ways with common use status;

Collecting of zoological, botany, mineral and other collections and carry out of scientific research with withdrawal from nature environment animals and plants, excluding those envisaged in subject matters and plans of scientific research works at reserves and without special permission;

Fly through of planes and helicopters lower than 2000 meters over the land and water areas without approval from reserve or Committee;

Other activity, directly or indirectly violating conditions of nature complexes and objects, as well as connected to the performance of reserve's goals.

18. At reserve territory, upon Committee approval execution of the following measures and activities are allowed:

Ensure of sanitary and fire preventing securities for nature complexes and objects;

Rehabilitation, as well as prevention of changes in nature complexes and components as a result of anthropogenic influence;

Carry out of scientific research, including ecology monitoring;

Carry out ecology educational work, creation and facilitation of ecology routes.

19. Game shooting (catching) of wild animals and plant collecting for scientific purposes in accordance with themes of scientific research works at the territory of reserve is allowed following determined procedure only upon approval of Committee.

Permission for game shooting (catching) of wild animals, collecting plants, listed in the Red Book of the Republic of Kazakhstan, for scientific purposes, are issued in accordance with procedure, determined by nature protection legislation.

20. Stay at reserve's territory of individuals rather than staff members is allowed only with presence of permission of the Committee or presence of reserve's management.

21. Land plots for personal business use of reserve workers are allotted by local executive bodies among territories located outside of reserve or within the limits of its protective zones.

Location of such plots marked at scheme map of reserve's protective zone.

22. Local executive bodies, situated at the area of reserve location approve nature protection regime of protective zone and regulation concerning it.

5. USE OF RESERVE FOR CULTURAL AND EDUCATIONAL, LEARNING AND TOURISM PURPOSES

- 23. Cultural and educational activities are carried out in reserve by providing scientific and ecology tours, using specially established ecology passes and routes and following reserve regime requirements; as well as by means of study-promotional, museum, exhibition and other works on environment and reserve business.**

24. Use of reserve for educational purposes is carried out upon approval of Committee and providing university and college students' internships with relevant major and by endorsement of agreement with reserve administration.

Internship is carried out under supervision of relevant reserve personnel, following all requirements of reserve regime.

25. Scientific educational tourism is allowed in reserve. It has to meet requirement on use of equipped tourism passes and transfer of cultural consumer and other tourism services outside of reserve.
26. To conduct efficient educational tours, scientific educational tourism and attract necessary material and financial means, reserve upon approval with Committee can endorse relevant agreements with subcontractors.

6. RESERVE SECURITY CARRY OUT

27. Special state service, acting in accordance with typical and the present regulations provides reserve security.

Employees of indicated service are included in state reserve staff

28. Reserve's director is chief state inspector on this reserve's security. Director deputies are deputies of chief state inspector on reserve's territory protection. There are the following staff members: head of security service, security engineer, chief inspectors, and inspectors.
29. Committee determines right of inspector on security of reserve.
30. Public inspection, founded in determined procedure, can be involved into reserve territory security.
31. State inspector on reserve protection are granted with the following rights:
 - to check ID and permission on stay at reserve territory from individuals, presented at reserve's territory;
 - to stop activities, contradicting to the environment protection legislation, conducted by individuals and officials at reserve territory and its protective zone.
 - to detain individuals, violated the legislation of the Republic of Kazakhstan on specially protected territories, on reserve territory and its protective zone and to deliver detained offenders to the law protective bodies.
 - to conduct examination of offenders' personal belongings and means of transportation.
 - to confiscate from offenders products and means of illegal nature use, transportation as well as relevant documents;
 - to produce minutes on violation of reserve's nature protection regime and require relative written explanation from individuals and officials, who performed these violations.
 - to visit without limits any objects, located at reserve and its protective territories for checking of requirements of legislation on specially protected territories of the Republic of Kazakhstan.

State inspector exercises all rights of officials of state forestry security and other specially authorized bodies in the area of environment protection.

32. State inspector is allowed to carry official weapon while performing his official services. Procedure for acquiring, storage and use of official weapon is regulated by the existing legislation.
33. State chief inspector and his deputies in addition to the general rights of state inspectors, listed at the present regulations, within the limits of reserve and its protective zone territories are granted the following rights:
 - to ban business an any other activity, contradicting to regime of reserve and its protective zone.
 - to impose administrative penalties for violation of specially protected territories legislation of the Republic of Kazakhstan
 - to submit law protective bodies with materials on violation of specially protected territories legislation of the Republic of Kazakhstan and suits to legal entities and individuals on compensation of damage, performed to nature complexes and reserve's objects, its protective zone; as well as make offenders to answer in accordance with criminal liabilities.

34. Workers of state nature reserve's security service are provided with uniform, unified ID, means of communication, vehicles, weapons and special equipment.
35. State inspectors are provided with accommodation (cordons) for the period of their work in reserve.
36. State inspectors have to be mandatory insured in accordance with the legislation of the Republic of Kazakhstan.
37. In case of death of state inspector or individual who was granted the rights of inspector on state reserve territory protection, which occurred during performance of his official liabilities, his family are provided with single payment (compensation for bread-winner loss) as well as pension in accordance with existing legislation.

7. CONDUCTING OF SCIENTIFIC ACTIVITY

38. Scientific activities in reserve are aimed on inventory, study of nature complexes and objects of state nature protective fund, as well as nature carry out of environment processes in order to develop scientifically based measures on their rehabilitation; long term monitoring of nature processes dynamics in order to evaluate, predict of ecology situation and establish data base; develop scientific basis for reserve business, conservation and rehabilitation of biological diversity of vegetation and animals, nature ecology balance, rational nature use.
39. Scientific research is performed in reserve by means of conducting all year round observations, carried out by scientific department, which is scientific methodology ecology center in the reserve region.
40. Reserve's scientific department, executing scientific research in accordance with Rules on carry out of scientific research at reserves of the Republic of Kazakhstan, approved by Committee, in accordance with determined procedure, are entitled with status of scientific organization, and all employees are granted with all rights relevant to the scientific workers.

Salary calculation for workers of indicated scientific subdivisions are conducted in accordance with Regulation on remuneration in scientific entities, developed by the Ministry of Science – of the Academy of science of the Republic of Kazakhstan

41. Establishment and direct management of scientific research, conducted at state nature reserve, are executed by the leader of relevant scientific subdivision.
42. Scientific Council is established in reserve. Committee approves regulation concerning Scientific Council. In addition to reserve employees, the Scientific Council can consist of eminent scientists from relevant scientific areas and specialists, representatives of scientific organizations and public nature protective unions.
43. Reserve can conduct coordination and carry out scientific research in accordance with its profile at the territories of other specially protected nature territories, that do not have status of nature protection entities (zakaznik, nature monuments and others), located in the region of reserve's activity.
44. Scientific research at reserve can be conducted by organizations of the Ministry of Science – Academy of science of the Republic of Kazakhstan, other scientific organizations, universities in accordance with agreements and following common with reserve programs, approved by Committee.
45. Scientific funds, data bases, scientific collections, archives of scientific papers of reserve's employees and scientists, conducted their works based on materials gathered in reserve are keeping and storing in reserve.
46. Reserve is granted with right to publish scientific papers, and other materials on reserve business.

8. RESERVE'S FINANCING AND ECONOMY INCENTIVES

47. Reserve's financing is provided from the following sources: funds of republic budget, means from the funds of environment protection; special funds of reserve; voluntary

- membership fees and donations from the legal entities and individuals; other sources of financing that are not prohibited by legislation.
48. Reserve as nature protection entity, has a right for special funds, accumulated from financial means received from offenders as reimbursement for damage and violation of the legislation on specially protected nature territories;
Finances, received from sale of confiscated vehicles, means of illegal use of state nature reserve fund, illegally obtained products;
Fees for use of reserve's territory and services, provided to legal entities and individuals within the limits, allowed by the present and typical regulations;
Funds, received from issuing of permissions for reserve's symbolism usage;
Voluntarily membership fees and donations from legal entities and individuals;
Funds from other sources not prohibited by the legislation.
Special financial means of reserve are accumulated and spent in accordance with procedure, mutually approved by financial and authorized bodies.
It is prohibited to spend special financial means for purposes other than those linked to reserve's protection and development.
49. Use of reserve's territory by legal entities and individuals for scientific, cultural educational, study, and tourism purposes are conducted on paid basis.
Also, legal entities and individuals, following determined procedure are allowed to use on paid basis reserve's buildings and constructions to conduct scientific, cultural educational, study and tourism activities.
50. In order to encourage economy activity, reserve is released from payments for land and nature resources usage. Tax rates and duties can be decreased in accordance with existing legislation.

10. TERMS OF WORK AND PAYMENT FOR WORK IN RESERVE

51. Amount of salary, additional payment, bonus and other types of appraisal for reserve's employees are determined in accordance with existing legislation.

52. Reserve's employees can be hired on contract basis.

53. Housing Fund of reserve can be included in accordance with determined procedure into official category and is not subject of privatization.

STATE CONTROL ON RESERVE'S ACTIVITY

54. State control on reserve's activity is conducted by:

state inspection on specially protected nature territories; Committee; specially authorized bodies, executing state control on environment protection, as well as protection and use of nature resources;

local representative and executive bodies.

12. RESPONSIBILITY FOR VIOLATION OF THE LEGISLATION ON SPECIALLY PROTECTED TERRITORIES

55. Organizations and individuals, harmed reserve and its property due to violation of the legislation on specially protected nature territories shall reimburse the damage to full extent in accordance with existing legislation.

Damage reimbursement is conducted voluntarily or in accordance with court order following determined and confirmed rates. In case rates are not determined, reimbursement has to be conducted considering actual expenses for rehabilitation of the state nature reserve fund in accordance.

13. REORGANIZATION AND LIQUIDATION

56. Reserve's reorganization and liquidation are conducted by authorized body - Committee or by court in accordance with existing legislation.

Document 4.) Resolution on the enlargement of the Naurzum Nature Reserve 19. October 2001 by the Kostanay Oblast Akimat

Translation

Akimat
Kostanay Oblast

Resolution

No. 145, 19. October 2001, City of Kostanay

On the transference of land on the territory of Naurzum Raion, Kostanay Oblast for the permanent land use by the “Naurzum State Nature Reserve”.

Referring to the material on the ordinance study project on the transfer of land to the Naurzum State Nature Reserve, the decision of the committee on land resources of Kostanay Oblast and the articles 10 and 27 of the law “About Land” of the Republic of Kazakhstan the Akimat of the Kostanay Oblast declares:

To assign to the “Naurzum State Nature Reserve” in the name of the Republic of Kazakhstan the permanent land use rights of 103 687 hectares, of which 778 are fields, 28 628 pasture land, 78 524 pasture land (4 099 pasture land derived out of sowing grassland), which is in total 100 136 hectares farm land and 3 551 hectares other land.

Akim Oblast SEAL

U. Shukeev

Document 5.) Resolution on the Ecological Corridor connecting the three parts of Naurzum Zapovednik, 8. January 2004 by the Naurzum Raion Akimat

Translation

Akimat
Naurzum Raion
Kostanai Oblast

Resolution

No. 1, 8. January 2004

On providing the land use rights for a territory of the Ulendinsk rural commune to organize a buffer zone (ecological corridor) to the administration of the „Naurzum State Nature Reserve“.

Based on the decision of the commission for land use with reference to the Point 1 in Article 17, out of article 123 of the land codex of the Republic of Kazakhstan and sub point 10 in point 1 out of the 31st article of the “Law on local state administration of the Republic of Kazakhstan” the Akimat of the Narzum Raion declares:

To assign to the “Naurzum State Nature Reserve” the land use rights of 19715 hectares, of which 19253 is pasture land with 5171 hectares sowing grassland, tree and shrub plantations 11 hectares, mires 206 hectares, aquatory 64 hectares, settlements 57 hectares, disturbed land 12 hectares, undefined area 206 hectares, roads 116 hectares, situated on the territory of Ulendinsk rural commune of the organisation of a buffer zone (ecological corridor).

Within the borders of this land the administration of the nature reserve has the right to control the security of the passage through the following territories: Forest district 29 hectares, road authority 64 hectares, company ESL 0,24 hectares, cemetery 0,7 hectares, farmland 11444 hectares.

Akim Raion SEAL

E. Xasenov

Document 6.) Decree of the Government of the Republic of Kazakhstan from 26th of January 2004; No. 79 to assign land for permanent use to the “Naurzum State Nature Reserve” of the Committee for Forestry and Hunting at the Ministry of Agriculture of the Republic of Kazakhstan by the Prime Minister of the Republic of Kazakhstan.

Translation

To protect the flora and fauna of the Naurzum State Nature Reserve, as a unique natural object in north Kazakhstan with national and international importance, as well as in correspondence to the **law** of the Republic of Kazakhstan from 15th July 1997 „On the protection of natural protected areas“ the Government of the Republic of Kazakhstan

DECLARES:

1. To expropriate agricultural land from the rural communes Karamendy and Naurzum in Kostanay Oblast with a total area of 4178 hectares, as well as 99509 hectares from the state land reserve of Naurzum rural commune and give it to the state institution "Naurzum State Nature Reserve“ under the Committee of forestry and hunting at the Ministry of Agriculture of the Republic of Kazakhstan (further – institution) for permanent land use according to the **annex**.
2. To transfer the land shown in the annex under point 1 from the rural communes and state land reserve to the territory of the state nature reserve.
3. The agency for land resources of the Republic of Kazakhstan together with the committee for forestry and hunting at the Ministry of Agriculture will arrange the necessary work to put the boundaries of the institution into nature.
4. The Akim of the Kostanai Oblast organizes the buffer zone around the land of the institution. In the buffer zone all actions which have negative effect on the territory and its ecosystems are forbidden.
5. This decree comes into effect at the day when signed.

Prime Minister
Republic of Kazakhstan

D. Axmetov

Document 7.) Decree of the Council of Ministers of Kazakh SSR on the transformation of the Korgalzhyn State Hunting Territory into Korgalzhyn State Nature Reserve, N 214, April 16, 1968

Translation

**Council of the Ministers of the Kazakh SSR
DECREE
from April 16, 1968, # 214
Alma-Ata, the House of the Government**

«On transformation of Kurgalzhyn State Hunting Territory into the Kurgalzhyn State Nature Reserve»

The Council of the Ministers of Kazakh SSR **decided:**

1. To take the administration of the territory under the auspices of the Council of the Ministers of Kazakh SSR, Tselinograd oblispolkom and the Ministry of Agriculture of Kazakh SSR and to transform the Kurgalzhyn State forestry and hunting to the Kurgalzhyn State Nature Reserve. The administration of the reserve under the auspices of the Council of the Ministers of Kazakh SSR will be responsible for the territory, within its changed borders and changed land use regulations.
2. Finances related to transformation of the Kurgalzhyn State Hunting Territory into the Kurgalzhyn State Nature Reserve, will be given. Payment for labor, salary funds and the budget is given to the administration of the reserve under the auspices of the Council of the Ministers of Kazakh SSR.
3. The established fishing enterprises on the territory for fishery and fish processing can be continued on the territory of the Kurgalzhyn Nature Reserve.
4. To the Main administration by the reserves and hunting under the auspices of the Council of the Ministers of Kazakh SSR:
 - To ranger the Kurgalzhyn Nature Reserve under the coordination of the Ministry of Fishing of Kazakh SSR;
 - To organize the staff of the Kurgalzhyn Nature Reservee under the coordination of the Ministry of Finance of Kazakh SSR.
5. To assign the Tselinograd oblispolkom: to hand in all materials on the allotment of the lands of the Kyrgalzhyn Reed Enterprise outside of the territory of the reserve.
6. To government plan of the Kazakh SSR and the Ministry of Finance of the Kazakh SSR will make necessary changes on public-economic plans and the budget of the Republic, caused by this decree.

Chairman of the Council of the Ministers of Kazakh SSR M.Beisebayev

Manager by the Affairs of Council of the Ministers of Kazakh SSR A.Tulinov

Document 8.) Decree of the Executive Committee of the Tselinograd Oblast Soviet of Workers' Deputies "On Establishment of the Boundaries and Regime of the Buffer Zone of Korgalzhyn State Nature Reserve", April 25, 1974

Translation

DECREE of Executive Committee of the Tselinograd oblast Soviet of Workers' Deputies

7/285
from April 25, 1974

«On Establishment of the Boundaries and regime of the buffer zone of Korgalzhyn State Nature Reserve »

In accordance with the decree of the Council of Ministers of Kazakh SSR from August 2, 1972 # 445 «About possibilities to improve nature reserves of the Kazakh SSR», the executive committee of the oblast council of deputies of workers decided:

1. During the years 1974-75 a 2 km buffer zone will be established round the Korgalzhyn State Nature Reserve and marked by signs.
2. In the buffer zone cutting and burning of the reed is prohibited as well as cutting down of shrubs and other plants, collecting of berries and mushrooms for any purpose, removing soil and working with explosives, dumping waste of any kind (industrial, agricultural and municipal), bringing out dung and industrial manure, camping and all other actions, which could cause a disturbance of the natural balance of the reserve.
3. In Krasnozhamentskiy, Kurgalzhyn district executive committees and directors of the state farm named after Kalinin, XXII Meeting of the CPSU and Amangeldy the following is valid:
 - to develop the use of pasture and hay-making lands, taking into account not to over use the vegetation and cut the hay in respect of the breeding season of the birds.;
 - to stop keeping uncontrolled amounts of private livestock;
 - to adopt methods to measure the improvement of the sanitary situation of the settlements and step-by-step remove the farms on the territory of the reserve.
4. To scientific workers of the Kurgalzhyn Nature Reserve can built cages to protect and study wild animals of the reserve and also organize demonstration sites, information tables and excursion routes.
5. The protection regime considered in this decree will be carried out by the responsible organs in their already established order.

Chairman of Executive Oblast Council of Worker's Deputies
A.Dzhulmukhamedov

Secretary of Executive Oblast Council of Worker's Deputies K.Polovitsyn

Document 9.) Decree of the Government of the Republic of Kazakhstan “On Assignment of Lands to Korgalzhyn State Nature Reserve”, No. 767, June 15, 1999

Translation

DECREE
of the Government of the Republic of Kazakhstan
from June 15, 1999
767

On Assignment of Lands to Korgalzhyn State Nature Reserve

With the aim to conserve valuable species of fauna and flora of the Korgalzhyn State Nature Reserve and according to the Decree of the President of the Republic of Kazakhstan having the force of a law, # 2717 from December 22, 19995 «On Land» (Journal of the Supreme Council of the Republic of Kazakhstan, 1995, # 24, article 159), the Government of the Republic of Kazakhstan

DECISION:

1. The Korgalzhyn State Nature Reserve will from now on have the power to use the land on an addition total territory of 15.192 ha as follows:
 - special land fund of Korgalzhyn district of Akmola oblast in area of 13.045 ha, including hay-making lands - 88 ha, pastures – 12.633 ha and other lands - 324 ha;
 - Amangeldy settlement district of Korgalzhyn district in Akmola Oblast in an area of 2.147 ha, including of pastures – 2.138 ha and other lands - 9 ha.
2. This decision has a power from the moment of signing.

Prime-Minister of the Republic of Kazakhstan
N.Balgimbayev

Document 10.) State Act AN # 2000329 issued by Korgalzhyn Region of Akmola Province of the Republic of Kazakhstan on tenure of 2 437 280 000 hectares within the boundaries according to the land use plan, No. 311, January 7, 1994

Translation

AN # 2000329
State Act

The state act is issued by the Korgalzhyn district administration of Akmola oblast of the Republic of Kazakhstan for the Korgalzhyn State Nature Reserve of the Ministry of Ministry of Natural Resources and Environment Protection of the Republic of Kazakhstan. The reserve is located in Korgalzhyn district and has a total 243.728 ha. Its territory is managed within the borders according to land-use plan.

The land is destined for constant use of the conservation of rare species of plants and animals and founded on the decree of the head of Korgalzhyn district administration from January 7, 1994, # 311.

This state act is compiled in two copies, one of them is given to the land-user, another one will be saved in Korgalzhyn district land committee.

The act is registered in the Registration Book of state acts on right to be an owner and a right to use of land on # 23.

Attachment: Land-use Plan, scale 1:100.000

Head of the Korgalzhyn district administration

S. Shalin

July 11, 1995

Document 11.) Statute of Korgalzhyn State Nature Reserve (approved by Order of the Committee of Forestry, Fishery, and Hunting of the Ministry of Natural Resources and Environmental Protection No. 109, April 3, 2000)

environment.

- 4) Provide environmental education and study tours.
- 5) Carry out cultural educational and tourism activities.
- 6) Participate in state environmental expertise of the projects and schemes for businesses and other objects location as well as development of regime for rational natural resources use in representative region.
- 7) Collaboration in scientific personnel education and specialist in the are of environment protection.

12. To implement its main goals and conduct its activities. The property has a right in accordance with determined procedure to do the following:

- 1) Within the limits of its authority to issue orders, which have mandatory status for execution within the limits of the protected territory.
 - 2) To inquire and obtain from state bodies information, necessary for functions implementation.
 - 3) To use governmental institutions, which are in possession of information on the property in form of operative management.
 - 4) Following determined procedure upon approval of the Committee to issue licenses for its territory used for scientific, educational, cultural and tourism purposes.
 - 5) To carry out activities on bringing to account of infringes of nature protection legislation.
 - 6) To have own symbolism (flags, pennant, logos and others) and a standard passport.
 - 7) To issue licenses for use of the property's symbolism by legal entities and individuals.
 - 8) To exercise other rights in accordance with the legislation of the republic of Kazakhstan.
13. The property's employees in accordance with determined by legislation procedure have a right to carry official weapon, uniform and standard ID.

3. The ownership of the Nature Reserve

14. The property has a right on operative management.
15. The owner of the property is the p Republic of Kazakhstan.
16. The property does not have a right to independently alienate or dispose of consolidated property.
17. The property carries out liabilities by means of possessed funds. In case of funds lack liability is transferred to the owner of the property.

4. Property's organization

18. The property is lead by director, appointed and dismissed by the Chairmen of Committee. Director of the property is the chief state inspector on protection of the Nature reserve..
19. Deputy director, chief accountant and the head of the ranger service are staff of the committee, appointed and dismissed by committee chairmen upon the suggestion of the property's director. Deputy Director and the head of security service are deputies of chief state inspector on protection at the property territory.
20. Director organizes and manage the work of the property and carry out personal responsibility for authorized to the property goals and functions implementation.
21. For these purposes the director does :
 - 1) introduce suggestions to the Committee concerning candidates appointed on the position of deputy director, the head of security service and chief accountant;
 - 2) determines liabilities and authorities of his deputy and Property structural subdivisions;
 - 3) according to the legislation employs and fires the personnel of the property
 - 4) according to the legislation encourages and imposes disciplinary penalties;
 - 5) endorse orders;
 - 6) represents the property in governmental bodies and other organizations;
 - 7) exercises other authorities in accordance with the legislation.

5. Property reorganization and liquidation

22. Property reorganization and liquidation is conducted in accordance with the legislation of the Republic of Kazakhstan.

Document 12.) Development program for nature conservation, research and tourism of Korgalzhyn State Nature Reserve for the years 2004–2006

Translation

**The Republic of Kazakhstan
Ministry of Agriculture
Committee of Forestry and Hunting
Public Institution «Korgalzhyn State Nature Reserve»**

Translation

Program of Developing

Public Institution “Korgalzhyn State Nature Reserve” in the period of 2004 -2006

Korgalzhyn 2003

I. Passport of the program

1. Program Title: Program of Developing Public Institution (PI) “Korgalzhyn State Nature Reserve” in the period of 2004 –2006.

2. Justification for development: Forestry and Hunting Committee's (FHC) Working Plan for 2003 approved by Order № 51 dated 29.12.2002, Letter of FHC № 25-1-1-8/6949 dated 18.10.2003; Strategy "Kazakhstan – 2030"; Indicative plan of socio-economic development of the Republic of Kazakhstan.

3. Main developer: PI “Korgalzhyn state nature reserve”, Forestry and Hunting Committee of the Ministry of Agriculture (MoA) of the Republic of Kazakhstan.

4. Purpose: Progressive development and sustainable operation of PI “Korgalzhyn state nature reserve” under present-day socio-economic setting.

5. Objectives:

Border optimization and reserve territory development;
Creation of material and technical basis for protection of territory;
Creation of material and technical basis for scientific research and social and educational activities;
Environmental tourism development
Organization of measures for undertaking limited economic activity.

6. Key priorities:

Growth and conservation of biological and landscape diversity
Improvement of operation of state nature reserve protection services
Rehabilitation of scientific research activities
Ecological education to local population
Improvement of work on development of ecological tourism
Running limited economical activities.

7. Funding source: State budget, own funds (special account), investments.

8. Expected resulting effect of Program's implementation: Create the necessary prerequisites for the sustainable operation of PI “Korgalzhyn state nature reserve” that would meet international nature-conservation requirements.

II. INTRODUCTION

PI “Korgalzhyn state nature reserve” development program is the basis for operation of one of the largest protected natural territories in the Republic of Kazakhstan in present socio-economic conditions.

Reserve was reinstated by the Resolution # 214 of the Council of Ministers of Kazakh SSR in 16.04.1968 and was designed for conservation of Tengiz-Korgalzhyn natural complex, analysis of the course of natural processes in its territory and for propaganda of nature conservation.

From administrative stand point the reserve belongs to Korgalzhyn district of Akmola region; in the southwest it borders with Nurin district of Karaganda region. The area of nature reserve at present equals 258920 hectares, out of which 197919 hectares are under water. Starting from year 1974 following the Resolution #445 of the Council of Ministers of Kazakh SSR dated 02.08.1972, a 2 km conservation zone was fixed along the border of the nature reserve.

The nature reserve falls directly under jurisdiction of the Forestry and Hunting Committee of the MoA of the Republic of Kazakhstan; by its legal status the nature reserve is a national nature-conservation scientific research and environmental education institution. The reserve's activity is financed by republican budget, own funds and attracted funds raised from various sources.

Extensive wetlands located in the reserve enjoy international recognition. In 1974 the reserve entered Ramsar network, in 2000 it was incorporated in the world network "Living Lakes", in 2002 it was proposed for nomination for World Natural Heritage of UNESCO.

In 2004, under the UN Development Program, supported by the Ministry of Environmental Protection of the Republic of Kazakhstan, a Project of "Complex conservation of priority and globally significant wetlands as habitats of migrating birds" will be launched in the territory of the reserve. The Project was supported by Global Ecological Fund.

A lot of work will be carried out under the mentioned project, which will strengthen the reserve and will demonstrate possibilities for resolving various issues affecting the resources of wetlands' biological diversity.

The current Program was developed with account of present social-economic conditions. It was based on the laws of the Republic of Kazakhstan "On protected natural territories" and "On protection and use of fauna", "National strategy of conserving biological diversity" as well as on other documents regulating operation of Protected Natural Territories in Kazakhstan, i.e. "Regulations on public institution "Korgalzhyn state nature reserve" (#42, dated 21.03.2003), "Procedures of organizing and implementing scientific research in national nature reserves and national natural parks of the Republic of Kazakhstan" (1998, Astana) and "Regulations on scientific and educational work and ecological tourism in Korgalzhyn state nature reserve (#130, dated 07.04.2000).

The estimated period of program implementation is 3 years, (2004-2006).

The program outlines key directions of development of Korgalzhyn nature reserve. Successful implementation of the program will allow the reserve to operate and meet the objectives set forth for it.

The current Program was developed with the contribution from the Director of the Nature Reserve, M. Aitzhanov; Deputy Director, B. Rybakov; former Deputy Director on Science, T. Sidorova; Specialist on Financial and Organizational Activity, N. Luft; Head of the Unit of Financial and Organizational Activity, A. Kojabekov; Head of Ecotourism Unit, S. Balmagambetova and State Inspector of Ecotourism Unit, A. Baybakisheva.

III. Goals, objectives and criteria for development program

Goals: The reserve development program is fully devoted to one single goal: creation of conditions and assurance of progressive development and sustainable operation of the nature reserve under present social-economic conditions.

Objectives:

1. Optimization of borders and development of the nature reserve territory:
 - a) conservation zone enlargement
 - b) construction along the perimeter of borders of the territory within fixed boundaries
 - c) major repairs of dams with overflow part and fish-breeder
 - d) building new service facilities (cordons) and repair of the existing ones

- e) major repairs of the roof, reconstruction of heating system and repair of the administrative building
2. Optimization of protection services' operation:
 - - renewal and extension of material and technical basis for protection of the territories;
 - development and introduction of advanced protection methods with account of present social-economic situation
 - exchange of experience with other nature reserves.
 3. Improvement of reserve's scientific research activity:
 - creation of material and technical basis for doing scientific research
 - implementation of scientific research for studies of the natural complex
 - organization of a hydrological post at the lakes
 - monitoring of birds number
 - rebuilding creative cooperation with institutions and universities of the Republic
 - interaction with international organizations
 4. Improvement of social and educational activities
 - reconstruction of Nature museum
 - arrangement of a video library and a video room
 - trainings of guides for the Museum
 - organization of exhibitions and other alike activities
 - preparation and publishing of booklets, leaflets, etc. about the reserve's operation
 - cooperation with public organizations
 5. Development of ecological tourism:
 - cooperation with «Akmolaturist» JCS
 - ecological tourism infrastructure development
 - development and equipment of ecological routes
 - organization of horse tourism
 - training of guides for work on routes
 6. Organization of limited economical activity in assigned plots that do not have highly valuable ecological systems
 - organization of public cattle's grazing
 - mowing and sales of hay to local population
 - organization of amateur and sports fishing

Criteria:

Assurance of nature conservation regime in the territory of the nature reserve and its protection zone that would rule out the abuse of Kazakhstan's nature protection legislation

Preservation of nature complex with all of its biological and landscape diversity

Scientific publications and database of conservation objects

Systematic work of Nature Museum

Organized flow of tourists

Regular coverage of the reserve's activity in mass media

Local people assist the reserve in preservation of birds and animals and all its natural territory because of their awareness about the reserve's mission

IV. Analysis of the current status of the PI "Korgalzhyn State Nature Reserve"

1. Nature protection activity

1) Legal regime of protection by PI "Korgalzhyn state nature reserve"

Reserve area is 258.920 ha. According to the legal regime this territory includes the following zones and sub-zones:

a) prohibited area – 258920 ha

б) conservation zone- 9400 ha

в) sub zone of limited economical activity – 4000 ha.

The Reserve is organized on principles of primary use of land and secondary use of land without expropriation of land from main land users.

The prohibition regime is fixed in all the territory of the prohibited area.

The regulated regime of limited economic activity was fixed in the conservation area; in some parts of this area there are public roads (120 km).

2) Organization of preservation in the reserve

The protection service operates in the stationary and field regime.

Stationary protection includes standing cordons with around-the-clock duty: 4 cordons and post № 1. All 17 inspectors work there. At the same time all the reserve area is divided into blocks and beats which are assigned to inspectors. Inspectors are personally liable for observance of the conservation regime in the territory assigned to them.

The cordons and post №1 are located with account of the available viewing towers, which allows the visual control of the territory with the perimeter of over 200 km or approximately half of the conservation zone, practically until the main shore of the bitter-salted lake "Tengiz"

The field protection is represented by going around all the area by field groups according to schedule or as needed. As a rule the field groups include 4 state inspectors riding the UAZ automobiles.

At the same time it is notable that for more effective conservation at least 3 more cordons and 15-20 additional inspectors are required. With this combination of stationary and field protection it is possible to succeed in control and maintenance of conservation regime in all the territory of the reserve.

Material and technical base:

The protection service has:

3 automobiles UAZ -469

10 guns (TT)

telephone at cordon "Karazhar" and at post №1

radiostation – none

3 buildings of cordons and post №1.

Passive conservancy

System of passive conservancy in the reserve comprises 158 barriers marking prohibited and conservation zones, 22 signs of tourist routes, amateurish and sport fishing areas, 8 panels. Besides, Post№1 has an information panel for people entering the territory of reserve.

Panel for tourists includes general information about reserve, protection regulations, tourist's and recreational activity, fire safety and maps.

Another element of passive conservancy is represented by of 2 entrance barriers installed at the entrance points to the prohibited area of the reserve.

Active and field protection

This type of protection is provided by state inspectors of the reserve at cordons and by raid operational groups. Depending on operational situation and following the joint plan of work policemen, staff of the Public Prosecutor Office and Regional State Control Inspectorate can participate in raids.

This work is carried out following the RK President's Order of April 13, 2001, № 01-10/7 «On increasing effectiveness of controlling poaching and on taking measures required for detection of facts of poaching and other violations of environmental regulations by civil servants and especially by the heads of state bodies and on coverage of such facts in mass media".

The results of strengthening the nature-conservation measures allowed improvement of the overall situation with prevention of conservation regime violation.

Year 2001 – 11 cases of violation, amount of penalties – 6 290 tenge

Year 2002 – 20 cases, amount of penalties - 13990 tenge

Year 2003 – 8 cases, amount of penalty – 6688 tenge

The amount of penalties was collected in full.

3) Fire prevention

Territory of reserve represents the following ecosystems.

steppe and semi-deserts - 42914 ha

meadow and wetlands – 35926 ha.

saline land –55485 ha

aquatics –124595 ha.

Fresh water bodies of the reserve overgrown with reed along-shore, 120 km of public roads pass through the steppe and along the ponds in the conservation area. Besides, some separate parts of reserved area is available for hay stoking for staff of the reserve and people residing next to the conservation area, who traditionally stock the hay in these areas. Furthermore, the contiguous territories accommodate 5 hunting grounds.

In connection with it, the possibility of ignition of steppe fires is very high. The fire risk period lasts from April to November.

There were no fires in the territory of the reserve (prohibited zone) in the last few years.

First of all, it is explained by preventive work with population, heads of hunting grounds and land users (farmers, LLC and family farmers).

Moreover, during the fire risk period visual observation after ignition of steppe in the adjacent territories is strengthened. As fire approaches the conservation zone, it is controlled by the staff of reserve, which prevents spread of fire to the steppe area of the reserve. Only in year 2003, the staff of the reserve smothered 5 steppe fires on territories adjacent to the reserve.

To prevent fires in the territories along the prohibited zone ploughing is carried out.

All people coming to the reserve are instructed on a number of issues including fire safety. A State inspector necessarily accompanies groups of tourists. Cordons, post №1 and official cars are equipped with basic fire fighting devices.

State inspectors of reserve together with workers of district subdivision of Emergency Situations attend not only briefing studies but also practical training, which give certain positive results. At the same time, the reserve doesn't have any fire-prevention equipment and the budget allocates no funds for these purposes.

All actions are carried out by initiative, including ploughing of the territory along the border of the prohibited zone.

At the same time, implementation of fire-preventing actions and fire fighting requires certain investments and availability of fire-preventing equipment or dual-purpose equipment.

This need comes from the fact that despite warnings and agreements with land users the local people burn out the stubble, weeds, grass and reed bushes on the swamps. Therefore, the threat of steppe fires on the area of reserve does not go down. Given this situation, for fighting fire and ploughing the territory we very much need a fire engine, caterpillar tractor ДТ-75, wheel tractor MT3-82, ploughs, disk cultivators, harrows and other fire-preventing equipment, namely spades, fire-crackers, fire shields, fire extinguishers (for cordons).

Work with law enforcement bodies.

The work with law enforcement bodies is built according to the approved plan of joint activities that provides for:

Operational actions, including joint raids.

Joint inspection of nature users, hunters and land users based in territories adjacent to the border of the nature reserve.

Joint work on holding training for state inspectors and staff of law enforcement bodies participating in raid groups.

There is a plan of joint work with the district subdivision of Emergency Situations for fire-preventing actions and fighting steppe fires.

Sanitary actions

Sanitary measures contribute to conservation of nature in its original status.

During last years, in light of big number of peoples being on territory of the reserve, we pay a lot of attention to sanitary issues.

To conserve the growth in the conservation area, detour-control roads, tourist routes and drives to ponds for amateur and sporting fishing were built.

The move of motor transport on the roads in the territory of the reserve is forbidden during rains and snow melting periods. It is achieved by rigid control by state inspectors and also by the corresponding prohibition signs and indicators.

Car parking plots and tourist recreational areas are equipped with metal garbage bins. Garbage and domestic wastes resulting from amateur fishing on the water bodies are collected by fishermen and disposed at the cordons.

Besides, state inspectors are responsible for cleanliness of the assigned territory.

Every citizen entering the reserve area is provided not only with entry permit but also with a booklet with rules of staying in the nature reserve.

By taking these measures we achieved cleanliness of the reserve territory, in which there is practically no garbage and wastes.

In respect of sanitary measures for control over fauna we need to mention the following: in the last 3 years we haven't observe any zoonotic infections in mammals' populations and any bird diseases on reserve territory.

The second control measure. To prevent wild animals from catching infections from domestic animals during summer grazing, the appropriate zoo veterinary control of all domestic animals is carried out and only after this control animals are allowed into grazing plots. Observance of all sanitary measures and rules in the territory of the reserve does not always depend exclusively on supplementary recreational load on the reserve's nature as a result of human factor.

Fresh waters bodies are flowing and located in the mouth the Nura River. Besides, water replenishment of fresh water reservoirs and bitter-salt Tengiz Lake comes not only from the Nura River, but also from Kulanutpes River, which during spring flooding is fed by rivers Kon, Jaman-Kon, Jaksi-Kon.

Settlement and factories are located along the course of these rivers. As a result, our water bodies appear to be a precipitation tank for all the wastewaters and therefore require constant sanitary control. Water pollution may cause different diseases of fauna in the area of reserve.

Therefore, we have to revive the practice of passportizing the following 8 lakes: Yesey, Sultankeldi, Kokay, Asaubalyk, Kizilkol, Karakol, Bozaral, Tengiz and analyzing water in the mouths of the rivers Kulanutpes, Kkulshim, Karachi. For that we need to enter into an agreement with the Republican Veterinary Station.

Besides, every year during the spring-summer period, a considerable part of wild animals migrates and leaves the territory of nature reserve. Outside the reserve they can be exposed to various diseases, which can end up in the territory of the reserve when wild animals come back to their permanent habitat. In this view we need to conclude agreements with sanitary epidemiological station for realization of control of epidemiological situation in the territory of nature reserve.

5) Biotechnical Actions

Biotechnical actions on reserve territory, from the position of their improvement because of presence of citizens, are not carried out. Special emphasis is laid on sustaining the environment for fauna in its natural state through rigid control over observance of the conservation regime in the territory of reserve.

Tourist route, limited economical activity is carried out in plots and places that do not have especially valuable ecosystems.

Anthropogenic pressure on the territory is minimal and doesn't affect flora and fauna: the factor of disturbing wild animals or birds is practically nil.

The impact of human factor in the prohibited zone is not allowed.

6) Analysis of rehabilitation of natural-reserve fund

On of the objects of the reserve fund is supporting dams: Kulshumskaya, Tabiyakskaya, Ablayskaya. Built in 1940-50-ies, their prior function was support of optimal hydrological regime of the system of existing fresh water ponds and acid Tengiz Lake.

As a result of their impact on the territory, which is nowadays occupied by the nature reserve, the existing unique flora and fauna was formed.

Given the fact that during decades the dams became so much integrated with the nature breach of one of them can upset hydrological regime in water bodies leading to adverse impact on the course of natural processes in territory of the reserve.

Therefore to preserve the natural reserve fund it is necessary to keep supporting dams operational.

Secondly, to prevent negative processes from occurring in the existing reserve territory, we need to bear in mind territories genetically adjacent to the conservation area, which are outside the reserve.

In this view, we need to extend the territory of reserve through creation of a buffer zone, without seizure of land from major land users. In this territory traditional economic activities should be pursued (cattle-breeding, agriculture, mowing).

This way we can eliminate partial processes in the main territory of the nature reserve (disturbance of wild life, application of chemicals).

2. Scientific-research activity

1.) Priority scientific researches

Priority directions of scientific researches in Korgalzhyn state nature reserve are determined by «The procedure of organizing and executing scientific research in State Nature reserve and State nature parks of the Republic of Kazakhstan» (Astana, 1998).

These directions are as follows:

Inventory of natural complexes and their components.

Formation of a data base of the status and dynamics of biocenosis and its components, populations of rare and endangered species, as well as reference and valuable species of plant and animals.

Monitoring of natural processes, incorporation of results in «The nature chronicle» for registration of all the changes taking place in nature complexes as a result of both direct and indirect anthropogenic pressure.

Development of scientifically justified proposals and recommendations on improvement of protection, rational use and possible rehabilitation of nature complexes, biological diversity, individual species and groups of organisms in the represented region.

In the context of above directions the following topics have been worked over during last years:

+ «Ecology and biology of waterfowl and long-legged birds of Korgalzhyn reserve in the view of anthropogenic transformation of environment» (executor M.N. Makimov).

+ «Ecology and the dynamics of number of the major fish species of lakes in Korgalzhyn reserve and development of recommendations for their reproduction» (executor A.V. Koshkin).

+ «Korgalzhyn reserve's growth and its dynamics» (executor T.V.Sidorova).

+ «Nature chronicles» (responsible executor O.I. Koshkina).

«The nature chronicles» of the reserve have been continuously kept since 1974. Starting from 1976 the Chronicles' structure follows recommendations outlined in a methodical manual of K.P. Philonov, Y.D. Nuhimovskaya «Nature chronicles in USSR reserves», M.; Science, 1985. The topic of "Nature chronicles" doesn't have state registration, the rest of the topics were approved according to set requirements.

2.) Prospective-thematic plan of scientific research activities

The prospective-thematic plan of scientific research in the reserve for the period till year 2010 was developed according to the letter of Committee of forestry and hunting № 25-1-1-9/6553 dated August 25, 2003.

The Plan envisages development of 11 topics combined into 4 sections:

Section 1. Discovery of biological diversity and other nature components of the reserve (inventory of nature objects).

Section 2. Study of individual species and groups of organisms, determination of how they are impacted by environment factors and development of recommendations for their conservation.

Section 3. Study of structure and regularities of the reserve's ecosystems functioning and development of recommendations for their protection.

Section 4. Monitoring of the processes taking place in the reserve's nature complex.

The prospective plan was submitted to the Committee of forestry и hunting of the Ministry of Agriculture of the RK for approval and reconciliation with the Ministry of Education and Science of the Republic of Kazakhstan.

3.) Analysis of a scientific department status

Following the decree of Forestry and Hunting Committee of the Ministry of Agriculture of the Republic of Kazakhstan №4221 dated March 21, 2003 the Department of Science, Information and Monitoring comprises 4 staff members: 1 unit – head of the department – the state inspector and 3 units – state inspectors of scientific department.

Specialization-wise the department has an ornithologist, an ichthyologist and a phenologist.

Programs of scientific-research activities were reconciled with the directorate of the reserve and supervisors of scientific topics; the programs were duly approved. The results of research in the form of hand-written reports are submitted to the scientific department for storage and incorporation into the annual book «The nature chronicles».

Since 1988 the department of science, information and monitoring has had no material and technical base for undertaking research activity. State inspectors of the department are forced to do this work at the cost of their wages.

The department has neither field equipment and labware nor transport assigned to the department.

The department has only 1 computer, library with the fund of 2000 copies of special scientific literature, the fund of manuscripts comprised of 146 units: reports on the work of the reserve, "The nature chronicles", reports on specific subjects.

In the last years the fund of scientific library is occasionally replenished only through donations. The fund of manuscripts is replenished regularly. Availability of a computer allows forming fund of manuscripts on disks.

4.) Scientific - technical Council

Holding sessions, scientific seminars and meetings, participation in scientific conferences, etc.

The nature reserve regularly holds meetings of Scientific - technical Council. The Council performs based on the approved Regulations and following the plans of work, which are approved in the beginning of the year. Chairman of the Council is the Director of reserve. The Council comprised by managers of reserve, heads of all departments, state inspectors of the department of science, information and monitoring, department of ecological education and tourism. All in all the Council has 14 members. At its sessions the Council mainly resolves internal issues. Employees of the department of science, information and monitoring actively participate in conferences, seminars and other events. Below please see the list of

conference and seminars held between 2000-2003 and attended by the staff of this department:

- Seminar «New categories and criteria of the IUCN Red Book and possibilities of their application at national and regional levels», Almaty, March 9-10, 2000.
- Meeting in the RK Ministry of Natural Resources and Environmental Protection «Presentation of the project «Complex preservation of priority, globally significant wetlands as habitats of migrating birds» held on May 30, 2000.
- IV conference «Living Lakes» Global Ecological Fund: «From confrontation to cooperation». Hannover, Germany, June 16-18, 2000.
- Republican conference - seminar «Development of ecological tourism in Kazakhstan», «National parks "Altynemel " и "Ili - Alatau", October 6-7, 2000.
- A seminar - «Managements of ecosystems and preservation of strategically important migration corridors for Siberian crane and other globally vulnerable migrating waterfowls in Asia», Kostanai, November 10, 2000.
- 6. Seminar «Global heritage in Kazakhstan», island "Film", Germany. May 28-30, 2001.
- 7. 6-th conference «Living Lakes» Global Ecological Fund: «Quality of water and traditional use of natural resources in lakeside territories». Ulan-Ude, Russia, July 30 - August, 3, 2001.
- 8. A seminar «Development of the uniform management plan for development of Korgalzhyn and Naurzum nature reserves», Korgalzhyn reserve, September 1-4, 2001.
- 9. Conference «Ecotourism - as the tool of sustainable development and protection of environment», Astana, September 2-4, 2002.
- 10. International seminar «Management and development of Naurzum and Korgalzhyn nature reserves within the framework of nomination of «Steppes and lakes of Northern Kazakhstan». Kostanai, December 13-15, 2002.
- 1. Republican scientific-practical seminar «The Role of Kazakhstan's nature reserves in preservation of a regional biological diversity», Alakolsky reserve, June 26-27, 2003.

5.) Publications of scientific research works

On the basis of the reserve over 300 scientific works (articles, theses, and monographs) were published by regular staff of the reserve and employees of other organizations in the past 45 years (starting from 1958). Publication of the results of research is ongoing.

The following articles were published in the period of 2000-2003:

- 2000 Koshkin A.V. "Review of status of population of geese in Korgalzhyn nature reserve (the Central Kazakhstan) - "Brand Goose"" – Bulletin of the Working Group of East Europe and Northern Asia on Geese, № 5, M; page 332-336.
- 2001 Sidorov T.V. "Korgalzhyn nature reserve – candidate for the World Natural Heritage" – Steppe Bulletin. Winter 2001, №9, Novosibirsk, page 16-17.
- 2001 Sidorov T.V. "On present status of flora and vegetation of Korgalzhyn state nature reserve". Geobotanical research in semiarid and arid regions: current status, problems and prospects. Almaty. Page 14-16.
- 2002 Koshkin A.V. "Results of fish marking in the lakes of Korgalzhyn state nature reserve" – The thematic collection of "Tethus" society, Almaty.

- 2002 Koshkin A.V., Koshkina O.I. "Swans of Korgalzhyn nature reserve" – "Casarka" - Bulletin of the Working Group of East Europe and Northern Asia on geese and swans, № 8, page 386-392.
- 2003 Sidorov T.V. "Cluster site of Korgalzhyn nature reserve – Management and development of Naurzum and Korgalzhyn state nature reserves within the framework of a UNESCO nomination «Steppes and lakes of Northern Kazakhstan»". Materials of seminar. Kostanai, page 21-23

Prepared for printing:

1. Koshkin A.V. "Information on Red Book species of Korgalzhyn nature reserve". For "Selevinia" journal.
2. Koshkin A.V. "New in ornitofauna of Korgalzhyn nature reserve". For «Russian ornithological magazine».
3. Koshkina O.I. "White-headed duck in Korgalzhyn nature reserve". For "Selevinia" journal.

6.) Work with other research organizations

The reserve is open to all scientific research institutes for undertaking research activities and for development of scientific subjects by universities. However for reasons beyond our control the links with scientific research institutes and universities were broken and are not yet restored. The reserve has no financial capacities to invite other organizations for development of topics provided by the long-term plans. For the same reason institutes and universities did not come up with this initiative either. Thus in the last years the reserve did not work with other organizations.

7.) Cooperation with the international organizations

Now the reserve cooperates with two international organizations NABU and GEF. NABU - German Nature Protection Union, international department. Cooperation started in 1996. At the initiative of this organization in year 2000 work on nomination of our nature reserve together with Naurzum nature reserve to the list of the UNESCO World Natural Heritage under the title of "Sary-Arka" was launched. This work is being finalized now.

GEF – Global Ecological Fund – is an international fund developing the program of «Living Lakes». The reserve joined this program in 2000. Under the umbrella of technology transfer a solar battery was installed at cordon "Nefterazvedka" with the support of GEF. The subsequent dismantling of power transmission lines located along lakes of reserve helps to prevent death of birds of prey and big water birds resulting from contact with such lines.

Both NABU and GEF do a lot of work on promotion of their activity. Thanks to the efforts of these two organizations the reserve gets widely known worldwide without incurring costs.

8.) Retraining courses and advanced training of specialist in the field of nature reserve work, environment protection and rational nature use.

Out of 34 employees of the nature reserve 7 have higher education, others have specialized secondary and secondary education.

Following the plan approved by the reserve's directorate the reserve delivers a "Workshop for a state environmental protection inspector". This workshop is held for upgrading the qualifications of inspectors working in the conservation service

department. It is usually attended by 14 to 17 participants. The workshop's program is designed for 12 hours of work.

During the last three last years employees of the nature reserve were invited and attended the following training workshops:

- "Development of the tourism in the territory of Korgalzhyn region", Korgalzhyn village, March 29-30, 2001.
- "Introduction to the work of Global Ecological Fund (GEF) for governmental and public structures and associations" Astana, October 31 - 1 November, 2001.
- "Development of project thinking" and "Project management "- training course, Karkaralinsk town, September 15-19, 2002.
- "Key Ornithological Territories in Kazakhstan", Almaty, March 26-27, 2003.
- "Basics of ecological tourism in the Republic of Kazakhstan", Almaty, 26-31 of May 2003.

9.) Keeping records of the populations of animals and plants

In accordance with requirements and recommendations of the Committee of Forestry and Hunting of the MoA RK the registration of the work held in the nature reserve is carried out by state inspectors of two departments: conservation service department and department of science, information and monitoring.

Winter registration of large mammals and spring stocktaking of migrant birds is implemented on annual basis. Stocktaking is conducted on land without using aviation though experience shows that aviation-based stocktaking in Korgalzhyn nature reserve provides more objective information. Before 1993 every year the nature reserve conducted three aviation-based stocktaking of animals and large groups of birds. At present this is no longer practiced.

Stocktaking work is considered to be labor-intensive and requires certain investments, which the nature reserve doesn't have. Because of this situation spring stocktaking of birds is conducted only at four observation posts of two Lakes: Esey and Sultan-Keldy. In these locations this work does not require additional spending on stocktaking staff. However, due to inadequate coverage of water bodies the data of such stocktaking does not provide the full picture of the number of migrating birds. Following the order of the Committee of Forestry and Hunting dated August 11, 2003 stocktaking of forestry fund was conducted in the nature reserve. The materials were submitted to respective bodies following the fixed deadlines.

3. Cultural and educational activity

Cultural and educational activity of the nature reserve is carried out on the basis of "Regulations on scientific-educational activity and ecological tourism in PI "Korgalzhyn state nature reserve", which was approved by the resolution of the Committee #130 dated April 17, 2000.

1.) Presence condition of the nature museum

The reserve's Museum of nature has existed since 1984; it occupies three exposition halls, which are located on two floors. The Museum has 13 colorful dioramas, 2 map schemes, bolted on wall and three portable stands reflecting the history of creation of the nature reserve and its activity. 270 effigies of animals and birds are exposed in the exhibition halls.

Every year the reserve gets approvals of the Committee of Forestry and Hunting for catching animals and birds for replenishment and renewal of the Museum's effigy

fund. Animals and birds are caught in the territory of hunting farms of Akmola region. Thus nature reservation regime is not infringed.

The museum halls are in poor condition close to emergency. The Museum's roof has leaked for 6 years, which causes high humidity in exhibition halls. For this reason the background canvases in all dioramas are damaged and effigies are not only damaged by skin eating beetles but also get molded.

Annual repairs of roof at the cost of limited funds and own efforts do not yield the desired results.

The Museum's exposition is not only severely damaged but also outdated for it was designed and developed in 1984.

Thereby, the Nature Museum of the nature reserve needs major repair of rooms, reconstruction and renewal of exposition.

Under the agreement the State Enterprise "Artistic fund" has already developed new exposition for the Museum with account of comments from the nature reserve and prepared cost estimates.

Despite poor condition and damaged exposition the Museum operates all the year round and is very popular both with local population and other visitors.

Pupils of Korgalzhyn region's schools represent the main category of the population with which the nature reserve's Museum works. In connection with increased population in Astana city, relative stabilization of life and development of ecological tourism in the Republic, the percent of adult visitors went substantially up. In 2000-2003 alongside with Kazakhstani people the Museum was attended by foreign people from Germany, America, Japan, Belgium, England, Russia, Switzerland, Holland, Denmark, Finland, Hungary.

The Attendance of Museum in recent years:

Year	Number of visitors
2000	1000
2001	1500
2002	2000
2003	

The visitors of the Museum are serviced on payment base. In this activity the nature reserve is guided by the following document: "Payment for services, rendered by state institutions - state nature reserves, physical and legal persons", approved by order of the Committee of Forestry and Hunting of the MoA RK # 97a of April 25, 2003. According to this document pre-school children are serviced for free, school children get 50 % discount, full-time students get 25% discount.

2.) The Objects of cultural and natural heritage

For three years the nature reserve has worked on including the entire territory of the nature reserve and its conservation zone in the list of the World Natural Heritage. The cluster territory (Korgalzhyn and Naurzum nature reserves) is being proposed to UNESCO under collective title of "Sary-Arka".

"Preliminary application" on including both nature reserves in the List of World Heritage was prepared in January 2001 and was sent to corresponding governmental bodies for submission to UNESCO Committee on natural heritage. On January 1, 2002 preparation of the file was completed and in February 2002 it was submitted to UNESCO Committee. In August 2002 international IUCN experts examined the territory of the nature reserve.

Right now work is conducted on the experts' comments.

3.) Actions conducted for cultural and educational purposes

In year 2003 a department of ecological education and tourism was established in Korgalzhyn nature reserve to organize and hold cultural-educational activities. There are 5 staff members in this department.

Ecological tourism is a new activity for the nature reserve, which is being developed now. All employees of the department are busy with organizing tourists' accompaniment and with servicing them. Cultural and educational activity is carried out by the staff of the department of science, information and monitoring. When needed the staff of other departments of the nature reserve are mobilized.

Lectures, discussions and consultations. This is one of the traditional forms of the awareness raising, which has not lost urgency today. State inspectors on call of duty conduct the conversations both with local population, and with nature reserve visitors. Conversations and consultations held by staff of the nature reserve are not considered their main work, and are not reflected in their time sheets and in annual reports. In this connection it is quite difficult to analyze the conducted work in this direction.

The thematic lectures and talks are conducted systematically and mainly cover school children. Quantitative factors are given in the below table. In 2000 with support of NABU lectures (German Union for Protection of Nature) were held in all schools of Korgalzhyn region. NABU covered transport expenditures. Normally the school children of regional center are covered by lectures.

Year	Number of lectures	Number of students
2000	37	850
2001	5	70
2002	18	270
2003	12	180

Publication of booklets, promotional materials, etc.

Booklet "Korgalzhyn state nature reserve" was published in 2002 in 2 variants and in 4 languages: Russian-Kazakh and English-German. Development of the model and replicated booklet was fully financed by JSC "Akmolaturist", which is our main partner in tourist activity.

THE EXHIBITIONS:

In 2000 nature reserve took part in International exhibition "Expo-2000", Hanover, Germany. Global Ecological Fund covered financial expenses on organization and service of exposition.

In 2001 nature reserve has organized the big contest - exhibition of artistic creative activity of local population under name "Harmony between human and nature". It was sponsored by NABU (German Union for Protection of Nature).

In 2002 nature reserve took part in oblast festival "Under united shanyrak (roof)", which was held in Kokshetau. The exhibition devoted to natural wealth of the nature reserve and its activity was organized at this festival.

In 2003 within the framework of "March of parks" an exhibition-contest "World of the nature" was organized.

4.) Work with mass-media

Work with mass media is one of the important directions in Korgalzhyn reserve's activity. Protected natural objects are national wealth and through mass media the wide public receives the information about the reserve's activity, problems, beauty of its territory and biological diversity.

Work with mass-media has two independent directions:

- a) Correspondent work of reserve's employees;
- b) Work with correspondents and journalists from mass media.

TV. Problems of reserve annually are covered on TV: 4-6 topics per year are covered on TV channels "KHABAR" and "Kazakhstan - 1".

Radio. Problems of the reserve are covered on radio as well: 1-2 topics per year. Plots were aired on the waves of "Radio - Kazakhstan" and "World".

Newspaper articles. The reserve actively works with local newspapers «Akmolinskazyz Pravda» and «Ecological bulletin». Employees of the department of science, information and monitoring organized a number of publications in republican newspapers.

Year	Number of the articles
2000	5
2001	15
2002	18
2003	7

In the last three years correspondents of all central newspapers visited the reserve and published materials on it. These newspapers accommodated information about the reserve, its problems, nature and activity.

PR - program (advertising activity). The reserve did not develop such a program. Nevertheless the reserve is widely known both in the Western Europe thanks to advertising actions of NABU and GEF («Living Lakes»), and in Kazakhstan thanks to TV and advertisements in newspapers, which are placed by OJSC "Akmolaturist ". Life shows that this work should be conducted professionally; in view of requirements of time and with special attention to getting people understand nature and idea of its preservation.

5.) Cultural - educational work

In 2002 "Flamingo" ecological camp for high school children worked in the territory of reserve.

In 2003 children from Korgalzhyn schools have joined the republican Water Company «RK Ecoforum»: a series of trainings devoted to the idea of «water is important, water is essential» were held for them. «Clean coast» action was also carried out.

Connections and contacts are established with University students from the capital city. So far this work is limited to professional consultations provided when students come to the nature reserve for help. Under the students' production-based practicum, work on course and graduation papers students get information on the reserve for free.

The reserve fruitfully works with teachers of the region schools. Teachers get help in preparation and conduct of school ecological actions and lessons on relative disciplines.

In 2001 together with a school the reserve held a regional seminar on ecology for heads of regional schools.

4. Tourist and recreational activity

1.) The description of tourist routes, paths, observation platforms

The reserve developed 4 tourist routes, which together with road maps were approved by the Committee of Forestry and Hunting of the MoA RK. All routes of ecological tourism start off from the nature reserve's Museum located in Korgalzhyn village. The Museum has colorful dioramas, exhibits of numerous birds and animals, possibility to watch video films.

Automobile routes with duration of 2 to 4 days: they are interesting to everyone loving nature and exotic places and those who want to get acquainted with real Kazakhstan steppe. But most of all our places are attractive for ornithologists and especially foreign tourists.

Route №1

Automobile and walking one-day route, which is especially popular: **village Korgalzhyn - Nura River - Sholak Lake - Esej Lake - Zharsuat - Itkirilgan - Sultan-Keldi Lake - Karazhar cordon - village Korgalzhyn.**

Overall length: 120 km.

The route is open from April till October.

The route goes through steppe along the Nura River bed in southwestern direction from village Korgalzhyn. Stops are made on higher bank of the Nura River near the 17 centuries Kanikay Mazar and for view of flowing Lake Sholak. The first regulated 2- hour stop and walk along the Coast of Esej Lake. The lake involves with a variety of flora and fauna. The shore is covered with thorny bushes and selitryanka. In the beginning of May the adjacent steppe gets covered by multiple colors of a Red Book plant - Shrenk tulip. Here you can see foxes, corsac, badgers, wild boars. On the lake surface there are swans, grey geese, pochards and river ducks. Here you can see gracious flamingos and rare bird – spoon-bill.

Salty Zharsuat and Itkirilgan lakes. In spring their shallow waters accommodate boiling bird's life.

Panorama of Sultan-Keldi Lake. Here it is possible to observe pelicans' and cormorants' feeding.

Karazhar cordon. Here you can rest in yurta or hotel. After that you can return to the village Korgalzhyn following the same route.

Route №2

Automobile and walking two-day tour with lodging in hotel or yurta at Karazhar cordon:

Village Korgalzhyn - Nura River - Shalak Lake- Esej-Zharsuat Lake - Sultan Keldy Lake - Karazhar cordon - Tuz Lake - "Nefterazvedka" cordon - Small gulf of Tengiz Lake - Kunovskaya Dam - Saumalkol Lake- Village Korgalzhyn

Overall length of the route - 130 kms.

Time of stay for a route: May - September

Up to Karazhar_cordon the course of excursion coincides with route №1.

The lodging is in hotel or in yurta on Sultan-Keldi lake coast. You will be fascinated with fiery sunsets, silence and splash of water from flushing ducks.

In the morning the route runs along Sultan - Keldi Lake up to the Nefterazvedka cordon by salty Tuz Lake. In July this self-sedimentary lake is covered with a layer of

salt reaching 20 sm. In spring on a route you can see numerous northern sandpiper: dunlins, curlew sandpiper, phalaropes, and ruffs.

Small gulf of Tengiz Lake, and beside Aktajlak Lake. The medicinal mud of the lake has unique properties: it was used in clinics of Tzelinograd, which is now the capital of RK – Astana.

Kunovskaya dam and Saumalkol Lake - places of waterfowl congregation.

To the very village of Korgalzhyn you will be accompanied by steppe, varying in different times of the year.

Route № 3

Automobile – walking two-day tour with lodging at Nigiman cordon:

Village Korgalzhyn - Birtaban Lake - Shalkar Lake - Stone dam - Kyzykol Lake - Sarykol Lake - Nigiman cordon - Tabiyak and Kulishum dams - Kerey kosa Tengiz Lake - Village Korgalzhyn.

Overall length of the route - 220 km.

Visiting time: May - September.

The route goes southward from Village Korgalzhyn through steppe to borders of the reserve on Birtaban Lake. Sandy beach. Further along the bed of the Nura River there are sites for amateur fishing.

Further the route goes along border of reserve. Behind the wall of reed at Korgalzhyn Lake you find vast water surface alternating with vast plots of reeds.

After Almaz village you see shallow Kyzykol and Sarykol lakes with numerous game.

Nigiman cordon. In the Kulanotpes River you can enjoy the view of white water lily and yellow jugs.

Tabiyak and Kulshum dams: here you can encounter numerous birds living in reeds and on water surface you can see ducks, swans, seagulls, pelicans, and cormorants. In these places you can also see families of wild boars.

Return to the Village Korgalzhyn following the same route.

Route №4

Automobile – walk three-day tour.

Route with lodging on the western coast of Tengiz Lake and in Nigiman: **Village Korgalzhyn - Sholak Lake - Esej Lake- Karazhar cordon - Sultan - Keldi Lake - Nefterazvedka cordon - Small gulf of Tengiz Lake - Nazrovskaya dam - Suanovskaya dam - Vzryvnaya dam - Lebedinskaya dam - Espesay - hills on the western coast of Tengiz Lake - Kerey kosa - Karachi tract - Nigiman cordon - Sarykol Lake - Kyzykol Lake - Shalkar Lake - Birtaban Lake - Village Korgalzhyn.**

Overall length of route - 410 km.

Time of visiting: June - August.

Ring route on periphery of the reserve from Village Korgalzhyn up to the Small gulf of Tengiz Lake coincides with route №2

From high coast of a gulf it is good to observe waterfowl which is always abundant on the water surface. On narrow shallow water part at the edge of water there are lots of sandpipers. In August here you will see young flamingos.

After driving round the eastern coast the route takes you westward along the northern coast of Tengiz Lake. Steppe and lake-sea. On water surface in front of Suanovskaya, Vzryvnaya and Lebedinaya dams there is always plenty of game. Ahead you see the green line of Steppe River Espesay flowing into Lake Tengiz. Further the route goes

across uneven terrain of the western coast of Tengiz Lake. In the spring Shuruk you can get excellent fresh water. Only here you will be lucky to see steppe kestrel, steppe eagles, kurganniks. From Shuruk spring the route turns eastward. It goes through hills from which you can enjoy the panorama of Tengiz Lake.

Kereyskaya kosa and track Karachi: here you can see flamingos, various birds and constant inhabitants of these places – wild boars.

From Nigiman cordon up to Korgalzhyn Village the way coincides with a route №3

2.) Extent of development of tourist routes, paths, servicing facilities

Tourist routes in the reserve are not well developed. In 2001-2002 no development works were planned because of lack of funds. In 2003 information boards were established on territories of the reserve in 4 places. At the checkpoint at the entrance to the territory of reserve information platform for tourists was equipped. The information board consists of 4 tablets; here on schemes 4 routes and all territory of reserve is represented. Further on the way to main cordon Karazhar the sign showing direction and distance to Esej Island is erected. At cordon Karazhar the board with indication of directions of routes №1, №2, and №4 is established. The next board is erected on small Tengiz gulf; it has an indication of the gulf's name and path of the route. The last board is erected on the third route on Birtaban Lake.

3.) Visiting the territory of reserve, excursions

In 2001 for the first time in reserve the department of environmental tourism and education was opened. The department was opened with the purpose of propagation and development of environmental tourism.

During three years the territory of reserve was visited by 1145 ecotourists, including 856 people in structure of groups.

According to article 37 of the Law "On protected natural territories" in 2001 the reserve has organized amateur and sports fishery on specially allocated sites of the rivers and reservoirs of the reserve within conservation zone, which do not accommodate especially valuable ecological systems. In 2001-2003 1180 persons visited the reserve under tourist tickets for amateur fishing.

4.) Stationary rest houses and treatment facilities located in the territory and related issues

In territory of reserve there are no stationary rest houses and treatment facilities.

5.) Cooperation with travel agencies.

The reserve is not engaged in independent tourist activity. Tourist business requires professionalism and substantial start-up investments. The reserve has no such opportunities therefore in 2001 the administration of reserve has concluded a contract with JSC "Akmola tourist" on cooperation in tourism. JSC "Akmola tourist" has a great operational experience in tourist business and owns sufficient material resources. According to the contract for tourist purposes the reserve provides only the territory assigned for tourist routes. Besides, land was provided at Karazhar cordon (without right for leasing) for development of tourists receiving base. Following the contract JSC "Akmola Tourist" transfers a part of payment for provided land to the reserve.

5. Limited economic activity

For all types of limited economic activities (cattle grazing, mowing, amateur fishing) there is an approval of the Committee of Forestry and Hunting of the MoA RK. The most effective type of limited economic activity is amateur fishing in some parts of water reservoirs.

1. Sports and amateur fishery

The limited economic activities in the territory of reserve are carried out mainly in the conservation zone. Paid amateur and sports fishery is practiced in wintertime at lakes Esej, Sultan Keldi, Kokai and the Kulshum River.

At drives to amateur fishery sites there are fixed places for parking cars. **Rules and the order of stay in the territory of reserve** are developed and provided to each fisher. Provisions are made for responsibility for violation of reservation regime and rules of amateur fishery.

Practice has shown that the authorized stay of people on certain parts of water bodies has eliminated unauthorized entrance though at the same time it entailed the need for continuous presence of state inspectors of protection service in this territory for control purposes.

Besides, certain categories of citizens are not allowed to come to the territory of reserve with weapons. Earlier vicious practice of arriving to the territory and water bodies under fishing permits made people uncontrollable. It objectively fostered infringements of conservation regime, including cases of arrival with weapons. Now this factor is completely eliminated through inspection of all transport vehicles entering the territory of reserve.

Besides some abusive state inspectors are no longer willing to violate conservation regime in any way.

Presence of amateur fishers played a certain positive role in sustaining the conservation regime.

2.) Manufacture of souvenirs and the consumer goods

The reserve does not produce souvenirs and consumer goods.

3.) Subsidiary farming

There are no subsidiary farms in the reserve.

4). Gathering mushrooms and berries, nuts, medicinal herbs, cattle grazing, mowing, etc

Only cattle grazing and mowing are practiced in the reserve. Other activities are not carried out in the reserve, as mushrooms, berries and medicinal plants do not grow on commercial scale.

Grazing of cattle

It is carried out in the conservation zone of the reserve on sites, which do not accommodate especially valuable ecological systems. Cattle are collected from workers of the reserve; grazing is done for a certain fee, a part of which goes for wage to the cattleman while another part goes to the reserve as revenue.

However, as practice of the last years has shown, this type of economic activities leads to infringement of conservation regime and causes disturbance of birds in places of cattle's watering.

The decision was made to temporarily stop cattle grazing in such sites and to try to find a better option.

Mowing

Fodder for workers of the reserve is stocked on sites adjacent to conservation zone and partly in conservation zone. It depends on herbage and required amount of hay. Haymaking begins at certain time, i.e. after hatching out and after nestlings leave these places. It has no negative impact on the nature of reserve.

5) Marketing of products of felling and sanitary felling

Given the lack of woodlands in the territory of the reserve, this activity is nonexistent.

V. Implementation mechanisms

1.) Nature protection activities

Table №1

Implementation of nature protection actions depends on effective work of the reserve's conservation service and a number of other factors:

1. State inspectors of protection service
2. Availability of legal enactments
3. Material support of protection service' staff
4. Availability of radio and telephone connection
5. Availability of weapon and special devices for workers of the protection service
6. Installation of signs and notices
7. Availability of uniform
8. Availability of fuel

1.1. In the reserve there are 17 state inspectors of protection service; the majority of them are experienced professionals with extended track record and professional skills. Newly recruited workers are specialists in various fields of economy. We have connections with universities that train hunting specialists. In the nearest future we hope to replenish our staff with graduates of those universities. Nowadays the staff of protection service can successfully solve tasks at hand.

2.1 After additions were introduced to the RK Law "On protected areas" in January 2001 the reserve independently developed all legal and regulatory documents and methodological recommendations following the above law and RK Code of Administrative Offences. Now we are working on preparation of new normative documents in view of requirements outlined by the Instructions № 457 approved by the Ministry of Agriculture on 29.08.2003. We think the document is detailed and concrete; it meets the requirements of the RK Administrative Code RK and RK Law «On protected territories».

Introduction of this normative-legal documentation into practice of work of the reserve will raise efficiency of the protection service.

There is a pressing need for a document legalizing inspection of the state reserve in line with the RK Code «On administrative offences», which will allow taking operative measures of punishing infringers of the conservation regime in the territory of reserve.

3.1. The material base of protection service comprises 3 automobiles UAZ-469 and GAS - 66 subject to write-off; it does not facilitate effective work of the protection service. Now the work is actually done due to use of personal automobiles of the

protection service workers. At the same time there are no snowmobiles and is high passable off-highway machinery.

Purchase at an initial stage, as the minimum of automobiles: VAZ 21213 (2 pieces), UAZ-469 (2 pieces), UAZ -3362 (1 piece), tractor MT3-82 (2 pieces), automobile GAS - 66 (1 piece), GAS - 53 a water carrier (1 piece), snowmobile "Lynx" (5 pieces), tractor ДТ-75 the bulldozer (1 piece), 2 boats "Kazanka" with "Whirlwind" motor (3 pieces).

4.1. Many opportunities of fighting infringers of the reserve regime are missed out because of lack of radio communication. This situation is worsened by vastness of protected territory. Only for this reason we not always have an opportunity to take necessary measures operatively. So far supreme bodies supervising the reserve do not resolve these issues. Work without timely information often does not give any effect and the scarce resources available for fuel are wasted. It is necessary to procure 6 stationary, 5 mobile and 30 portable radio stations.

5.1. The protection service does not have sufficient rifled weapons (requirement for pistols is met to 60 % only); there are no carbines, special devices. It is even worse that even now there is no explanation of what is considered to be special devices in protection service and of the order of their application. Such a document is extremely necessary, since initiative in such a business can have very adverse consequences.

It is one of a number of serious issues affecting the increase of the overall performance of the protection service.

Now for assurance of personal safety of state inspectors following the order of the Director the missing weapons are compensated by the workers' personal smoothbore weapons authorized by the Ministry of Interior.

In the last years field glasses were procured for state inspectors. At the same time it is necessary to procure 2 video cameras, 5 Dictaphones, 7 cameras, 5 carbines SKS, pistols PM-19 and 10 body armours.

6.1. An important factor of increasing efficiency of nature protection actions is availability of signs and notices erected along the border of prohibited and conservation zones of the reserve's territory.

Only in the last three years 86 signs were erected, including 48 new signs indicating the border of conservation zone that were established for the first time. All in all during this time signs along the perimeter of 250 km i.e. $\frac{3}{4}$ of the territory were renewed. This work should be finished in 2004. All of this was done without attraction of budget funds at the initiative and with efforts of the staff of protection service.

7.1. During last two years all state inspectors received winter, summer and full dress uniform, including summer and winter footwear, except for hats with earlaps. It in turn not only raised the authority of protection service workers, but also to a certain extent increased their self-discipline, led to more robust execution of their official duties, increased necessity and importance of this service. In the end all of it will allow ensuring efficient protection of the reserve's territory.

8.1. Supply of fuel. According to the estimates and the current working regime the protection activities requires 9 tons of gasoline per year.

2.) Fire-prevention actions

Table №2

To fire-prevention actions in reserve pays sufficient attention.

We develop with own forces the instruction on fire-prevention safety, study and practical employment on suppression of fire in steppe, reed thickets on a reservoir is organized. Citizens arriving on territory receive the instruction on fire-prevention safety.

Not supposing on the territory, workers of a protection service extinguish a steppe fire on approaches to reserve territory. For last three years there were no fires in territory.

We annually carry out meetings with heads of hunting and land users in adjacent territories on questions of fire-prevention safety. There is a joint plan of action of suppression of fire with regional division of emergency service.

It is carried out fire-prevention measures on prohibited zone border, are made and there are on cordons, automobiles primary fire extinguishing means. It is necessary to establish in addition general purpose roads notices, the boards warning and information character.

To available 5 viewing towers it is necessary to establish 5 more on detection of the steppe fire centers and detection of possible penetration on territory of reserve mode infringers.

Giving special importance to this work it is planned to use for these purposes in 2004-2006 300 thousand tenge for the special facility account.

3.) Restoration of natural-reserve fund

For State University «Korgalzhyn state natural reserve» costs to more actual a problem of habitat vegetative and fauna maintenance in territory.

The most important question is maintenance of an optimum hydrological mode on reserve reservoirs.

A network of retaining dams in the extent of 6 kms demands major overhaul. The design - budget documentation on major overhaul of Kulshum, Tabiyak and Ablay dams is prepared. For 2004 it is allocated on these purposes 30 mln tenge, for 2005 it is planned to spend 17 mln tenge. After end of an initial stage of major overhaul and development of the allocated means it is planned to transfer the given dams to balance of Water Resources Committee on Ministry of agriculture.

Second, it is necessary to expansion of territory and creation of buffer zones. For today on separate sites of reserve territory has developed an absurd situation.

In due time at the organization of reserve and definition of its borders in 1968 at all have not defined a security zone.

In 1974 this position has corrected, but in part. The lakes (two fresh and one-salty) in the south of east part of territory, is divided by border of a security zone so, that practically half of lakes departs to hunting farming and to a craft of a fish. Fauna and birds are in extreme stressful conditions, at constant presence of the factor of fauna anxiety.

This question reserve, with all substantiations, is put on higher body's consideration, including the Government of Kazakhstan Republic, but the decision during last years is tightened.

The status of prospective territory for expansion of a buffer zone is determined; it does not demand alienation of the grounds from primary land users who are engaged in a traditional agricultural production (cattle pasture, mowing, and crop of

agricultura). It is required basically limited or an interdiction on hunting and a craft of a fish. Especially reservoirs have no some trade value.

4.) Sanitary actions

Table №3

By the way of data action performance it is necessary to carry out a permanent job on of non-admission of reservoirs pollution and tourist routes territories and on reservoirs sites of amateur and sports fishery during the winter period. Such work is successfully carried out; in territory the appropriate sanitary order is supported.

It is required to establish in the near future in the certain places iron boxes for gathering dust and household waste products, strictly to adhere to the established order by quantity of citizens stay in territory.

These questions observance of sanitary requirements and maintenance of a normal sanitary condition in territory of reserve does not demand any additional facility, is a component of protection service inspectors work.

5.) Biotechnical actions

For territory of reserve there is the main thing a question of maintenance and preservation of an environment in a natural condition.

Self-regulated number of fauna from sufficient forage reserve point of view, extensiveness of territory demands basically non-admission the factor of anxiety, observance of optimum quantity of stay citizens in reserve territory certain places and under the control of state inspectors of protection service, the regular control over places of dwelling and moving of animals within the limits of reserve territory, duly restriction or full interdiction for citizens stay during certain time or on the certain sites. This problem is feasible and defined by a management of reserve on reserve mode observance.

For example, practice has shown that pasture of personal cattle on sites within the limits of a security zone resulted in infringement of a reserve mode, i.e. the watering place of cattle was carried out in a prohibited zone that created the factor of anxiety for birds. Is accepted decision to stop of cattle pasture on the given sites, to define a place outside a security zone, especially such opportunity is present.

In a southern part of territory of reserve the arrangement with inhabitants of "Nigman" settlement about the termination of arrival of transport in a security zone on general purpose roads and pasture cattle in tracks of a wild boar is achieved. This condition is carried out.

6.) Scientific research activities

Table №4

Scientific research work is an essential part of the operation of reserve.

The following measures are planned for coming years:

1. Annual monitoring of birds number. These actions require transportation expenses related with servicing of 5 sites in April. To visit each point once it is necessary to go 700 km. For car GAS - 66 the gasoline consumption makes 224 l. Each point will be served 5 times per month. Thus the total consumption of gasoline will make 1120 l at the price of 50 tenge per liter. Thus this activity will require 56000 tenge.
2. It is planned to revive aviation-based stocktaking of waterfowl congestions and large mammals. March is the time for registration of wild boar, May is the time for swans, June is the time for registering waterfowl, and August is the time for

flamingos. Each flight lasts 5 hours, 1 hours costs 44100 tenges, which means that each flight requires 220 500 tenge.

3. To improve work on "The Nature chronicles", which is the state document of the reserve, it is necessary to relaunch procurement of information from the Center of hydro meteorological monitoring (CHM) in Astana. The necessary data of 6 categories is outlined in the table below with rates of CHM as of year 2004.

№	Information	Cost of information (tenge)		
		Cost per unit	Number	Total
1	Temperature of air: monthly average, minimal, maximal	1470	12	17640
2	Precipitation per month	1515	12	18180
3	Depth of ground freezing	257	4	1028
4	Dates of transition of temperatures	750	4	3000
5	Monthly average runoff of rivers	780	12	9360
6	Monthly average water levels	390	12	4680
	The sum			53888
	VAT 16 %			8622
	Total to be paid			62510

Annual expenses on procurement of meteorological information are high. In order to cut these expenses it makes more sense to restore a hydrometeorological post on Sultan - Keldi Lake at "Karazhar" cordon using the funds of the reserve and to conclude a contract with CHM for servicing this post with subsequent free provision of necessary information. Restoration of the post requires investments at the rate of 346 thousand and is planned for 2006.

4. Execution of research on the planned topics. It is planned to keep "The Nature chronicles" and to support work on three independent themes, two of which are in ornithology (programs of work are being developed) and one is on botany (the work is being finalized). All research is related with investigation of the territory and lakes. Provisions are made for field allowance, fuel, travel expenses to go to Almaty and Astana for consultation with topics' supervisors as well as for stationery and other expenses. All of this is reflected in the table. The total amount of expenses is 620.7 thousand tenge per annum.

The estimate of costs of developing four research topics in the context of Korgalzhyn nature reserve (for 1 year)

Items	Costs	Amount (thousand tenge)
Field allowance	3 persons * 90 days 1 person * 120 days Total 390 days* 800 tenge per day	312.0
Fuel	2 subjects require 200 l 1 subject requires 550 l 1 subject requires 800 l TOTAL: 1750 l at price of 50 tenge per l	87.50
Stationery (writing paper, pencils, pens, folders, calculator, etc.)	Per 1 person 2500 tenge.	10.0
Photogoods and photo service	4 films * 400 tenge. Printing 120*40 tenge.	6.4
Rrings for birds marking	3000 piece *10 tenge.	30.0
Traveling and living expenses	4 business trips of 10 days to Almaty - 37360 tenge each.	149.44
	2 business trips of 5 days to Astana - 12680 tenge each.	25.36
	TOTAL:	620.7

In field conditions researchers and their assistants also need vehicles, things for organizing minimal living conditions. In this connection it is necessary to rehabilitate the material base of the department of science, information and monitoring to have the following:

List of the material items required for the department of science

Item	Number of pieces	Cost, thous.tenge
I. Transport facilities		
automobile «VAZ-21213»	1	1176,0
Boat «Progress»	2*150,0	300,0
Boat motor «Vihr»	2*130,0	260,0
TOTAL		1736,0
II. Equipment and office equipment		
1. computer	2*110.0	220.0
2. laser printer	1	65.0
3. Xerox	1	146,0
4. camera with long focus lens	2*80,0	160,0
5. optical spyglass, magnification of 60 with stand	2*150,0	300,0
6. video camera "Panasonic"	1	100,0
7. microscope	1	150,0
8. binocular	1	150,0
TOTAL		1291,0
III. Field equipment		
1. Clothes	10*15,0	150,0
2. sleeping bags	10*10,0	100,0
3. 2 places tents	2*12,0	60,0
4. rubber boots	5*2,5	10,0
5. camp table	2*5,0	10,0
6. camp chairs	12*1,5	18,0

7. kapron flasks for water	8*3,0	24,0
8. portable gas stove	2*4,5	9,0
9. gas-cylinders (small)	4*1,0	4,0
TOTAL		3158,5

To make sure that the level of processing of field materials meets present-day requirements, the department of science needs 2 additional computers and 1 laser printer.

9. Organization of available scientific materials into a database. For this we need a specialist-programmer. This issue is being discussed Karaganda state university after E. Buktov. The start up of works requires 100 thousand tenge.

10. Re-equipment of the library and its replenishment. It is necessary to replace the old equipment in the library.

Expenses on library equipment

Item	Number of units	Cost thous. tenge
Shelves	10 * 8.0	80.0
Tables	4 * 10.0	40.0
Chairs	12 * 4.0	48.0
Bibliography box	1	2.0
TOTAL:		170.0

The Library of the nature reserve is used by all employees, by students and scientist, working on expeditions in the territory of Korgalzhyn region. In this connection it is necessary to restore its systematic replenishment with scientific literature (books and journals). It requires 30.0 thousand tenge per annum.

For successful operation of all departments, particularly the department of protection service, they need topographical cards with scale 1: 200000 and 1: 100000. It requires over 40.0 thousand tenge.

7. The Connection to Internet

The Scientist of the whole world use the modern communications service – Internet for quick search of necessary information, quick connection with each other and for exchange of opinions in quest for truths. In order to interact with institutes, universities and international organizations interested in the nature reserve in view of its prospects of joining UNESCO World Heritage and participation in the network "Living Lakes" the nature reserve needs connection to Internet. This service costs 2 000 tenge per month (60 000 annually). This sum includes payment for Internet and international phone calls since the nature reserve is located in rayon center.

8) Cultural-awareness rising activity

Table 5

Cultural-educational activity of the nature reserve begins with excursions on museum of nature of the nature reserve. The Museum is found in emergency condition. For maintenance and developments of the environmental awareness rising necessary repair of museum buildings, registration of its exposures and new design. Necessary renewing new exhibit.

Cultural-educational activity of the nature reserve is first of all work with school students. For work with them and local population separate video common-room for showing film and undertaking the meeting is required. There is one hall, but it needs to be repaired.

Necessary acquisition of the video camera "Panasonic", video player with TV set and video cassettes. In purpose of awareness rising of the population and guests about rich natural potential of the reserve, publication of booklets is required. Korgalzhyn nature reserve at present nominees on World Heritage UNESCO also enters worldwide network "Living Lakes". In connection with nominee it is necessary to present nature reserve as object of the Worldwide Heritage. It requires investments on receiving the guests and representatives from mass media, undertaking the contest of child drawing and organization of exhibition, acquisition prize for contest and on consumables on exhibition.

One more obligatory action, which must carry out the nature reserve, is undertaking conference on worldwide network "Living Lakes". The participants of conference are 250 persons approximately. It needs investments for hand outs and consumables, feeding, residence, transport expenses and etc.

9.) Tourist and recreational activity

Table 6

For present-day designed 4 routes is not completely arranged. For its arrangement it is necessary to make the additional qualifying signs, develop and make the information shields, biotoilets, dustbins, tables, benches. It is necessary to install the observation platforms in determined places. For undertaking all these action it needs additional facilities.

10) Limited economic activity

The Amateur sport fishery is realized on water pools for people of the Republic Kazakhstan.

The fishery carried out on water pools not presenting specifically valuable environmental systems basically at winter period only. On Kulishum River in safe zone amateur fishery is realized all the year round.

People may fish on the reserve territory only 24 hours and catch only 10 kg. All types of the expenses of the nature reserve are enclosed in cost of the permit on organization of fishing, including expenses on maintenance of the sanitary condition of water pools, realization of the checking the fishery, observance of reserve decisions.

A Part of remedies for realization of the permits is enumerated in budget for coming people on territory, payment for bioresources. The Certain amount of the facilities (minus all expenses) matriculates on special count of reserve. The Similar mechanism of the calculation of the facilities acts on pasture, cocking hay for necessities of reserve workman. At realization of limited economic activity emphases fire safety rules, the personal safety of the people are spared.

Limited economic activity is directly checked by state inspectors of the reserve of guard service.

Expenses of PI "Korgalzhyn state nature reserve" on procurement in 2004-2006

Item	Expenses for the period of 2004-2006			2004		2005		2006	
	Units	Unit cost	Amount (thous. tenge)	Units	Amount (thous. tenge)	Units	Amount (thous. tenge)	Units	Amount (thous. tenge)
UAZ 396252 (cargo-and-passanger)	3	1176,0	3528,0			1	1176,0	2	2352,0
UAZ 315122 (passenger)	6	624,0	3120,0	2	1248,0	1	624,0	2	1248,0
VAZ-212180	3	1240,0	3720,0	1	1240,0	2	2480,0		
GAZ 53 (water carter)	1	1764,0	1764,0			1	1764,0		
GAZ –66 van	1	1764,0	1764,0					1	1764,0
Microbus	1	1000	1000					1	1000
Fire-engine ZIL-131	1	3000	3000			1	3000		
KAMAZ go-anywhere vehicle	1	4396,0	4396,0					1	4396,0
Tractor MTZ-82	2	2100,0	4200,0	2	4200,0				
DT-75 (bulldozer)	1	2150,0	2150,0	1	2150,0				
Plough PN-4-35	3	271,0	813,0	3	813,0				
Propagator	2	297,0	594,0	2	594,0				
Trailer 2PTS-4	2	150,0	300,0	2	300,0				
Disc harrow BDN-3.0	3	84,0	252,0	3	252,0				
Boat "Kazanka"	7	120,0	840,0	3	360,0	1	120,0	3	360,0
Motor "Vihr"	7	157,0	1099,0	3	471,0	1	157,0	3	471,0
Snowmobile "Tayga"	5	627,0	3135,0	2	1254,0	2	1254,0	1	627,0
Mobile boarding outfit car	2	800,0	1600,0			1	800,0	1	800,0
Communications facilities stationary	5	126,0	630,0	2	252,0	3	378,0		
mobile	8	43,0	344,0	8	344,0				
portable	30	40,0	1200,0	9	360,0	10	400,0	11	440,0
Carabine SKS	5	52,0	260,0			5	260,0		
Pistol PM	19	25,0	475,0			19	475,0		
Bulletproof vest	10	15,0	150,0			10	150,0		
Computer	4	110,0	440,0			1	110,0	3	330,0
Printer	2	65,0	130,0			1	65,0	1	65,0
Xerox	1	146,0	146,0			1	146,0		
Video player with TV set	1	50,0	50,0			1	50,0		
Video camera	4	100,0	400,0			2	200,0	2	200,0
LCD projector	1	50,0	50,0					1	50,0
Optical tube	2	40,0	80,0			2	80,0		
Camera	10	10,0	100,0			5	50,0	5	50,0
Camera with long focus lens	2	80,0	160,0			1	80,0	1	80,0
Digital camera	1	74,0	74,0					1	74,0
Binocular	1	150,0	150,0					1	150,0
Microscope	1	150,0	150,0					1	150,0
Winter and summer uniform	50	27,0	1350,0			50	1350,0		
Biotoilets	10	100,0	1000,0			5	500,0	5	500,0
TOTAL			44614,0		13838,0		15669,0		15107,0

VI. Sources of finance

Financing sources of "Korgalzhyn state reserve" are state budget and own facilities. The Republican budget provide in 2004 - **67208,8 thous.tenge**, in 2005- **66675,8 thous.tenge**, and in 2006 - **52130,8 thous.tenge**.

On the base of Government Regulation of RK from 10 May 2000 and on behalf of Committee of Forestry, Fishery and Hunting reserve has developed the motivation of the rates of the payments for use the territory of state reserve and rendered facilities by them, which was delivered in specially protected areas department of Committee for co-ordination and following statement.

During 3 years the rate of the payments were revised and established 2 times. Presently, the reserve follows the document "Charge per facilities, rendered by state institutions-state reserves for physical and juridical persons", which is approved by order of the Committee of Forestry, Fishery and Hunting from April 25 2003 # 97 a. Means for realization goods and pay services, rendered by reserve goes on special count.

Financing goes from this count on necessities of the reserve Table 1. 2. (the special count).

VII. Expected results of Program's implementation.

The implementation of this program will allow improvement of the overall activity of the reserve.

Optimization of the borders of the reserve and development of its territory will allow improvement of the overall situation with prevention of violation of the conservation regime.

Strengthened material-technical base of the protection service department will allow inspectors to be more effective in protection of the natural complex and to keep operative communication with cordons and administration, as well as with law-enforcement organ.

Capital repairs of dams will allow assuring the sustainable hydrological regime of lakes. In general it will be a guarantor for sustainable conservation of the biodiversity in reserve.

Reconstruction of material-technical base of the department of science, information and monitoring will allow raising the quality of the work on "Nature chronicle" and other exploratory subjects. Monitoring of the birds' number will allow checking the efficiency of environmental activity of the reserve.

Reconstruction of nature's museum will allow brightening the work with visitor, bringing up people with love of nature and motherland. Creation of a video room and video collection will contribute to growing flow of tourist and other visitors of the reserve. Development of tourist routes and publication of booklets will allow improvement of conditions of receiving tourists and will contribute to improvement of the reserve's image both in our country and in the world, which will strengthen the authority of the Republic of Kazakhstan all over the world.

Results of program implementation:

1. Optimized border of PI "Korgalzhyn state nature reserve"
2. Developed protected territory.

3. Sustainable hydrological regime of lakes.
4. Optimal material and technical base of all departments.
5. New exposition in the nature museum.
6. Fruitful systematic work of all departments of the nature reserve.
7. Sustainable conservation of biological variety.

Director of PI "Korgalzhyn state nature reserve" M.S.AYTZHANOV

Deputy Director on scientific research activity T.V.SIDOROVA

Deputy Director B.M.RYBAKOV

Chief accountant A.B.KOZHABEKOV.

Formation of costs covered from budgetary funds
(Consolidated cost estimates)

Cost Item	2004-2006	2004	2005	2006
	Sum thous. tenge	Sum thous. tenge	Sum thous. tenge	Sum thous. tenge
Purchases	44614,0	13838,0	15669,0	15107,0
Rehabilitation of dams	30000,0	30000,0		
Repair of roof	6000,0	6000,0		
Reconstruction of the nature museum	5500,0		5500,0	
Capital repair of administrative buildings	15000,0		15000,0	
Construction of cordons	25000,0		10000,0	15000,0
Fabrication and installation of sign (department of protection)	320,0	120,0	100,0	100,0
Fuel for protection service	1350,0	450,0	450,0	450,0
Monitoring of number of the birds	16,8	5,6	5,6	5,6
Aviation-based stocktaking	1764,0		882,0	882,0
Hydrometeoroinformation	187,53	62,51	62,51	62,51
Reconstruction of hydro post on Sultankelidy lake	346,0			346,0
Field equipment for department of science	391,0		391,0	
Research on approved subjects	1862,1	620,7	620,7	620,7
Creation of database (the department of science)	100,0	100,0		
Equipping the library	170,0			170,0
Completing the library and topographic maps	130,0	30,0	70,0	30,0
Internet	180,0	60,0	60,0	60,0
Creation of video collection	286,0		162,0	124,0
Scientific publications	100,0			100,0
Development of eco routes	1335,0	114,0	598,0	623,0
Booklet publication and etc.	400,0		200,0	200,0
Training of guides	45,0			45,0
Conference "Living Lakes"	600,0			600,0
Sanitary passports	330,0		165,0	165,0
Control of epidemiological situation	480,0		240,0	240,0
Salary	32826,0	9826,0	11000,0	12000,0
Other expenses	16682,0	5982,0	5500,0	5200,0
TOTAL:	186015,3	67208,8	66675,8	52130,8

Shaping the expenses from budgetary funds (consolidated estimate of expenditures)

Name	2004-2006	2004	2005	2006
	Sum thous.tenge	Sum thous.tenge	Sum thous.tenge	Sum thous.ten ge
Acquisition	44614,0	13838,0	15669,0	15107,0
Recovering the dams	30000,0	30000,0		
Repair roof	6000,0	6000,0		
Reconstruction of the nature museum	5500,0		5500,0	
Repair of administrative buildings	15000,0		15000,0	
Construction of cordon	25000,0		10000,0	15000,0
Fabrication and installation sign (guard department)	320,0	120,0	100,0	100,0
Petroleum for service guard	1350,0	450,0	450,0	450,0
Monitoring number of the birds	16,8	5,6	5,6	5,6
Avia accounts	1764,0		882,0	882,0
Hydrometroinformation	187,53	62,51	62,51	62,51
Reconstruction of hydro point on Sultankelidy lake	346,0			346,0
Field equipment for department of science	391,0		391,0	
Research on confirmed subjects	1862,1	620,7	620,7	620,7
Creation database (the department of science)	100,0	100,0		
Equipping the library	170,0			170,0
Completing the library and topographic maps	130,0	30,0	70,0	30,0
Internet	180,0	60,0	60,0	60,0
Creation of video collection	286,0		162,0	124,0
Scientific publications	100,0			100,0
Development of ecoroutes	1335,0	114,0	598,0	623,0
Booklet publication and etc.	400,0		200,0	200,0
Guide courses	45,0			45,0
Conference "Alive lakes"	600,0			600,0
Sanitary passports	330,0		165,0	165,0
Checking the epydemiological situation	480,0		240,0	240,0
Salary	32826,0	9826,0	11000,0	12000,0
Other expenses	16682,0	5982,0	5500,0	5200,0
TOTAL:	186015,3	67208,8	66675,8	52130,8

Document 13.) Development and Management program of Naurzum State Nature Reserve for 2004–2006

**DEVELOPMENT PROGRAM
of Naurzum State Nature Reserve (NSNR)
for the period of 2000-2005 years**

1. Program's passport
2. Introduction
3. Analysis of contemporary status of the problem
4. Aim and tasks of the Program
5. Basic directions and mechanisms for Program realization
 - 5.1. Equipping the territory of the NSNR and creation of the protected clusters in operation management by the NSNR. Giving it the status of an UNESCO Biosphere Reserve.
 - 5.2. Creation of a base to combat fires on the territory of the NSNR.
 - 5.3. Creation of material-technical base (MTB) to carry out scientific work and raise public awareness on the territory of the NSNR.
 - 5.3.1. Creation of MTB to carry out scientific research
 - 5.3.2. Creation of MTB to carry out public relation work to raise public awareness
 - 5.3.3. Publications

Program Passport

Title:	Regional Development Program of the Naurzum State Nature Reserve on 2000-2005 years
Basis for Development:	The Constitution of the Republic of Kazakhstan, the Law of the Republic of Kazakhstan «On Specially Protected Natural Territories», the National Strategy on Conservation of Biological Diversity
Authors:	Kostanai' oblast territorial administration on forests and bioresources (Oblterbioresources), the Naurzum State Nature Reserve
Aim:	Rehabilitation and development of the Naurzum State Nature Reserve in contemporary socio-economic conditions
Sources for financing:	Local budget, Fund of Environmental Protection, own means of the establishment
Expected Results:	The Program realization will let to achieve the following: <ol style="list-style-type: none">1. To spread the territory, optimize the border of the Naurzum reserve;2. To give the status of biosphere reservats3. To organize the net of zakazniks, subordinated to the Naurzum Nature reserve;4. To strengthen the material-technical base of the Naurzum Nature reserve;5. To increase the number of species of protected wild animals and birds, and also their habitats

2. INTRODUCTION

The complex development and rehabilitation program of the Naurzum State Nature Reserve is a basis for the functioning of the largest specially protected natural territory (SPNT) in the oblast in a new socio-economic conditions.

The basis for its development became adopted during the last years by the Government of the RK Law «On Specially Protected Natural Territories», the National Strategy on Conservation of Biological Diversity and other documents, which regulate an activity of SPNT on the territory of the Republic and material-technical base of Naurzum State Nature Reserve by the level of contemporary standards.

3. Analysis of contemporary state of the problem

At present, the Naurzum State Nature Reserve occupies the territory of 87.7 thousand ha, consisting of 4 isolated parts. In 1931 year, when the reserve was organized, the necessity of an area more than 300 thousand ha was scientifically justified, that related to the international norms for the SPNRs in arid and sub-arid zones (not less than 160-170 thousand ha.). After a number of reorganizations, there was reduced not only its area, but also isolated massifs were formed, that caused the increasing of the borders' length, needed to be protected. Beside this, the majority of the lakes and forest massifs entered into the SPNT following to the level of edge of lakes and forest massifs, without having protections zone with the reserve regime, that contradicts to the basis for protection of internal waters (lack of water-protection zone) and island forests (lack of buffer zone). Therefore, the problem of borders' equipping for the improvement of the state of protection and leading its square to the modern norms is one of the most significant. Proposed area of 103 thousand ha for the spreading of the reserved territory, and then creation of the zakazniks under the administration of the Naurzum State Nature Reserve is also necessary step for the rehabilitation and development of the NSNR. Suggested Zharsor-Urkahskiy season' zakaznik, complex zakazniks named «Kizbel-Tau» and «Kara-Tau» are meant on this matter. Only together with the Sarykopa zakaznik and complex of suggested zakazniks the Naurzum state reserve can pretend for its transformation into the biosphere reserve for the giving complexity to the protected plot. Then, they will enter to the reserved core of the large SPNT «The Steppe Turgai», proposed into the List of natural territories of the UNESCO World Heritage. Decision on nomination «The Steppe Turgai» from the Republic of Kazakhstan was approved by the Commission on UNESCO Matters in Kazakhstan, the Ministry of Natural Resources and Environmental Protection of the RK and International seminar-training on preparation to nomination of the natural territories of the Central Asian states into the List of the World Heritage (Almaty, May 8-11, 2000), but for the reaching this goal, it is necessary to increase the territory and to create the cluster protected plots in the region. Nowadays, the question on increasing of material-technical provision of the Naurzum state reserve, primarily by an anti-fire equipment, is in urgent agenda. From the period of 1993 year and to present, due to extreme deficit of the financing and the lack of joining of the new technique, the base of the reserve is very low. The financing of last years does not led to conduct anti-fire activity, protection and scientific researches. There is not enough funds even for the extinguishing of the fires.

The same time, the Law on SPNT (chapter XXI, article. 73) is envisaged the financing of the SPNT not only from the Republican budget, but also from funds of the Fund of Environmental Protection. The Naurzum state reserve till present time did

not receive any support from oblast budget and Fund of environmental protection (the oblast and the Republican). The assistance from the district budget is very limited owing to subsidy character of district budget. The Republican legislation envisages such kind of assistance on constant basis, and this fact was repeated to the reserve administration by the above-managing bodies.

Systematic scientific researches on the territory of the Naurzum state reserve and in the region of its presence were being conducted from 1934 year. Even in the years of the Great Patriotic War in scientific division there were worked from 12 to 18 scientific fellows, not counting the technical assistants and service personnel. Namely the scientific researches brought the fame to the Naurzum reserve and created fundamental scientific base for the development of the basis for the protection of the nature of the most significant natural region.

However, during the last years, the staff was reduced to 3 scientific fellows, 1 head of division and 2 laboratory assistants, that is not enough even for the conducting by the divisions of obligatory state document «The Chronicle of the Nature» (9 divisions) and extremely necessary Scientific-Research Work (SRW) in accordance with the order and conducting of SRW in the state reserves of the RK (Astana, 1998).

In connection with this program it is suggested to make separate budget to support the Naurzum state nature reserve and other SPNT of the oblast.

Complex program includes the Divisions «Equipping of the territory», «Protection and anti-fire equipping», «Scientific researches and cultural-awareness activity».

4. Aim and Tasks of the Program

4.1. Program' Aim - is rehabilitation and development of the Naurzum state reserve in modern socio-economic conditions.

4.2. Program' Tasks

- 1) Equipping of the territory of the Naurzum state reserve and creation of the protected cluster sites in operation management of the Naurzum state reserve.
- 2) Creation of material-technical base for the protection and anti-fire equipping of the NSNR territory
- 3) Creation of material-technical base for the conducting of scientific researches and cultural-awareness activity on the territory of the protected plots of NSNR.

5. Basic directions and mechanisms for program realization

As the main directions of the Program there were considered the following:

- Equipping of the territory of the Naurzum state nature reserve (NSNR) and creation of the protected cluster sites in operation management by the NSNR. Giving it the status of the biosphere reserve;
- spreading of the NSNR borders;
- creation of the protected plots under operational management of the NSNR (state-zakaznik);
- creation of material-technical base for the protection and anti-fire equipping of the territory of the Naurzum State Nature Reserve;
- creation of material-technical base for the conducting of scientific researches and cultural-awareness and excursion activity on the territory of the protected sites of the NSNR;
- publishing of awareness and scientific products.

ACTION PLAN
on the NSNR Development Program Realization

I. Equipping of the territory of the Naurzum state reserve and creation of the protected cluster sites in operation management by the NSNR.
Giving if the status of the biosphere reservats.

№	Actions	Period	Executors	Form of completion	Sources for financing	Amount of financing, (thousand tenge)
1	2	3	4	5	6	7
1.1.	Spreading of the NSNR on the territory of the Naurzum district - submission of the documents to oblast' level	2000	NSNR, NGO «Naurzum», Akim of Naurzum district, Oblterbioresources	Decision of Akim of the Naurzum district	-	-
	Equipping of the territory in a new borders	2001	NSNR, Land-arranging establishment	Carrying into the reality the borders of the reserve in Naurzum district	Oblast' budget	10000
1.2.	Creation of the Specially protected areas under the operation management of the NSNR (state-zakazniks) ■ Zharsor-Urkashkiy state-reserve * submission of the documents	2000	Obleterbioresources, NSNR	Package of documents		
	■ State-zakaznik «Kizbel-Tau» * submission of the documents	2000	Obleterbioresources, NSNR, NGO «Naurzum»	Package of documents		
	* equipping of the borders	2001-2002	NSNR, Land-arranging	Carrying into the reality the	Oblast' budget	1500

			establishment, NGO «Naurzum»	borders		
	■ State-zakaznik «Kara-Turgai» * submission of the documents	2000	Oblterbioresources, NSNR, NGO «Naurzum»	Package of documents		
	- Equipping the borders	2001- 2002	NSNR, Land- arranging establishment	Carrying into the reality the borders	Oblast' budget	1500
1.3.	Spreading of the borders on the territory of Auliekol district - submission of the documents	2001	NSNR, NGO «Naurzum», Akim of Auliekol district, Oblterbioresource s,	Decision of Akim of the Auliekol district		
	- equipping of the territory	2001- 2002	NSNR, Land- arranging establishment	Carrying into the reality the borders	Oblast' budget	1500
1.4.	Giving the status of the biosphere reservat to the NSNR - submission of application to the Commission of MAB of the Republic of Kazakhstan	2000	NSNR, NGO «Naurzum», Akim of Naurzum district	Application		
	- compilation of the package of documents	2000- 2001	NSNR, Commission of MAB, Oblast budget	Package of documents		100

2. Creation of material-technical base for the protection and anti-fire equipping of the territory of the Naurzum State Nature Reserve

№	Description of Activity	Period	Executors	Form of completion	Source of financing	Amount for financing, (thousand tenge)
1.	Preventive anti-fire activity - 400 thousand tenge a) Explanatory activity among the population (lectures, talks) b) Making of announcing boards, panels and border's signs	Annually	NSNR	Equipping of the signs	Oblast budget	400
2.	Restricting anti-fire activity (control under the min-lines, anti-fire gaps, ploughing round the borders - 3500 thousand tenge	Annually	NSNR	Ploughing around	Oblast budget	3500
3.	Patrol activity (building of the metallic observation tower, purchasing of radio-station) - 1500 thousand tenge	2001	NSNR	Installation of the tower and radio-station	Oblast budget	1500
4.	Fundamental and current repair of auto-tractor technics and equipment	Annually	NSNR	Works	Oblast budget	1200
5.	Providing and full-packaging of the existed fire-chemical stations - as at the norm of full-packaging	Annually	NSNR	Purchasing	Oblast budget	4000
6.	Increasing of the staff number of the forest protection service - as at the norm	2001-2005	NSNR	Change of estimates	Oblast budget	700
7.	Purchasing of materials and means of radio-communications for the forest protection - as at the norm	2001-2005	NSNR	Provision of huntsmen	Oblast budget	500
8.	Creation of necessary reserve deposit of fuels on fire-danger period	Annually	NSNR	deposit of fuels	Oblast budget	700

3. Creation of material-technical base (MTB) for the conducting of scientific researches and cultural-awareness activity on the territory of the Naurzum State Nature Reserve and protected plots under the NSNR administration

№	Description of Activity	Period	Executors	Form of completion	Source of financing	Amount for financing, (thousand tenge)
3.1.	Material-technical provision of the scientific-research works (STW)					
	- Fundamental equipment					
	1. UAZ - 452 - field laboratory	2001	NSNR	Purchasing of the vehicle	Oblast budget	650
	2. Motor cycle «Ural» - 2 units	2001	NSNR	Purchasing	Oblast budget	240
	3. Car «Niva»	2002	NSNR	Purchasing	Oblast budget	550
	4. Snow-vehicle «Buran»	2002	NSNR	Purchasing	Oblast budget	120
	- Laboratory equipment and office technic					
3.2.	1. Computer and office suppliers	2001	NSNR	Purchasing	Oblast fund of environmental protection	173
	2. Copy-machine (A3-A4 format)	2001	NSNR	Purchasing	Oblast fund of environmental protection	250
	3. Laboratory equipment	2001	NSNR	Purchasing	Oblast budget, own funds from excursions	50
	- Field equipment	2001-2005				
	Stationary	Annually	NSNR	Purchasing	Oblast budget	200
	- Equipping of the library, informational		NSNR	Purchasing	Oblast budget	250

	center, working places					
	- Supplies	2001-2005 Annually	NSNR	Purchasing	Own means	24
3.2.	1. Designing of «The Museum of Nature»	2001-2005				
	- designing of exhibition halls (3 halls)	2001-2005 Annually	NSNR	Designing of the halls	Oblast budget	200
	- completion of internal works	2001-2005 Annually	NSNR	Completion of the works	Oblast budget	100
	2. Equipping of excursion routes (6 routes)	2001-2005 Annually	NSNR	Equipping of the routes	Oblast fund of environmental protection	120
	3. Designing of Lecturing Hall		NSNR	Designing of the hall	Oblast fund of environmental protection	450
	4. Equipping of taxidermy work-shop		NSNR	Equipping	Oblast budget	300
	5. Equipping of Collection areas	2001-2005 Annually	NSNR	Equipping	Oblast budget	100
3.3.	Expenditures to publication of scientific and cultural-awareness materials					
	- leaflet-descriptions of excursion routes (6 routes)	2001	NSNR, MNREP	Publication		
	- annotation lists of the animals	2001	NSNR	Publication	Oblast fund of environmental protection	60

	- annotation lists of the plants	2001	NSNR	Publication	Oblast fund of environmental protection	60
	- Volume 5 of «The NSNR Works»	2001-2002	SNSR	Publication	Oblast fund of environmental protection	250
	- Scientific Compendium «The Structure of the Community of Ground Invertebrates of the Northern Turgai»	2001	SNSR	Publication	Oblast fund of environmental protection	140
	- Vision agitation (posters and etc.)	Annually	SNSR	Publication	Oblast fund of environmental protection	160

6. Necessary Resources and Sources for Financing

№	Description of Activity	Sources for Financing	Necessary amounts, thousand tenge
1.	Equipping of the SNSP territory	Oblast budget	10000
2.	Creation of protected plots under the operation management by the NSNR	Oblast budget	4500
3.	Spreading of the borders of the NSNR	Oblast budget	1500
4.	Giving the status of the biosphere to the NSNR	Oblast budget	100
5.	Material-technical providing of the protection and anti-fire equipping of the territory of the NSNR	Oblast budget	12500
6.	Material-technical providing of the scientific-research activity and cultural-awareness activity of the NSNR	Oblast budget, Oblast fund of environmental protection, own means	2910 1903 74
	Total:		33487
	Including from oblast budget		31510

Document 14.) Decree of Akim of Korgalzhyn Region of Akmola Province on the transfer of land to KSNR, January 24, 2000

Translation

Akim of Korgalzhyn rayon
Akmolinsk district

Resolution
as of 24.01.2000 #04

“Concerning transfer of land
to Korgalzhyn Nature Reserve”

Based on the sent letter #10, from January 24th, 2000 by the director of the Korgalzhyn State Nature Reserve and according to the Article 11 of the Law of the Republic of Kazakhstan “On Protected Natural Territories” and considering the importance of the conservation of the Korgalzhyn Region’s unique flora and fauna of international significance, the Akim of Korgalzhyn region decided:

1. To extend the buffer zone of Korgalzhyn State Nature Reserve, to transfer lands of Maishukursky and Shalkarsky village okrug (region) and the rest part of Amangeldinsky village okrug to Korgalzhyn State Reserve (map is enclosed). These lands are not withdrawn from their juristic owners.
2. The director of the Korgalzhyn State Nature Reserve, Mr. Aitzhanov should now ranger the newly added territory and undertake investigations to improve living conditions for flora and fauna, develop ecological education, eco-tourism, encourage the population’s patriotism and make it conscious about the importance of the established buffer zone in order to protect the local nature for future generations.
3. Rayon Department of internal affairs (Mr. Abrayev S.S), tax police (Mr. Beszhanov A.T), authorized inspector on wild life protection of Korgalzhyn rayon (Mr. Rybakov B.M.) have to provide all kinds of support during the process of state reserve protective zone establishment.
4. Rayon tax committee (Mr. Tolenov S.A.) based on Article 77 of the Law of the Republic of Kazakhstan “On Protected Natural Territories” should be developed and submitted to the relevant bodies in order to be used for purposes of protection of the nature reserve.
5. Chairmen of committee on land management and land relations (Mr. Akzhambayev T.T) should provide the calculation of Maishukursky, Kyzylsaiskl and Amangeldy village okrugs territories, transferred to the buffer zone of Korgalzhyn State Nature Reserve.
6. Akim deputy Mr. Abuov E.K., should control the execution of this decree
- 7.

Akim of Korgalzhyn Rayon S.A. Tulebayev



Document 16.) Information Sheet on RAMSAR Wetlands

Categories are approved by Recommendation 4.7 of the Conference by endorsed Parties

Date of document fulfillment

For official use only

23-03-1997 DD MM YY

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Designation date Number of inquiry

Country

Republic of Kazakhstan

Name of the wetland: Korgalzhyn/ Tengiz Lakes

Geographical coordinates: 50° 27' N° 69' 10 E

Altitude: (average as well as maximum and minimum) 300-400 meters

Area: (in ha) 260,500 ha

Location: The lakes are situated in the Tselinograd district, northeast of the Aral Sea in the north of Kazakhstan.

Criteria: 1a,2a,2c,3a.

Kourgaldzhin and Tengiz Lakes are good examples of saltwater lakes characteristic for the north of Kazakhstan. The globally threatened species *Oxyura leucocephala* is a regular summer visitor to the lakes. The lakes are of great importance as breeding, moulting and resting stations for wildfowl during their migration in the northern desert zone. The wetland is the main nesting site for 10,000-14,000 pairs of *Phoenicopterus ruber*, which was listed in the USSR Red Data Book. The 20,000 other breeding birds include *Larus ridibundus* with 2,000 pairs, *L. canus* with 800-900 pairs, *L. ichthyaetus* with 350 pairs, *Sterna hirundo* with 1,500 pairs and *Cygnus olor* with 200 pairs. Other non-breeding summer visitors include *Tadorna tadorna*, *T. ferruginea* and *Oxyura leucocephala*. The site is a moulting refuge for numerous non-breeding birds including *Anas penelope*, *A. acuta*, *A. strepera*, *Aythya ferina* and *Anser anser*).

Wetland Types: P,Q,Ss.

The lakes lie in an extensive group of depressions in the north of Kazakhstan. These depressions contain shallow lakes (3-4 m depth), with a fluctuating water level and no outflow. Lake Tengiz is a saltwater lake surrounded by mudflats. Lake Kourgaldzhin includes a network of deep water channels with varying degrees of salinity.

Biological/Ecological notes: There is no information on vegetation around Lake Tengiz. The vegetation at and around Lake Kourgaldzhin comprises reedbeds with *Phragmites communis*. At the lakeside the grasses *Stigma lessingiana*, *Agropyron repens*, *Bromus inermis*, *Festuca sulcata* and *Calamagrostis epigeios* grow, as well as the flowering plants *Pyrethrum achilleifolium*, *Spiraea hypericifolia*, *Artemisia* spp., *Halocnemum strobilaceum* and *Atriplex cana*. Lake Kourgaldzhin also supports large zooplankton and phytoplankton populations and fish fauna.

Hydrological/Physical notes: The water levels of the lakes depend on the inflow from the Noura and Koulanou-Tpes Rivers, sluices on the dams across the rivers, the amount of flooding, and the evaporation rates. The lake water has a varied mineral composition, particularly high insulphates and chlorides. Tengiz is a saltwater lake of 156,000 ha. The

water level has fallen leaving vast mud and alluvial flats between the water and the original lake edge. The lake floor is covered with a thick layer of silt. Kourgaldzhin Lake is a lake of 39,600 ha with varying degrees of salinity. It comprises a network of deep water channels (0.5-2.5 m) and it supports a rich aquatic vegetation. The average temperature in January is -17°C and in June it is 20°C. The number of days with an average temperature below zero is 150 days per year.

Human Uses: In the area around Lake Kourgaldzhin all activities are prohibited except research, and in the area around Lake Tengiz there is some hunting, hay cultivation and some unspecified exploitation of natural resources. Studies were conducted on the ecosystem and of waterfowl populations. Laboratory facilities and boats were available for research at the time of designation.

Conservation Measures: The site was declared a Zapovednik (state nature reserve) in the late 1980s or early 1990s under the former USSR. At Kourgaldzhin Zapovednik all activities including tourism were prohibited. This concerned 237,100 ha of the Ramsar site. In the other 23,400 ha hunting was restricted and exploitation of natural resources was controlled in accordance with conservation of the wetland as a waterfowl habitat. The site used to have an area of 193,000 ha, but around 1981 it was enlarged to the current 260,500 ha. The Kazakh Academy of Science was working on recommendations for the management of the site, including water level control.

Adverse Factors: Pollution of inflowing water from the city of Timirtau has threatened the water quality of the site, and therefore its ecological character. The management of water control structures (sluices, dams) built some years ago occasionally fail to operate correctly.

Most recent Ramsar Information Sheet/datasheet: none. Please see Introduction for more details.
Please apply to Ramsar convention Bureau, Rue Mauverney 28, CH-1196 GLAND, Switzerland,
Telephone + 41 22 999 0170 Fax: +41 22 999 0169 e-mail:ramsar@hq.iucn.org

Document 17.)

MANAGEMENT PLAN for the "SARYARKA - STEPPE and LAKES of NORTHERN KAZAKHSTAN" Year 2002

1. Reasons to plan and create a clustered Natural World Heritage Site in the Kazakh Steppe Zone

Kazakhstan –one of the biggest countries in the world (9th place) – has joined the international convention for Natural and Cultural World Heritage of UNESCO in 1996. Several natural sites form international importance are situated on its territory in the center of the Eurasian continent. The vast taiga forests of Siberia in the north (Russia) are bordering endless flat steppes and semi-deserts in the South (Kazakhstan). The high mountains of Altai and Thien-Shan with its glaciers and snow covered peaks complete the assemble. Due to the high variety of habitats the flora and fauna of this area is very rich. On the territory of the republic there is a number of natural sites which are of high value for the world community and are worth to be proposed as UNESCO Natural World Heritage Sites.

In May 2000 a teaching seminar for building up capacities in the Central Asian states for the development of World Heritage Sites took place. It was organized by the Worldwide Fund for Nature (WWF) supported by UNESCO and under the advisory help of Green Peace Russia and others. On the seminar material on possible Natural World Heritage Sites in the Central Asian countries were assessed. The material on site Stepnoy Turgai (Naurzum Nature Reserve and Sarykopa Wildlife Reserve) were for the first time presented a bigger audience.

On December 25th in the year 2000 a workshop of the working group of the Ministry of Natural Resources and Environmental Protection on promotion of Natural World Heritage Sites of Republic of Kazakhstan had a session. About 10 national sites the RK1 were determined to be interesting to be proposed as Natural World Heritage Sites.

In February 2001 the national commission of Kazakhstan on UNESCO affairs has submitted the application to be included to the list of as first Natural World Heritage Site " Steppes and lakes of Northern Kazakhstan " to the Center of World Heritages of UNESCO. The site is a clustered territory, which consists of three clusters Korgalzhyn and Naurzum reserves, as well as Sarykopa Wildlife Reserve.

The site is of great value. On the background of global destruction of the steppe ecosystem the virgin Kazakh steppe with its specific fauna and flora can be found here. The lakes of this region are of global significance and play an important role for the migration and nesting of waterfowl, waders and other wetland birds. The site consists of three clusters:

1. The Korgalzhyn Nature Reserve borders to a plain with alluvial lake sediments. The biological diversity can be figured out with 41 species of mammals, 314 of birds, 4 of reptiles, 2 of amphibians and 14 species of fish - not counted are the invertebrate species so far. In addition over 400 plant species are found on the territory of the clustered site.

Since 1975 the Korgalzhyn Nature Reserve is included to the list "A" of the RAMSAR Convention² and in the year 2000 became a full member of the "Living Lakes" network of the "Global Nature Fund (GNF)".

2. The Naurzum Nature Reserve has got a high biodiversity as well. About 687 plant species , 1000 invertebrate animals, 44 mammals and 6 reptiles and amphibians were found on the territory. Within the nature reserve a combination of three habitat types are found: steppe, forest steppe and lakes.

1 RK = Republic of Kazakhstan

2 Kazakhstan has not ratified the convention so far, but as soon as the new republic will do so the site will be officially listed again.

3. The Sarykopa Wildlife Reserve is part of the Naurzum Nature Reserve. It is situated south of the nature reserve. It is managed and observed together with the reserve. It's main features are a lake system of the so called Sarykopnsk lakes. The purpose of the protection of the water and marsh system are rare breeding and migrating water birds and waders.

2. The World Heritage Site – Purpose of the management

Long term objectives for the whole site:

Conservation and study of steppes and wetlands in its natural condition. The observation of natural processes on the sites and changes in time of this typical processes in a unique ecological systems are of major interest. The biodiversity and genetic diversity of flora and fauna of the Natural World Heritage Site " Steppes and lakes of Northern Kazakhstan" is to be protected as well as the ecosystem as a whole.

The intermediate term objectives for the whole site:

1. Develop the sites to a State Biosphere Reserve with enlarging and adding of zones (development zone will be added to the existing buffer and core zone).
2. To study the complex ecosystem and reveal its regularities and irregularities.
3. To study adjacent areas of the clusters due to nature conservation and restoration.
4. Ecological education for a better understanding of the aims within the site is important.
5. Traditions of the local population have to be maintained and encouraged in and next to the clusters of the Natural World Heritage Site.

Short-term objectives on clusters of Korgalzhyn and Naurzum reserves:

1. Expansion of territory of Naurzum reserve to 103 000 hectares and rounding up the total area to 190 000 hectares
2. Expansion of existing inner buffer zone (no hunting) and creation of a outer buffer zone in order to widen up the undisturbed area for wild plants and animals.
3. Better conditions for the management of the clusters of the site have to be provided.
4. An optimum water level has to be maintained and managed within the Tengiz-Korgalzhyn Lake System.
5. Maintenance of the unblocked passage of water originated by thawed snow in spring to the lake systems of Naurzum Nature Reserve. That means to clear the water beds by destruction of dams built without proper planning.
6. Investigation of insufficient studied groups of animals i.e. invertebrates and small mammals.
7. Development of eco-tourism and recreation as an additional financial support for people living next to the reserves.

3. The legal status the Natural World Heritage Site

The clusters of the Natural World Heritage Site "Steppe and Lakes of Northern Kazakhstan" consist of:

- Core zone presently under protection
- A planed enlarged core zone of Naurzum Nature Reserve
- Inner buffer zone with no hunting allowed
- A projected outer buffer zone with hunting only in autumn allowed
- The zone of the wildlife reserve, with defined ways of use for its natural resources

Korgalzhyn and Naurzum State Nature Reserves are due to the Kazakh law on nature protection running under the highest category of protected natural territories in the RK. They are state property and managed by the Committee of forestry, fishing and hunting of the Ministry of Natural Resources and Environmental Protection.

Korgalgyn State Nature Reserve was founded by the decree № 214 of the council of the Ministers of the Kazakh SSR³ from April 16th in 1968. The organization of the reserve was initiated by the Academy of sciences of the Kazakh SSR. In the beginning the territory of the reserve covered an area of 177.200 hectares. Within the following 30 years its territory was expanding three times. Now the total area reaches 258.947 hectares, 177.505 hectares of them are covered by water.

Naurzum State Nature Reserve was founded by a decree of the Council of a National Commission of the Soviet Union on July 30th in 1931. It was called: "The organizations of the Kazakh State Nature Reserve Naurzum". The territory covered about 250.000 hectares. Nowadays the total area is 87.694 hectares. There is a two kilometer inner buffer zone (no hunting) established around the reserve. It was organized by the decree № 188 by the executive committee of the oblast⁴ from 17th March 1977 covering now a total territory of 116.500 hectares.

On the territory of the reserves it is not allowed to exploit any natural resources or lease its ground to anybody. The ground of the sites of which are owned by a state fund are not subject of any privatization within the RK as it is stated in the Law on protected areas in the RK, article 5.

Korgalzhyn and Naurzum Nature Reserve are very important wetland sites and run under category 1a of the IUCN (International Union for the Conservation of Nature).

A two kilometer inner buffer zone (no hunting) is established around the nature reserves. The decree № 7/285 from 25th April 1974 for Korgalzhyn nature reserve and the decree № 188 from 17th March 1977 for Naurzum nature reserve made by the responsible oblast committees give the legal frame for this zone.

The cluster Sarykorpinsk State Wildlife Reserve is of major importance within the RK. It was founded without withdrawal of property of the ground from their owners and users. The owners and users can use the ground of the wildlife reserve only limited due to the aims of nature conservation determined in the decree mentioned below.

The wildlife reserve was organized with the decree № 96 by the council of Ministers of the Kazakh SSR from 13th March 1986. without full restriction of land use (Decree № 77 by Turgai oblast executive committee from 10th April 1986.). With the decree № 66 of the Council of Ministers of the Kazakh SSR from 18th February 1988. It was transferred to the be controlled by the Ministry of Forestry of the Kazakh SSR. Now the wildlife reserve is as well as all nature reserves under the administration of the Committee of Forestry, Fishing and Hunting in the Ministry of Natural Resources and Environmental Protection of the RK.

The territory of the wildlife reserve covers 85.200 hectares including the ground of the former state farms "Kizbelskkyi" (68100 hectares) and "Albarbugetsyyi" (17100 hectares). The wildlife reserve is run under the administration of the Naurzum Nature Reserve.

The territory of the inner buffer zones of all the reserves is state property and in parts used for crop cultivation and grazing live stock. The territory used for agricultural purposes held by seven limited partnerships. Due to the above mentioned decrees any actions harming the environment are forbidden. The administration of the reserves provide a ranger system to

3 SSR abbreviation for: Sovjetskix Sozialistitsheskix Respublik – Republic of the Soviet Union

4 Kazakhstan is divided in seven districts (= Russ. Oblast)

control the buffer zone and the reserves themselves. The way how the inner buffer zone is organized and rangered nowadays has to be developed further.

Recommended actions for the development:

The State Nature and Wildlife Reserves can be developed to Biosphere Reserves (Law on protected natural territories from 1997, paragraph 40-3), keeping the existing reserves as core zone. It is therefore planned to include the clusters of the heritage site to the global net of Biosphere Reserves of UNESCO (Programm MAB – Man and Biosphere). For this purpose an outer buffer zone and a development zone has to be established as well. First steps have been already undertaken in the past years.

4. Borders

The cluster of the World Heritage Site Korgalzhyn Nature Reserve is on the territory of Akmolinsk and Karaganda oblasts. The administration is situated in the village Korgalzhyn in the Korgalzhyn raion⁵ of the Akmola oblast. Its inner buffer zone of the reserve is on the territory of Korgalzhyn, Egindykol and Nurinsk raion. The projected outer buffer zone will be also on the territory of these raions.

The nearest city is the capital of the RK Astana (170 km to the northeast of the cluster of the World heritage site (further called object)). From Astana up to village Korgalzhyn an asphalted road of 130 km was built. From Korgalzhyn onward leads a bulk road up to the object. Regular bus service is operating on the route Korgalzhyn - Astana. Driving further up to the object is only with permission of the nature reserve administration possible. During winter generally for a short time it is not possible to use the roads due to blizzards and snow drifts. It is possible to drive up to the object from Astana within 2,5-3,5 hours.

The contour of territory of reserve in general coincides with external contours of large lake Tengiz and extensive water-marsh space of the lake system Korgalzhyn. The borders of the reserve were established by drawing a line 20-40 m above the shore under the filling conditions of the lakes in 1971-1972. The border of the inner buffer zone runs in 2 km distance along the existing border of the nature reserve.

The steppe ecosystem is underrepresented in the cluster Korgalzhyn Nature Reserve. The territory is mostly aquatic and the biggest nature reserve in the RK. For big migrating mammals like the Saiga antelope the site is important, but can not support a vital population on its territory alone. The big salt lake Tengiz in the west and the Korgalzhyn lake system in the east of the territory make up international important wetland. The wetland is important for migrating waterfowl and waders as well as breeding site for rare bird species. Some of the salt and fresh water lakes near the reserve are not on the territory. For example the salt lakes Kirej and Kypshak in the south west, which play an important role for waders and waterfowl on their migration.

The cluster Naurzum nature reserve of the World Heritage Site is located in the southeast part of Kostanaj oblast on the territory of two counties “Naurzum” and “Auliekol”. The biggest part of the three parts of the reserve is located in the county Naurzum in the village Karamendy. It is situated about 200 km south of the oblast center of Kostanaj city.

The reserve extents from north to the south about 65 km; from west to the east about 63 km. Administratively the territory of the reserve is divided into three forest divisions: Sosnovskoe, Betagashskoe and Naurzumscoe.

The territory of the Naurzum reserve is subdivided itself in three cultures isolated from each other by corridors of about 10 to 20 km: Tersek-Karagai – 6.665 hectares; Sypsyn-Agach – 7.048 hectares; Naurzum-Karagai with of Sarymoin, Aksuat, Zharkol and other lakes – 36.918 hectares . Thus, the total area of state nature reserve is 87.694 hectares, including the Auliekol region with 4.665 hectares.

⁵ Every oblast consists of several raions (counties)

The cluster "Sarykorpinsk wildlife reserve" covers an area of 85,2 thousand hectares and includes:

The territory of the former state farm "Kizbelsk" – 68,1 thousand hectares; the territory the former state farm "Albarbugetska" – 17,1 thousand hectares.

Recommended actions:

1. To round up the territory of all clusters:

To provide the clusters of the World Heritage Site with sufficient space for the protection of their biodiversity it is planned to widen up the buffer zones and round up the reserves territory itself.

A petition to the government of the Republic of Kazakhstan asking for expansion of the territory of Naurzum State Nature Reserve should be handed in.

Expansion of the inner buffer zone of Naurzum Nature Reserve. All three parts could then be situated on one territory. The land within the buffer zone does not have to be withdrawn from their owners.

Expansion and establishment of the inner and outer buffer zone, to include big steppe areas in the west of the Tengiz Lake and adjacent salt lakes important for migrating birds.

2. To develop the zonation of the protected territory further:

The establishment of the following zones are planned:

The **core zone** or conservation zone with a strict protection regime for the ecosystem and its flora and fauna (present territory of the reserves). Within this zone only very limited human activities are possible i.e. eco-tourism, fishing and hunting, cattle grazing, etc..

The **buffer zone** subdivided in an inner and outer buffer zone. The **inner buffer zone** is the existing 2 km buffer zone adjacent to the core zone. In the inner buffer zone hunting and fishing is very limited in all seasons as well as other human activities. The **outer buffer zone** is adjacent to the inner buffer zone and 10 or more kilometers broad. All human activities which are not severe affecting the ecosystem are allowed. A major difference between the inner and outer buffer zone is also that licensed hunting is possible only in autumn, but not in spring. Within this zone the development of eco-tourism is enforced. In the long run in the buffer zone the cultivation of crops is not desired, as it is done now in some parts of it. Grazing of horses and sheep is the preferred land use form in this zone.

Adjacent to the mentioned zones a **development zone** will be established. Environmentally friendly economic activities will be developed here. Such as traditional ranging of horses and sheep directed on manufacture of non-polluting production will be carried out. Development of traditional economic activities (horse and sheep breeding). Also aid for the revival of traditional handy crafts and maintenance of national traditions will be given. A limited hunting tourism will be also organized.

In the surroundings of the bigger settlements suffer overgrazing due to high numbers of milk cows. It is necessary to determine the amount of cattle which can graze without overusing the pasture grounds. That means in some areas to organize more summer camps where horses, sheep and not milking cows are kept away from the settlements. environmental district has tested long and intensive influence from pasture of the animals. It is desirable to determine and support a safe load of cattle in vicinities of settlements.

5. Basic threats

1· Regulation of the water level in the Korgalzhyn Nature Reserve

The river Nura is the main supply of water to the lakes of the Korgalzhyn Nature Reserve. Due to fluctuations of the water level in the river, both because of the natural climatic and anthropogenic reasons (regulation of the river by dams and reservoirs) the lakes are sometimes flooded or dry partly out. This does have a negative influence on the breeding and feeding sites of the waterfowl and waders. Therefore a system of dams within the reserve does regulate the water level of the lake system within the reserve. The dams are built out of loam and clay and frequently burst due too the high floods. That may cause a mass dying of fish in winter time, because the lakes are too shallow to provide enough oxygen for the fish populations. Also the breeding sites of the greater Flamingo, which are nesting on islands in the Tengiz lake are flooded and the colonies are in danger.

2· Regulation of the water level in the Naurzum Nature Reserve

The Karasu Rivers does bring the melting water to the lakes of the reserve. Therefore the construction of dikes along the stretch of the rivers for farming and cattle breeding bears a threat to the lake system. No more dams should be build and the old ones should not be repaired or rebuilt. Where possible the dams have to be removed.

3· Pollution of the main water supply of Korgalzhyn Nature Reserve in the upper reaches of the River Nura by industrial waste of the enterprises in the Karaganda Oblast

The river water was polluted by heavy metals, mineral oil and other chemical products. The heavy metal load of the water and the silts in the river bed are very high. Mercury is very toxic (Class 1) and the metal and its combinations are present in the eco-system. Over many years during the Sowjet Union industrial waste with this heavy metal was discharged in the river. Sometimes even Acetaldehyd got in the river due to failures and old technology of the joint-stock company "Karbid" in Temirtau (near Karaganda).

Downstream from Temirtau two water basins are emptied in spring and carry the contaminated silts down the river for tens of kilometers. Probably the contamination has reached the lakes of the reserve jet and influence the ecosystem badly. Investigations on the accumulation of mercury, other heavy metals and water pollutants in animals and plants were not carried out so far. The hydrological post on the Korgalzhyn lakes (Sultan - Keldy reach, Karazhar cordon) was closed. Unfortunately monitoring of the water and its quality is not carried out further.

4 Pollution of the lakes of Naurzum reserve

Together with thawed snow of reservoirs waste products of animal industry and agriculture (including old mineral fertilizers and other chemicals), which are dumped in ravines and channels of the Karasu River feeding the Naruzum lakes.

5· Uncontrolled use of bio-resources.

The locals living around the nature reserves are forced more and more to use the bio-resources of the reserves. As a matter of fact poaching on fish, waterfowl, boars and other species is a growing problem. It is necessary to install a functioning system how to sell licenses to hunters and use the profit directly for nature conservation purposes within the reserves.

6. Management of natural resources on the territory of the Natural World Heritage Site

6.1· Management of the resources of lifeless nature

- 1) To strengthen the protection of the territory of the reserve by enforcing the ranger system also in the buffer zones.
- 2) To maintain and support an optimum water level in the Korgalzhyn lake system.

- 3) To provide the nature reserves with enough financial resources to combat fires becoming a threat to the ecosystem of the reserves.
- 4) To destroy all dikes and dams on Karasu Rivers, carrying thawed snow of spring high water in the lakes of Naurzum Nature Reserve (the lakes are supplied mainly by water of thawed snow)
- 5) To clear up waste and pollution in the river bed of Karasu Rivers and the ravines supplying the lakes of the reserve in autumn.

6.2. Management of bio resources

It is necessary

- 1) to strengthen the protection of big mammals such as : elk, roe deer, wild boar, saiga antelope and fur animals.
- 2) to achieve a outer buffer zone with no hunting in spring.
- 3) to prevent predatory birds being killed on not isolated power lines to the ranger stations within the reserve, it is planed to install alternative energy sources on the stations i.e. wind and solar energy and remove the power lines.
- 4) to identify the key species for the reserves and monitor them.
- 5) With article 37 in the law of the Republic of Kazakhstan on protected natural territories from 1997 and changed in 2001 it is now possible to use parts of the territory and its natural resources as agreed with the authorized bodies i.e. nature reserve administration and Ministry of Natural Resources and Environmental Protection. This includes eco-tourism, building up information tours for public relation work, game hunting, sport fishing and collecting of medicinal plants (all non commercial). This is not including highly important parts of the reserve and some of the activities are only to be carried out by the workers of the Zapovednik or these people living directly in the reserve i.e. hay cutting and cattle breeding for their own households.

7. Anthropogenic factors

7.1. Local inhabitants

The World Heritage Site is located in sparsely populated areas. Population density around the sites is about 1,4 human/km². There are only a few settlements near the reserves. Directly in the reserve are only the rangers of the reserve itself living permanently. Within the borders of the sites there are therefore no settlements.

In the existing inner buffer zone only two small settlements are situated in Kurgalzhyn Nature Reserve (Villages Abai and Nygyman together with less than 700 inhabitants). Just next to the border of the existing inner buffer zone in Narzum Nature Reserve and partially in the reserve three settlements are situated (Staryi Naurzum, Karamaishy, Saryshyanak only 120 inhabitants all together). Within the borders of the projected outer buffer zone of the Korgalzhyn Nature Reserve and so on the periphery of the Natural World Heritage Site cluster are located 12 settlements and the regional center Korgalshyn. The total number of the population does not exceed 11 thousand people in this villages and is constantly falling over the past years. Out of this people about 98% are ethnic Kazakhs. They are all living settled, but kept some of their national traditions till now.

Within the borders of the projected outer buffer zone of Naurzum Nature Reserve and so on the periphery of the Natural World Heritage Site cluster 7 settlements and the regional center Karamendy are located. The total number of the population there does not exceed 6 thousand people. The number of unemployed people is very high (65% or more) and also in this cluster people tend to migrate towards the bigger cities or leave the country. About 75% of the population in the Naruzum region are ethnic Kazakhs.

Recommended actions:

- 1) To get contacts to the regional administration and local enterprises in order to develop a plan of joint actions to keep the settlements clean and supply save water supply for the house gardens.

- 2) To plant species of indigenous tree species in the outer buffer zone, to supply locals with timber and fire wood (only due to Naruzum Nature Reserve).
- 3) To give assistance for the development of a domestic handcraft and support the marketing of the products i.e. carpets, leather products, etc..

7.2. New ways to develop the local economy

The area around the Nature World Heritage Site is characterized by a very low level of productive enterprises. There is no industry found and during the Sowjet times high subventions were paid to the weed production, which was introduced in the 50ies and 60ies by the so called "Virgin Land" program. Weed production can nowadays not provide a powerful development to the region. Range land farming might be able to contribute more and more to the local economy.

In the lakes of Korgalzhyn Nature Reserve and Sarykopa Wildlife Reserve in the past years fish was caught to maintain and brought to the market.

Actions for the development of economically relevant activities:

- 1) It is desired to convince all land users still cultivate weed within the inner buffer zone to give this up and change to range land farming with sheep and horses. The productivity of weed is so low that it is and will not be profitable in the long run (only 300 to 600 kilogram per hectare weed is harvested in normal years).
- 2) To develop recommendations for land users how to use the pastures and haymaking grounds with a maximum of biodiversity within the buffer zone.
- 3) To promote revival of sheep and horse breeding in the whole region.
- 4) To monitor the fish populations and develop norms for the amount of fish to be caught. Introduction of local fish species in promising lakes could be taken into consideration.

7.3. Tourism

The biodiversity of the Nature World Heritage Site bears a high potential for the development of eco-tourism. In the past a growing interest of foreign nature tourists could be observed. In the Korgalzhyn region sport fishing is carried out traditionally. In spring and autumn for a determined period of time it is possible to hunt waterfowl. During the hunting season about 200 mainly local hunters visit the area. The hunt on geese and other waterfowl is licensed, but unfortunately the control of it is not satisfactory.

Organized tourism in the vicinities of the Nature World Heritage Site is only now starting slowly. The potential for mass tourism is not given. Only small tourist groups watching nature will be realistic due to the very specific interests of this people. A limited amount of hunting tourism should also take place. It is a great challenge to limit and manage this form of tourism in a sustainable way for the reserves natural treasures.

1. Cluster Korgalzhyn Nature Reserve

Since 1998 basic infrastructure for a small scaled nature tourism where established with international help (NABU- German Society for Nature Conservation). A study was made on the potentials of eco-tourism in the region by NABU and first European ornithological tourist groups visited the region in year 1999 and 2000.

For this purpose 4 ecological tour routes were developed, 2 of them operate. A small guest house with 12 beds is equipped for the summer season. The tourist groups are guided by scientists and rangers of the reserve. Transport and catering is provided by locals and the employees of the nature reserve.

Within two years 6 groups with foreign tourists came to the reserve (64 people in total). Local people have so far only few interest in ornithological tourism, because bird watching is not popular in the RK.

2. 1. Cluster Naruzum Nature Reserve

In Naruzum Nature Reserve 6 routes for eco-tourism were developed. They were worked out by the scientific staff of the reserve. The routes show all types of vegetation and landscape

within the reserve. Lakes, springs, forest, forest-steppe and steppe can be watched on very scenic routes through the reserve. Several camps at ranger stations can be built up to overnight in tents or in houses of the rangers.

Recommended actions: It is necessary to provide initial financing for the establishment of more basic infrastructure for tourists along the routes. Local and international tourism can only be established by an interplay of local NGOs, the administration of the reserve, local population and international organizations.

Recommended actions:

- Eco-tourism can bring together economic development and nature conservation in the region. For a successful establishment of eco-tourism in the region it is necessary that to make people understand that a consumptive use of nature is fatal. A radical change of thinking has to take place by building up a consciousness about the high value of the Nature World Heritage of the region.
- It is necessary to maintain and install basic infrastructure for nature tourists and limit the quantity of hunters and hunted wild animals. Profits of licensed hunting tourism should be put directly to the protection of the reserves.
- As eco tourism and hunting will not play a very big role for the local economy it should be community based developed. Therefore trainings and workshops should be offered to locals to get a deeper understanding how eco-tourism could work.

8. Ecological education and information

Korgalzhyn Nature Reserve has done work on the information the local population from the first years till now. On ranger post Karazhar the first small museum was founded. In 1984 it has been enlarged and transferred to a new building, which was built specially for the reserve in the center of the region the village Korgalzhyn. In the exposition shows 216 stuffed animals are displayed, there are 13 colored dioramas, 2 map schemes, and informative material is presented on stands. The visitors are guided through the exhibition by trained personal, organized in an department for public relations of the reserve since 1977 with two to four members. The museum is still operating and is visited locals, school classes as well as international guests. A total of over 32.400 visitors in the past 16 years could be registered (average per year 2000 visitors). The reserve staff is active in public relation work. Over 242 articles have been published and more than 300 lectures were held at local schools. A now newly founded department for tourism at the reserves administration is working well. As all other nature reserves in the CIS countries scientific staff out of most important fields are working at the reserve i.e. ecologists, geographers, botanists, ornithologist and other zoologists. From the very first beginning the scientist of the reserve hold close contact to several Institutions of higher education of the former Soviet Union. In particularly students of the following Universities had undergone their practice here: Institute of Agriculture Irkutsk, Universities of Kharkov and Saratov, Kazakh (Almaty) and Eurasian (Astana) Universities. During the last 4 years also international students from Germany and many other countries came here.

Over the past 30 years media, magazines, radio and television were again and again interested in the reserve and its biodiversity. A close cooperation with the local newspapers took has always been taking place.

Information materials about the reserve are regularly produced. Two scientific films about Korgalzhyn Nature Reserve had been made and shown to the public (Kazakhtelefilm, Telefilm USSR).

Scientific edition of " Kurgaldgino Nature Reserve" (Khrokov V.V., Alma-Ata, 1987); colorful booklets (1999, 2000); posters and postcards were published. Information about preserve is

available in such books as “Nature Reserves of the Soviet Union”, (Moscow, 1969), “Nature Reserves of Middle Asia and Kazakhstan (Moscow, 1990).

In Naurzum Nature Reserve as well exhibitions in the museum did play an important role for the publicity of the reserve. The museum was founded 5 times in different buildings and in various localities due to the transfer of the reserves’ administration and/or construction of other buildings. In the museum are all different ecosystems of the reserve represented i.e. steppes, forests as well as stuffed animals of big mammals (wild boar, roe deer, wolf and Saiga antelope) and big birds (pelican, heron, crane, geese, spoon bill and others). There are also insect collections, archeological items etc. on display. At the end of 80ies and beginning of the 90ies the nature reserve was visited frequently. Tourists came from the regional center, schools classes, from the state farms and cities like Kostanai, Rudnyi, Lisakovsk etc. In average the about 300-400 visitors came to the reserve. In good years up to 2000. The administration plus museum is now situated in the regional center next to the reserve. The museum has been growing and some expositions are replenished.

Public relation work was also carried out intensively. Generally from 12 to 36 articles were published in the local, regional and national press.

Two booklets about Naurzum Nature Reserve and the popular scientific book “Orly” (1979 and 1994) were issued. Descriptions of two excursion routes were published. In co-authorship with the institute of teachers’ improvement as learning material for 8-9 classes of secondary schools named “Kostanai oblast geography” was published (Kostanai, 1993). Employees of the scientific department wrote basic chapters about the nature of the region and its protected territories. The manual was included into educational process of leading schools in the whole area. The knowledge about the reserve and its fauna and flora could be risen effectively. Employees of scientific department have taken part in the edition of “Ecology and the Environment” (Kostanai, 1994), which was written by the association of oblast scientists, and for the preparation of materials for the Kostanai oblast atlas. A big role in propagation of reserve plays public association “Obshestvennaya Ekologicheskaya Organizazia” (OEO – Ecological Non-profit Organization) “Naurzum”. The organization initiated for the first time in the RK Kazakhstan the realization of Parks Marche (1996) and has created information center in the regional center with information materials about the reserve such as video material, sets of books about ecology, wildlife management and exhibitions on wildlife. On its activities a arboretum around the new Nature Museum was planted. It realized ecological youth camps on the territories of the reserve, works with children and in youth circles. In the information center it became a tradition to carry out thematic lessons, round tables on “Days of the Earth” and “Marches of Parks”, in the “World Day of the Environment” and “Day of Knowledge”. Through OEO “Naurzum” a number of information and propaganda materials about reserve was issued. Since August 1995 till August 1997 in the Naurzum Nature Reserve and together with OEO “Naurzum” two “Peace Corps” volunteers from the USA worked on site. Joint realization of nature protection actions, lectures at schools and in organizations promoted the attraction and the interest on the reserve. Employees of the scientific department and volunteers read about 60 lectures per year.

A big role in the popularity of the reserve has played a theater play organized with the help of the regional administration, by workers of reserve together with regional management of culture, devoted to the 60th anniversary of reserve activity in 1994. In the house of culture of the region a exhibitions about the activities of the nature reserve were displayed. Special releases of newspapers and advertisements were issued. Annually 2-3 tele-radio-broadcasts in regional and national radio and TV senders about the nature reserve took place. On anniversaries big actions promoting the work of Naurzum Nature Reserve were carried out. In 2001 (70th anniversary of the foundation of the reserve) a big exhibition with archive material on the creation of the reserve were displayed. About 15 scientific articles around this event were published.

Recommended actions:

- The public relation work with the public should be continued and local NGOs are to be involved.

- Scientific and popular scientific publications should be continuously published.
- Exhibitions in the museums of the reserves should be updated and a mobile unit created.
- Besides TV and Radio the world wide web should be used more and more to make the site more popular

9. Research and monitoring

1. In Korgalzhyn Nature Reserve during the process of its organization various research work was carried out in and around the Tengiz-Korgalzhyn lake system. Surveys on the following fields were done: Geological, soil, hydrological, chemical, botanical and zoological. Special focus during this time and till now was put on ornithological researches. As a matter of fact until recently highly skilled ornithologists constantly worked at the reserve.

Since 1958 on the protected territory more than 300 scientific works of various topics were published. This published material is a good basis for further comprehensive research to understand the complex ecosystem and its further development.

Scientific research in the reserve is also carried out by a number employed scientists (up to five), as well as by experts of foreign organizations. During Soviet times intense scientific work was carried out by the Academy of Science of the Kazak SSR (Almaty, Institutes of Zoology and Geography). Due to financial difficulties, both at the academy and the reserve, research work done on the reserve became less and less.

Since 1974 is carried out the program "Annals of Nature. Since 1987 "Calendar of Nature" is made on the basis of phenological observations on birds and some other plant and animal species.

Presently the ecology and biology of waders and waterfowl are studied; the ecology of fishes; and the vegetative cover. For the third year now with help of NABU Germany counts of breeding and migrating waders and waterfowl are carried out.

This monitoring allows to control the condition the site and it is necessary to be continued. However it is by far not sufficient now. It is desired to organize a more efficient monitoring of flora and fauna. Earlier the monitoring of fauna was done by an Epidemic Station of the oblast. Effort should be done to renew this station and give it new tasks. Station and also to restore a hydrological post on the Korgalzhyn Lake (Sultan-Keldy reach, cordon Karazhar).

2. In Naurzum Nature Reserve in the period from 1986-1998 scientific research had been carried out by both staff scientists of the reserve and by the scientists from academic institutes.

In the above mentioned period very much scientific work was done in the reserve:

- Several expeditions took place.
- Several different research projects took place during this time.
- Every year final reports on different topics are written.
- Several diploma work and dissertations were written about the reserves nature.
- The scientists of the reserve were regularly publishing about the reserve.
- A big scaled research project on the forest steppes in the reserve was carried out.

The Scientific department has contacts with science and research institutions all over the CIS and also some foreign research institutes. On the basis of a cooperation contract invertebrate animals were surveyed together with the Zoological Institute of Saint Petersburg University, the Institute of Zoology and Protection of Gene Pools as part of the Ministry of Science and Academy of science of the RK (Almaty), the zoological museum of the Moscow State University (Russia) and the Institute of Zoology of the Republic of Ukraine (Kiev).

A good cooperation with international research institutes took place, such as the Institute of Global Ecology (Great Britain, Dorset). In cooperation with the University of Arizona (USA) the Saker Falcons in Asia were in the focus of interest.

Recommended actions for all clusters:

- Creation of a databank of flora and fauna organized and fed by the scientist of the reserve and other national and international organizations;
- To determine the invertebrate species in Korgalzhyn Nature Reserve and Zarykopa Wildlife Reserve;
- To organize long-term monitoring program for the observation of the hydrological and hydro biological condition of lakes;
- To carry out investigations of the flora within the limits of the inner and outer buffer zone;
- To organize monitoring of seasonal migration waterfowl, other wetland birds and large mammal;
- Realization of annual air counts of animals and birds;

For the realization of the research programs it is necessary get involved experts from national and international academic institutes, as well as to invite students from national universities or institutes and also volunteers from abroad.

10. Programs on development

Program for the conservation of biodiversity

1. In order to protect effectively the biodiversity of the Nature World Heritage Site it is necessary to expand the buffer zone and add a development zone.
2. To develop the different zones with its regulations, it is necessary to involve all responsible people and organizations.
3. Assistance for the realization of international projects on conservation of biodiversity:
 - a) “Integrated Conservation of Priority Globally Significant Migratory Bird Wetland Habitat. A Demonstration on three sites“ (Finances by UNPD/GEF, only Korgalzhyn Naure Reserve)
 - b) “Network for the development of protected water-marsh areas in Kostanai oblast for the protection of waterbirds” (International Partner: WWF, only Naruzum Naure Reserve and Sarykopa Wildlife Reserve)
 - c) “Maintenance of biodiversity in Central Asia (a package of urgent actions)” (International Partner: WWF)
 - d) “Saving of the Saiga antelope population (Finances by GEF; Partners: local NGOs & NABU)
 - e) “Deinstallation of for birds dangerous electric power lines by installation of solar energy supply on remote ranger stations. (Finances by GNF – Global Nature Fund, NABU)
 - f) “Monitoring of migrating and nesting water birds. (International Partner: NABU)
 - g) “Investigation on the ecological situation in the Tengiz-Korgalzhyn lakes system. (Finances by the Czech government)
 - h) “Analysis of protected territories in Central Asia” (GEF/WWF and others.)

Ranger Work Programm

1. It is necessary to develop an optimal structure of the reserve’s ranger service.
2. It is necessary to maintain a pool of technical equipment for the ranger service of the reserve.
3. The installation of a mobile radio communication is a basic need for the effectiveness of the protection of the site.
4. There is a need to develop legal instruments to enable rangers to do public relation work with the locals, work together with the local police and administration.
5. Training of the ranger service to get a deeper understanding of the legislation made for nature protection, training for self-defense, to prevent fires and to control nature users’ work.

Ecological education and information program

Actions:

1. Development of a registration system for the visitors of the Natural World Heritage Site.

2. Development of a modern information center for ecological education on the basis of the museums.
3. Renovation of the nature museums and updating the expositions.
4. Organization a video-tape library and small cinema with film about the nature of Korgalzhyn and Naursum Nature Reserve.
5. To attract more visitors the thematic exhibitions will be shown in the museum.
6. Preparation and release of booklets and brochures about the World Heritage Site and the reserve as a whole.
7. Preparation and organization of souvenir production about the site of the World heritage (postcards sets of photos, badges, caps etc.).
8. Preparation and realization of thematic lectures.
9. Organization and realization of thematic seminars the rangers of the reserves.
10. Preparation a guides for the employees of the reserve on public relation work with the locals and visitors.
11. Realization of " Open Door of the Reserve Day ", "Park Marches", "Earth Day" etc
12. To develop a program to attract volunteers for seasonal work with visitors of the World Heritage Site.
13. To built up new contacts with scientific institutes in the country and give assistance for practical activities of students.
14. To maintain interaction with mass media, newspapers, magazines, radio and TV.

Ecological tourism development program

Planned Actions:

1. To develop and describe ecological routes for tourists.
 2. To equip ecological routes i.e. information boards, catering facilities etc.
 3. To train interpreters to guide foreign tourists.
 4. To train guides for information tours of local tourists.
 5. To organize a cultural program for attraction of the local population.
 6. To organize demonstrations on the process of making kumis⁶.
 7. To organize demonstrations of national customs (music, dance)
 8. To give the possibility to rent a horse and ride over the steppe.
 9. Organizing a community based tourism for backpackers and other individual travelers.
 10. Better organization of the small hotel and catering service there.
 11. Building up a network of domestic hotels.
 12. To give tourists the possibility to sleep and eat in jurts.
 13. To organize transport under participation of the local people i.e. to organize a network of individual owners of vehicles for both individually and in groups traveling tourists.
 14. To organize in the buffer zone of the reserve ice fishing with a minimum of service.
 15. During the hunting season in fall it is necessary to cooperate with the hunting tour operators.
 16. To make advertisement for the attraction of foreign tourists.
11. Administrative-technical management of the World Heritage Site and its development

II.1. 1. The management of Korgalzhyn Nature Reserve is carried out by the administration of the reserve, operation under supervision of the Committee for forestry, fishing and hunting of the Ministry of Natural Resources and Environmental Protection.

The staff of the reserve for January 1, 2001 consists of 31 persons.

There are 5 departments:

6 fermented horse milk

1. Administration - 5 persons;
2. Scientific department - 5 persons;
3. Department on work with visitors and tourists - 3 persons;
4. Territory Security Service - 13 persons;
5. Technical department - 5 persons;

Everyone is working on full-time basis.

The structure of the employed people is quite acceptable to manage the site effectively and monitor its nature and for the public relation work with visitors and locals of the adjacent settlements.

Except the ranger service all departments have enough staff.

11.1. 2. The system of the ranger service of the Korgalzhyn Nature Reserve is organized as follows

The whole territory is subdivided into 5 areas and 12 sectors, which are observed by one inspector. There is an operative group, which goes 3-4 times per one month on tour to prevent poaching.

The ranger stations and the county center Korgalzhyn, where the administrative headquarter is situated are connected by bulk roads. Between headquarter and station Karazhar a telephone line is built. The hardest time for the ranger service is spring, summer and fall. In wintertime the ranger service is only done at a minimum due to the bad weather conditions.

The technical equipment of the ranger service is poor. Everything is worn out up to its limit. In the last 10 years the reserve has not received one automobile, boat or boat motors and no snowmobile. The rangers are working practically driven by their enthusiasm for their work. To carry out their work they use their own vehicles, which have been bought during Soviet times and can be used only on days with good weather. Combustive-lubricating material is frequently bought from personal budget. The rangers are supplied with new uniforms from time to time.

Connected to the enlargement of the buffer zone, the protected territory will expand. It will be impossible to provide sufficient control for the territory by the now employed 13 rangers. Consequently it is necessary to increase the number of rangers by 6-8 persons in order to install two additional permanent posts on important arrears where not less than two rangers will be working. Rangers should have skills to be able to execute the broader rights and duties, the ability to work under field conditions, skills to handle a weapon, to operate and repair vehicles and good theoretical background and practical skills on the protection of wildlife. Therefore it is necessary to us it is necessary to increase material equipment of Security Service. An other important feature both for the rangers and tourists are observation platforms five to ten meters high. With a binocle it is possible to observe steppes and lakes in a distance of up to 30 kilometers. To enable the rangers to provide effective protection of the territory it is necessary to proved them with new cross-country vehicles and snowmobiles. For radio communication 2-3 stations and up to 20 walkie-talkies. In addition the ranger service should be equipped with video cameras and dictating machines. Modern equipment for the ranger service is necessary, because poachers are nowadays often highly equipped. They have fast vehicles, modern rifles and automatic weapons.

11.1. 3. The scientific staff of Korgalzhyn Nature Reserve consists nowadays of 5 people. In the past up to six scientists were employed. The head of the department of science is at the same time the vice director of the nature reserve. With her are working three scientists and one laboratory assistant. The scientist have absolved a higher education and have made diplomas in biology. Finances for scientific work are very low since the Soviet Union broke down. For the realization of scientific projects there was no budget in the past 10 years. Sleeping bags, tents and other necessary equipment is worn off. A necessary vehicle for the field work is not working.

The few field work carried out is only continuing old research programs on a very low level. The work can only be carried out due to the enthusiasm, who provide their private transport and by materials on their own expenses.

With international help a computer room could be equipped with internet access. A library is still existing, but has only few new literature on stock, due to lacking finances.

The department of science begun in the past years to cooperate with international organizations and universities. They started to get experts and volunteers working within the reserve on different scientific topics in cooperation with the scientists of the reserve.

11.1. 4. If visitors come to the Korgalzhyn Nature Reserve they are firstly guided to the museum of the nature reserve. The museum is therefore well known by people from abroad as well as locals. To workers of the nature reserve are working in the museum and can manage to guide the visitors around the museum easily.

Basically 2-3 persons are enough to run and update the museum, make advertisements and publish printed in order to organize information center and regular development of an advertising and educational printed matter.

11.1. 5. For the organization of the work with national and international tourists the Korgalzhyn Nature Reserve has recently employed one person. The eco-tourism has two main seasons. Bird migration in spring and fall. In spring flowering tulips on the steppes round the lake make the site even more attractive. It is necessary to coordinate seasonal workers and experts (guides, translators, owners of motor vehicles, and others), which are ideally found among the locals and students from the near capital Astana.

11.2. 1. Naurzum Nature Reserve has its own administration, which is controlled by the Committee of forestry, fishing and hunting of the Ministry of Natural Resources and Environmental Protection.

The staff of reserve of 37 persons (January 2001).

There are 5 departments:

1. Administration - 5 persons;
2. Scientific department - 5 persons;
3. Ranger Service - 23 persons;
4. Technical department - 4 persons;

Everyone is working on full-time basis.

The structure of the employed people is quite acceptable to manage the site effectively and monitor its nature and for the public relation work with visitors and locals of the adjacent settlements.

Except the ranger service all departments have enough staff.

11. 2. 2. The ranger service of the Naurzum Nature Reserve is organized as follows. The territory is divided into 3 forest divisions of 8 areas with 28 sectors. These sectors are divided to 12 rangers. There is an operative group, which 3-4 times per one month carries out patrols in order to prevent probable poaching.

The roads between the ranger stations and the center of the area "Karamenda", where the administration of the reserve is situated, are bulk roads, only the road to Kostanai is asphalted. Between the head quarter and the ranger stations radio communication is possible.

The hardest time for the ranger service is spring, summer and fall. In wintertime the ranger service is only done at a minimum due to the bad weather conditions.

The technical equipment of the ranger service is poor. Everything is worn out up to its limit. In the last 10 years the reserve has not received one automobile, boat or boat motors and no snowmobile. The rangers are working practically driven by their enthusiasm for their work. To carry out their work they use their own vehicles, which have been bought during Soviet times and can be used only on days with good weather. Combustive-lubricating material is frequently bought from personal budget. The rangers are supplied with new uniforms from time to time.

Connected to the enlargement of the buffer zone, the protected territory will expand. It will be impossible to provide sufficient control for the territory by the now employed 12 rangers. Consequently it is necessary to increase the number of rangers by 4 people in order to install two additional permanent posts on important arrears where not less than two rangers will be working. An operating group of 3-4 rangers should permanently patrol the territory. Rangers should have skills to be able to execute the broader rights and duties, the ability to work under field conditions, skills to handle a weapon, to operate and repair vehicles and good theoretical background and practical skills on the protection of wildlife. Therefore it is necessary to us it is necessary to increase material equipment of Security Service. An other important feature both for the rangers and tourists are observation platforms five to ten meters high. With binoculars it is possible to observe steppes and lakes in a distance of up to 30 kilometers. To enable the rangers to provide effective protection of the territory it is necessary to proved them with new cross-country vehicles and snowmobiles. For radio communication 2-3 stations and up to 20 walkie-talkies. In addition the ranger service should be equipped with video cameras and dictating machines. Modern equipment for the ranger service is necessary, because poachers are nowadays often highly equipped. They have fast vehicles, modern rifles and automatic weapons.

11.2. 3. The department of science at Naurzum Nature Reserve had during Soviet times up to 12 scientist employed. In the years before the war even up to 18 scientists. Now there are only 5 scientists in the department: the vice director of the reserve, who is at the same time head of the department, three scientists and two laboratory assistants. All of them have a higher education and done a diploma. Finances for scientific work are very low since the Soviet Union broke down. For the realization of scientific projects there was no budget in the past 10 years. Sleeping bags, tents and other necessary equipment is worn off. A necessary vehicle for the field work is not working.

The few field work carried out is only continuing old research programs on a very low level. The work can only be carried out due to the enthusiasm, who provide their private transport and by materials on their own expenses.

For processing field data there is an office and the library in the administration building. The scientific department does need desperately material support.

11.2. 4. If visitors come to the Naurzum Nature Reserve they are firstly guided to the museum of the nature reserve. The museum is a place to give lectures and does play a big role in the work of the local NGO Narzum. The NGOs major aim is nature conservation and public relation work on this topic in the region. Therefore the museum is a good platform to do this work. There is no staff in the museum. For a visit to the museum one has to make a booking in advance in order to get a guided tour through it.

11.2. 5. There is scientific tourism on a small scale done in the Naurzum Nature Reserve. Mass tourism does and will not take place in the reserve, because it is too remote and there is no infrastructure installed. There are several routes developed and described to watch the nature of the reserve. Tours for all age groups are offered and are guided by the scientists of the reserve.

12. Finances for the management of the World heritage site

The current budget of the World heritage site (Korgalzhyn and Naurzum reserves) in 2001 was 10.800.000 Tenge⁷.

Financial Sources (according to "The regulations of the Korgalzhyn and Naurzum Nature Reserves" and "The Law on Protected Natural Territories"):

⁷ 1 US \$ was in 2001 about 135 Tenge, i.e. 10.800.000 Tenge equals 80.000 US \$

- Budget of the government of RK;
- Finances from environment funds;
- Donations of legal and physical persons;
- other sources of the financing which is not forbidden by the legislation;
- Finances from international organizations

13. Monitoring and further development of the management plan

To put this management plan into action it is necessary to make up a supervisory council.

In this supervisory council the following organs and institutions will be represented: Committee of the Ministry of Natural Resources and Environmental Protection for forestry, hunting and fishing; local administrations of the settlements round the reserves; NGOs, the reserve administrations; farmers associations, hunters and other important users of natural resources.

The supervisory council gathers not less than once per year, necessary additions and changes to the management plan will be made.

This management plan is to be understood as a first draft for a plan, which will be developed further by the members of the council and put into action step by step.

Document 18.) Kazakhstan specially protected areas development program years 2006 – 2008

Table of contents

1. Kazakhstan specially protected areas 2006-2008 years development program's passport
2. Introduction
3. Analysis of contemporary situation of nature reserve work in Kazakhstan
4. Program's aim and objectives
5. The Program basic directions and mechanism of realization
 - 5.1. The order of the organization and enlargement of special protected areas network
 - 5.2. Enlargement of the existing territories and creation of new specially protected areas with rights of legal person
 - 5.2.1. State nature reserves (zapovednik)
 - 5.2.2. State national parks
 - 5.2.3 State nature reserve (rezervat)
 - 5.2.4 Time frame for the organization of protected areas
 - 5.3. Organization of specially protected areas without rights of legal person
 - 5.3.1. State reserve zones
 - 5.3.2 State nature sanctuaries (zakazniks)
 - 5.3.3. State nature monuments
 - 5.4. Creation of specially protected areas of local importance
6. Program's necessary resources and sources of financing
7. Expected results from realization of the Program

2. Introduction

Table 1.
Protected areas of the Republic of Kazakhstan within the limits of geographic zones.

Nature zones, subzones	Nature reserves	national parks	Reservations	Nature sanctuaries	zakazniks	reserved zones	total
South forest-steppe	-	-	-	-	2		2
Kolochnaya gently-arid steppe	-	-	-	2	1		3
Gently-arid steppe	-	3	-	18	4		25
Arid steppe	-	-	-	-	1		1
Gently-dry steppe	1	1		-	9		11
Dry steppe	1	-		1	1		3
Wilderness steppe	-	-		-	5		5
Semi-deserts	2	-	2	1	4	2	11
Desert	-	-		-	10		10
South desert	1	-		-	-	2	3
Mountains with expressed vertical zone	5	4		3	19		31
Total	10	8	2	25	56	4	105

5.2. Enlargement of the existing territories and creation of new specially protected areas with rights of legal person

5.2.1. State nature reserves (zapovednik)

State nature reserves – specially protected areas with reserve mode of protection, with status of the nature protection scientific institute designed for conserving typical, rare and unique natural complexes. Reserves are the higher category of specially protected areas on republican value. Any economic activities are forbidden and are spent only research efforts at the territory of reserve. Cultural, educational and tourist actions can be spent only on specially allocated sites.

It is necessary to enlarge the areas of 7 existing SNR till 2008 year for conservation the biodiversity on adjacent territories (table 3).

Table 3.
Enlargement of Nature Reserves (Zapovedniks)

6. Korgalzhyn state nature reserve, Akmola region	
Location	Reserve is located in 150 km to Southwest from Astana city. It includes Korgalzhyn's system of lakes and Tengiz Lake, and also two-kilometer zone of steppe bordering to them.
Year of formation	Is created by the Kazakh SSR Council of Minister's Governmental regulation № 124 from 16 th April 1968 year.
The area, thousand in ha	The existing area - 258963 th.ha. Enlargement of the territory due to inclusion the parcel of steppe to the West and Southwest from Tengiz Lake, including Kipchak and Kirey Lakes, - 160.000.ha, to the West from Tengiz Lake till Terysakkan River, and also lands to the East from Esey Lake till Nura River, including Zharsuat, Dry and Kyzylkol Lakes – 40 th.ha. (GEF/UNDP project)
Motives of enlargement	Western steppes are important as a constant place of saiga fawns, also there are greater colonies of a marmot-baybak. East territory – habitat of wild boar, lakes – places of permanent congregations of waterbirds, including especially protected species.
Protection rate	Reserve, with the exception of all kinds of economic activity. Carrying out research and monitoring works is permit.

5.2.2. State national parks

Table 6.

New Organization of National Parks

3. State national park “Buiratau”, Karaganda and Akmola regions	
The area, thousand in ha	60,0
Motives of organization	Conservation, research and recreational use of dry steppes unique natural complexes
Objects of protection	Ermentau mountain-steppe range ecosystems, rare and disappearing species of fauna and flora, geomorphological objects
Protection rate	Reserved and registered

5.2.3 State nature reserves (rezervat)

Table 7.

Recomenations for the Organisation of Nature Reserves

1. Novinsky state nature reserve, Atyrau region	
Location	Kazakh site of Volga river delta at the border with Russia (on the Novinsky state reserve basis)
The area, thousand in ha	75, 0
Motives of organization	Protection of east part of Volga delta wetlands at the border Kazakhstan and Russia: nesting-places of water-birds, valuable and rare species of mammals
Objects of protection	Rare and disappearing species of mammals, habitats of migrant water-birds
Protection rate	Reserved and registered
3. "Altyn-Dala" state nature reserve, Kostanai region	
The area, thousand in ha	489,794
Location	It is located on territories of Naursumsky, Auliekolsky, Amangeldinsky and Jangeldinsky districts of Kostanai region
Motives of organization	Protection of unique landscapes, wetlands of steppe and semi-desert zones of flat Kazakhstan, having global value for conservation and restoration of populations of rare and disappearing species of big mammals (saiga, koulan) and birds (bustard, sociable lapwing, a complex of raptorial species and wetland birds).
Objects of protection	Sites of untouched steppe complexes, calving sites of saiga, migratory ways and summer pastures, and also a largest wetland with fresh and weekly-salt water with nested colonies of rare species of waterbirds.
Protection rate	Reserved and registered
4. Tyrgai nature reserve, Aktobe region	
The area, thousand in ha	348,0
Objects of protection	Protection of wetlands biocenosis of Turgai lakes, invected to Ramsar Convention List.
Motives of organization	Reservoirs of Turgai depression, playing the significant role during nesting, moult and seasonal migrations of birds in Central Palearctic. It was given a higher nature protection status – A group of MAB system. Functioning of reserve will promote to implementation of Ramsar Convention liability.
Protection rate	Reserved and registered
5. "Akjayik" state nature reserve, Atyrau region	
Location	Site of Ural River with adjoining coast of Caspian Sea within the limits of geographic coordinates 46°42' - 47°02' n.l.; 51°10' - 52°02' e.l.
The area, thousand in ha	111,5
Motives of organization	Protection of unique Ural River delta wetlands with adjoining coast of a northeast part of Caspian Sea, being a place of feeding and nesting of waterbirds on Caspian-Black Sea-East African flyway, and also areas of migration and areas of sturgeon and fine-mesh species of fishes.
Objects of protection	Sustenance of 34 rare and disappearing species fauna and flora and their habitat. (GEF/UNDP project)
Protection rate	Reserved and registered

5.2.4. Time frame for the organisation of protected areas

Table 7

Terms of enlargement and creation SPA with rights of legal person

Name of SPA	The area, ha	Terms of development and design approval (scientifically and technical-economical justification)					
		Enlargement			Creation		
		2006	2007	2008	2006	2007	2008
State nature reserves							
7. Korgalzhyn NR, Karaganda and Akmola regions	330963	+	-	-	-	-	-
National Parks							
6. NP «Buiratau», Karaganda, Akmola regions	60 000	-	-	-	+	+	-
Nature Reservat							
1. Novinsky NR, Atyrau region	75 000	-	-	-	-	-	+
3. “Altyndala” NR, Kostanai region	489 794	-	-	-	+	+	-
4. Tyrgai NR, Aktobe region	348 000	-	-	-	+	+	+
5. “Akzhayik” NR*, Atyrau region	111500	-	-	-	+	-	-

6. Program's necessary resources and sources of financing

Table 12

Expenses for enlargement and creation SPA in years

Name of SPA	The area, thousand of ha	Expenses, thousands in tenge			Expenses distribution in years in thousand Tenge (1 USD: 130 Tenge)		
		Total	including:		2006	2007	2008
			Technical Documentation	Staff maintenance			
Enlargement of existing SPA							
Reserves							
1. Alakolsky	90,0		+	-	+		
	120,0	Wetlands project 2620,0	2620,0	378,0	1300,0	1509,0	189,0
2. Markakolsky	135,04	2400,0	2400,0	-	1200,0	1200,0	-
3. Aksu-Zhabaglinsky	88,754	1500,0	1500,0	-	1500,0	-	-
4. West-Altai	86,422	2400,0	2400,0	-	1200,0	1200,0	-
5. Korgalzhynsky	72,0	3563,6	-	3563,6	-	1781,8	1781,8
National parks							
1. Bayanaulsky	150,0	2000,0	2000,0	-	1000,0	1000,0	-
2. Kokshetau	181,148	1000,0	1000,0	-	1000,0	-	-
Creation of SPA							
Reserves							
Tarbagataisky	250,0	16684,5	3500,0	13184,5	1500,0	2000,0	13184,5
National parks							
1. Zhungar-Alatausky	407,465	25458,3	800,0	24 658,3	-	800,0	24658,3
2. Kolsai lakes	96,0	16 159,1	-	16 159,1	-	16159,1	16159,1
3. Buiratau	60,0	15700,6	1938,0	13 762,6	1938,0	15700,6	15700,6
4. Sairam-Ugamsky	149,053	10 994,9	-	10 994,9	10 994,9	10 994,9	10 994,9
5. Akzhailyau	40,0	6186,2	1100,0	5 086,2	-	1100,0	5086,2
Nature reserves							
1. Turgaisky	348,0	17534,0	3800,0	13 734,0	1800,0	2000,0	13 734,0
2. Novinsky	75,0	10587,5	2200,0	8 387,5	1000,0	1200,0	8 387,5
3. Altyn-Dala	489,79	27 000,0	3500,0	23500,0	2000,0	1500,0	23500,0
4. Irtysh river floodlands	370,0	15669,4	3400,0	12 269,4	2000,0	1400,0	12269,4
5. «Akzhayik»	111,5	24939	-	24939	-	12469,5	12469,5
Total:		225963	32158	141736	28433	53855	143675

Document 19.) Outline of the hydrological status in the Nura River and Tengiz Lake Basin - focusing on the maintenance of natural flows in Nura River to safeguard long-term water supply of Korgalzhyn Nature Reserve

Outline of the hydrological status in the
Nura River and Tengiz Lake Basin -
focusing on the maintenance of natural flows
in Nura River to safeguard long-term water
supply of Korgalzhyn Nature Reserve



Foto: Til Dieterich

Final Draft Version

**Compiled by Stefanie Claus and Martin Lenk
Astana, January 2004**

1 Contents

1	Contents.....	180
2	Executive Summary.....	183
3	Hydrological Characteristics of Tengiz-Korgalzhyn Basin.....	185
3.1	Climate. Precipitation and evaporation	185
3.2	Water resources and natural regime of Tengiz Basin	186
3.2.1	Rivers Nura, Kulanotpes and Kon.....	186
3.2.2	Tengiz and Korgalzhyn Lakes.....	189
3.2.3	Natural Flow Regime of Tengiz Basin.....	190
3.2.4	Groundwater.....	192
4	Chronological Inventory of Objects of Anthropogenic Influence onto the Hydrological Regime of Tengiz-Korgalzhyn basin	194
4.1	Samarkand Reservoir	195
4.2	Sherubainura Reservoir	196
4.3	Irtysch-Karaganda Canal (IKC)	196
4.4	Expansion of irrigation farming	199
4.5	Nura-Zhezkazgan Canal	199
4.6	Nura-Ishim Canal	200
5	Current water resources inventory.....	201
5.1	Data availability	201
5.2	River flow	201
5.3	Groundwater	202
5.4	Water quality	203
5.4.1	Nura water quality compliance with Kazakhstan standards.....	203
6	Future Projects in Tengiz-Korgalzhyn basin.....	204
6.1	Water supply to the City of Astana	204
6.1.1	Population Forecast Astana City	205
6.1.2	The Existing Water Supply of Astana.....	205
6.1.3	Current and future water consumption.....	206
6.1.4	Assessment of Alternative Water Resources	207
6.2	Astana sewage water disposal	208
6.3	Mercury pollution: Nura River Clean up Project	210
6.3.1	Mercury in the Nura River – description of the problem.....	211
6.3.2	Nura River Clean up Project	215
6.4	Dry lands Management Project	217
7	Research and monitoring in Nura River Basin	219
7.1	GEF Wetlands Project “Integrated Conservation of Priority Globally Significant Migratory Bird Wetland Habitat: A Demonstration in Three Sites”	219
7.2	TWINBAS – Twinning European and Third Countries River Basins for Development of Integrated Water Resources Management Methods	221
8	Management of Water Resources	223
8.1	Overview Environmental Law and Institutional Context	223
8.2	Umbrella Project “Improvement of the environment for sustainable development of Akmola, East-Kazakhstan, Pavlodar, Karaganda Provinces and the City of Astana of the Republic of Kazakhstan”	223
8.3	Nura Ishim River Basin Management Project	224
8.4	New Water Law 2003	224
9	Bibliography.....	225
10	Appendices	227

Figures

Figure 1: Climate diagram (Korgalzhyn).....	185
Figure 2: Comparative Runoff pattern of Nura & IKC.....	187
Figure 3: Annual flow and long-term flow pattern Nura (1933-2001).....	188
Figure 4: Allocation of annual flows (gauge Romanovka).....	189
Figure 5: Origin of Tengiz Lake Water.....	191
Figure 6: Profile through Samarkand reservoir.....	195
Figure 7: Overview of Irtysh – Karaganda Canal.....	197
Figure 8: Water balance of Irtysh – Karaganda Canal.....	198
Figure 9: Estimated growth of Astana until 2035.....	205
Figure 10: Distribution of mercury in the Nura floodplain.....	213
Figure 11: Mercury in the topsoil 0 - 85 km downstream of the Temirtau.....	213
Figure 12: Mercury content in the river sediments.....	214
Figure 13: Water issues of Nura and Ishim near Astana (Sewage water, bifurcation, Nura-Ishim canal).....	229
Figure 14: Nura River satellite image of the exceptional high spring flood in April 2002.....	230
Figure 15: Share of the two month with the highest Nura runoff.....	231
Figure 16: Vyacheslav Reservoir storage variation and long term reliable yield.....	232
Figure 17: Diagram of natural water regime and human impact in the Nura River Basin.....	151

Tables

Table 1: Distribution of runoff in the Tengiz Basin.....	192
Table 2: Water consumption of Nura Basin (litre / day / capita).....	194
Table 3: Annual Water demand in target years (Mm ³ /year).....	207
Table 4: Water Balance without Additional Water Resources.....	207
Table 5: Sewage Generation Forecast, m ³ /day.....	208
Table 6: Tentative Development Plan for Agriculture Land for Re-Use of Treated Wastewater.....	209
Table 7: Content of Mercury and technogenic silts deposits in Nura River Valley between Samarkand and Intumak Reservoirs.....	215

Photos

Photo 1: Kysyltas mountains near the headwaters of Nura River in fall 2003227
Photo 2: Spring of Nura River in fall 2003228

2 Executive Summary

Most of Northern Kazakhstan is a semi-arid grassland area, therefore water supply is a critical factor for wetlands like Tengiz lake. Transition processes in post-soviet Kazakhstan include fundamental changes in natural resource valuation and use, such as water.

This documentation:

- characterizes the hydrology of the Tengiz Basin;
- analyses human impact on the natural hydrological system of Nura River (including water quantity, quality and runoff dynamics) during soviet times, at present as well as planned activities for the future;

presents ongoing and planned projects focusing on the maintenance of a secure long-term water supply of Korgalzhyn nature reserve;

Major findings are:

QUANTITY OF WATER

- Almost half of the surface water supply for the proposed world heritage site is not coming from Nura naturally, but from the rivers Kulanotpes and Kon. After 1990 water diversion of these rivers for irrigation has decreased from about 18% to approximately 5% and is unlikely to increase anymore, due to a partial depopulation of their catchment areas and the inefficiency of the irrigation systems;
- Analysing the total period Nura flow has been monitored, the runoff has even increased, most likely due to additional water from the Irtysh-Karaganda canal.
- The existing reservoirs near Karaganda have only capacity to store a limited share of the runoff water of Nura in most of the years, especially during the spring flood, when about 85% of the runoff has been monitored. An improvement of reservoir capacity could not change this situation substantially in a medium term;
- Preventing the spill over of Nura into Ishim river, what naturally reduces the overall Nura flow by estimated 20-30%, could be an easy option to increase water for the nature reserve if needed;
- The Government of Kazakhstan decided not to divert water from the Nura basin to solve the issue of growing water demands of the new capital Astana, but completed the construction of an additional canal from the Irtysh-Karaganda canal into the Ishim basin instead;

QUALITY OF WATER

- Since 1990 water quality of Nura has improved significantly, due to decline of industrial production and irrigated agriculture. Emission of mercury has stopped completely;
- However, water quality seems to be the biggest issue for the Nura River. The Government of Kazakhstan in cooperation with the World Bank is implementing a 40 million US \$ project to clean up Nura from mercury (2003-2009);
- An improved enforcement of existing environmental regulations is likely to lead to the reduction of other pollutants;

MANAGEMENT AND MONITORING

- To improve water management in the Nura basin, the Government of Kazakhstan extended competences of the Nura River Basin Management Authority in 2003;
- The Government of Kazakhstan is setting incentives for efficient water use by pricing;
- The legal framework is improving. The new water code was signed in 2003. A GEF wetland project (2003-2007) aims to establish a national law on wetland protection;
- Fostering sustainable land use systems will contribute to the improvement of the water quality;
- Research and monitoring projects are implemented or will be implemented during the next few years to further improve decision making processes and the protection of Korgalzhyn Nature Reserve;

As far as more than one million people are living in the Nura basin and the biggest industrial centre of Kazakhstan is located there too, it would be ambitious to call the hydrological regime of Nura to remain “completely natural”. However, as shown in this documentation, most of the ecologically important natural key characteristics of Nura, such as: overall water quantity, spring floods and annual variation of runoff (except of water quality), surprisingly survived soviet time and will be maintained. The Government of Kazakhstan is taking action to improve the situation for Korgalzhyn Nature Reserve. The remaining risks are extremely low.

3 Hydrological Characteristics of Tengiz-Korgalzhyn Basin

3.1 Climate. Precipitation and evaporation

The climate of Akmola and Karaganda provinces, where the Nura River Basin is situated, has severe continental climate. The average annual precipitation is between 150 and 400 mm. Over the year precipitation is distributed utmost unevenly. Long-term and seasonal distribution pattern of annual precipitation is highly

uneven as well. The months with the highest rainfall are May to August, the winter months have low rainfall (usually snow) that may average only 36% of the annual total but accounts for nearly 100% of the runoff.

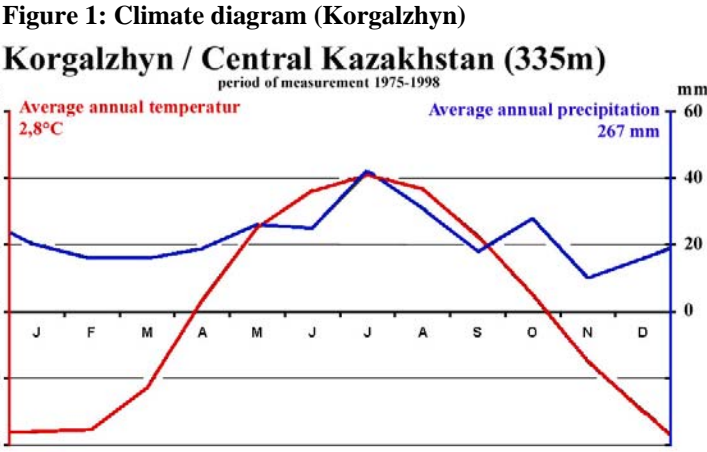
The transitional seasons spring and autumn tend to last only a few weeks. During spring average wind speed tends to be

high. July, the month with the highest average air temperature which is 18-21°C, and on some days during some years sees temperatures up to 40 or 42°C. From May to September relative humidity is 43-48%. Open water evaporation during periods with average day temperature above 10°C amounts to 500-800 mm.

January, with an average temperature of about -18°C, is the coldest month of the year and during a severe winter even temperatures of -52°C can occur. One of the characteristics of the continental climate are its extreme variations of average temperatures over the year.

Furthermore, the climate in central Kazakhstan is characterized by a small average amount of precipitation and high annual sunshine duration, which in the Nura River Basin amounts to 2300-2500 hours.

Those elements of climate, which are connected to the sun, like sunshine duration and evaporation are not subject of variation, thus it is easy to make a forecast for events like the beginning of snowmelt or spring flood. Elements of climate, such as precipitation, which depend on other factors of the weather often differ sharply from average data.



Source: DIETERICH, T. (2000), changed

3.2 Water resources and natural regime of Tengiz Basin

The following chapter examines the natural flow regime in the Tengiz Lake Basin.⁸

Tengiz Lake Basin is a depression without outlet with a catchment area of 95,250 km². The most important part of Tengiz Basin is the Nura River catchment, an area of 51,150 km², including about 8,050 km² catchment not directly running off into Nura River, but into one of the several small terminal lakes situated within the Nura River Basin. The catchment area of Kulanotpes and Kon Rivers is 25536 km².

3.2.1 Rivers Nura, Kulanotpes and Kon

Nura River is the longest river in Kazakhstan (978 km), which both rises and ends in Kazakhstan. It rises on the the Kyzyltas mountains southeast of Karaganda at an elevation of about 1000 m asl. (see Figure 17) It flows generally northern and then westerly direction for a distance of 978 km to its delta into the system of the Korgalzhyn Lakes. During severe drought the river may stop to flow during the first three months of the year.

In literature one finds different information concerning the average annual flow of Nura River: 473 Mm³ ⁹, 596 Mm³ (gauge Romanovka)¹⁰ or 605 Mm³ (Romanovka)¹¹. Of fundamental importance in deriving flow data blocks, and for assessing the potential yields of the basin individually, is a far as possible naturalization of the flows. Man-made effects have affected the flows of the Nura River historically, and these affects are currently included in the flows as measured in the historic records. These effects include large flows diverted into the Nura River since 1974 via the Irtysh-Karaganda canal, a major scheme built to enable massive industrial and irrigation water demands at that time prevailing in the Nura River Basin, which had to be met.

From the research of hydrologists follows, that the flow of a thousand-year flood event is estimated 3300m³ per second (gauge Romanovka).

In earlier publications one will find lower average flow data, because regular measurements of flow data started in the 1930s, a dry period which lasted from 1933–1939.

Of particular significance is the seasonal runoff pattern indicated by River Nura. It shows the expected major flows to be regularly at snow-melt time, i.e. April to June (see: Figure 15, page 231). The river freezes in winter time and therefore has low flow during this period. Average annual and seasonal flow

⁸ Under the name Tengiz Lake Basin we understand the catchment of the Tengiz Lake in a broader sense, including different smaller secondary catchments such as Kypshak or Kerej, as well (see Annex).

⁹ Grin et al (1987), p. 13.

¹⁰ Altan (1997), p. 42.

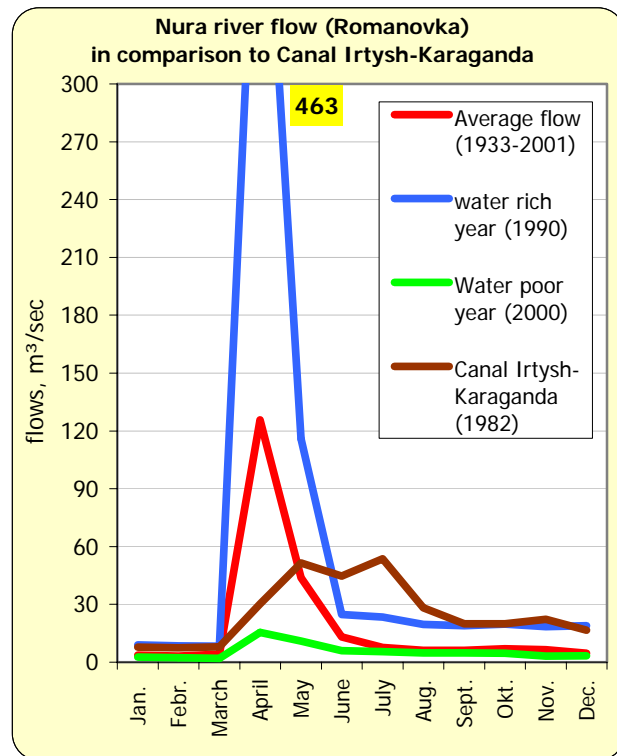
¹¹ Average flow: Jacob&Gibbs (2003).

pattern show large variation. (see Figure 2)

In most of the years snowmelt and spring flood occur simultaneously. The flood peak is reached around the 10th day (at gauge Romanovka about April 19th). Afterwards the water discharge continuously sinks. Springs floods last approximately 43 days (minimum 15 days and maximum 73 days¹²). In the months from April to June more than 85% of the annual flow runs off.

These variations of flow are based on the existence of only one source of spring flood, which is snow-melt. Years with a small amount of snow are usually followed by smaller flows. However, winter with large amounts of snow are not yet enough a guarantee for large flows, especially if

Figure 2: Comparative Runoff pattern of Nura & IKC



Sources: Jacob&Gibbs (2003); Grin et al (1987) 79, 136.

the spring time increase in air temperature does not occur rapidly. Only on frozen ground the water is really running off, otherwise it seeps into the ground.

It is typical for arid zones, that the share of runoff in precipitation is very low. In the Nura River Basin an average annual rainfall of 335 mm faces 763 mm potential evaporation. The runoff is only 13 mm¹³, that makes 3% of precipitation.¹⁴ If one looks at the composition of this runoff, it shows, that snow-melt water makes up 80–85%, which is the largest share of this runoff. Rain contributes only 5–8% to the runoff, while at the same time 10% come from groundwater.¹⁵ Besides aridity and the uneven distribution of annual rainfall the plain relief is responsible for the existing low runoff characteristics.

The difference between low water years and high water years is very big. This way, the monthly average flow in April of the flood year 1990 was 30 times higher, than during the drought year 2000, while the relation of the annual flow of the flood year 1990 toward the drought year was 11,5 times more for the first. (see Figure 2 , Figure 3 and Figure 4)

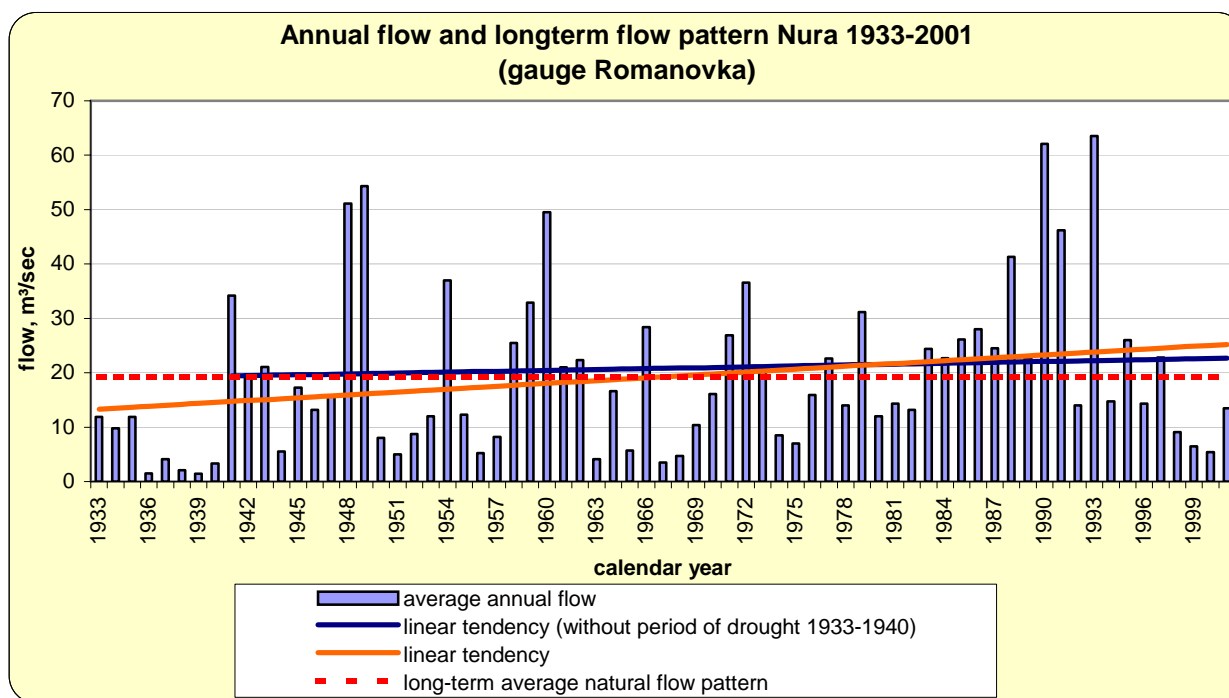
¹² Berkaliyev (1959), p. 235.

¹³ Jacob&Gibbs (2003). Sidorenko (1970, p. 500) mentions 12,6 mm runoff for Tengiz Basin.

¹⁴ Grin et al (1987), p. 11.

¹⁵ Atlas of the Kazakh SSR, vol. 1 (1982), p. 51.

Figure 3: Annual flow and long-term flow pattern Nura (1933-2001)



Source: Jacob&Gibbs (2003)

The flow shown in Figure 3 is not the natural flow of Nura River.

During flood Nura River tends to partly discharge into the Ishim river, near Astana City. This stream bifurcation could theoretically lead to the union of Nura with Ishim (the share of stream bifurcation can reach 60%), but at this time bifurcation is partly prevented by dams. This way about every 10 years Nura River spills into Ishim river. Then estimated 10% of the bifurcation flow is kept in the Nura basin by dams, the other part flows into the Ishim (see Figure 13). The phenomenon is not yet completely investigated.

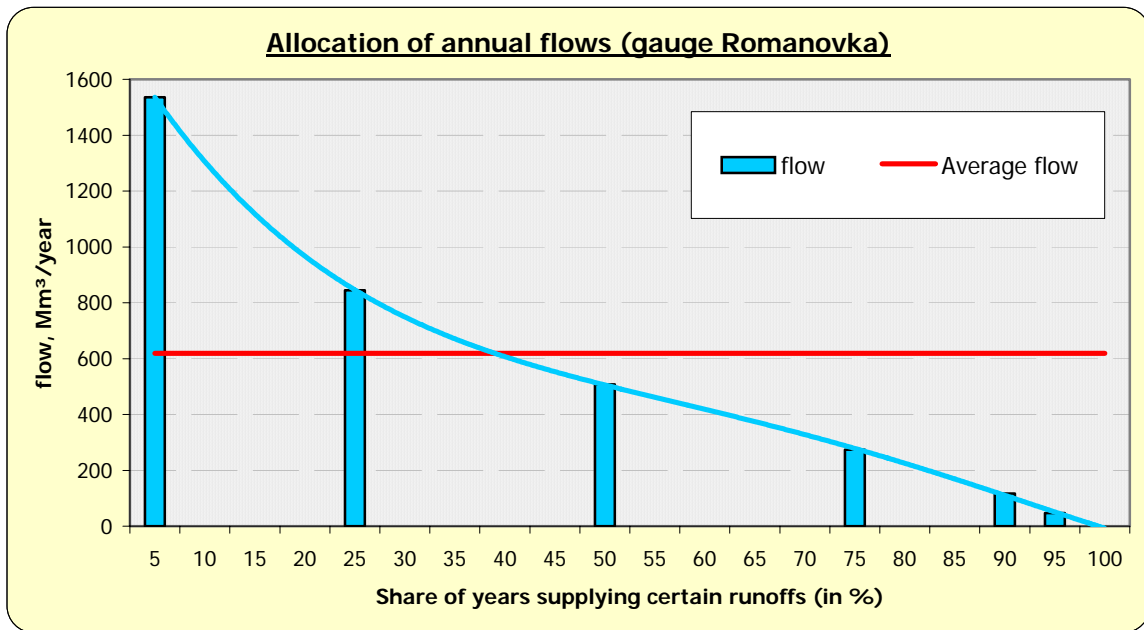
However, there are plans to extent the existing dam, to a length of 18 km and a height of 6 m.

The content of minerals in the Nura River fluctuates. Mostly it is about 0,6–1,5g/l. During flood mineral content is lower.¹⁶ Out of cations Na^+ dominates, the content of anions fluctuates and depends on part of the river and on season.¹⁷

¹⁶ Berkaliyev (1959), 38.

¹⁷ KazGIPROVODHOZ (1988), 24.

Figure 4: Allocation of annual flows (gauge Romanovka)



Source: Ilyushenko (2000).

Southern, south-western of Tengiz Lake the catchment of the Kulanotpes River¹⁸ (length 364 km) and its tributary Kon River (length 219 km) is situated. Both rivers flow periodically. The average annual flow (measured at Aktubek) is 265 Mm³. Spring flood last about one week, but during drought spring flood can last a few hours only.

The lakes on the lower Nura¹⁹ the river has to pass are serving as buffers, therefore spring floods of Nura River reach Korgalzhyn Lake later than the flow of Kulanotpes River.

3.2.2 Tengiz and Korgalzhyn Lakes

Tengiz Lake, with an area of 1590 km², is situated in the lowest part of the Tengiz depression. This enclosed, bitter, salt lake has a shore line of 488 km. About 70 islands are located in the eastern part of Tengiz Lake.²⁰ Tengiz is the largest lake in the northern part of Kazakhstan (its area exceeds in size Lake Constance three times). The lakes depth varies between 2 and 4 meters, and it contracts during prolonged periods of low flow. Its high salinity, which varies between 22,1 g/l and 271,5 g/l depending on lake size, prevents the existence of fish population in Tengiz Lake. It is said, that in the 1940 year of drought all the lakes around Korgalzhyn Lake dried out and lakes Tengiz and Korgalzhyn almost dried out. As Figure 3 shows, 1940 was the

¹⁸ direct translation of Kulanotpes: “a Kulan cannot go through”

¹⁹ These river lakes are for example Sholak-Shalkar, Birtaban, Zhanybek-Shalkar, Uialy-Shalkar and Zhandy-Shalkar. Popolsin (1960), 85.

²⁰ Korgalzhynski Zapovednik (1990), p. 71, Altan (1997), p. 33.

last year of a prolonged period of drought. Tengiz and Korgalzhyn Lakes contractions are a natural phenomenon and have seasonal and long-term character.

Korgalzhyn Lake (308 m asl) is a freshwater lake with an area of 330 km² and a shore line of 187 km. This shallow lake, fed by Nura River, has a depth between 0,5 m and 3 meters. Reed grows on 70–80% of its area. Its salinity depends on salinity of Nura River, the major tributary of the lake, and river flow leaving Korgalzhyn Lake towards Tengiz Lake. In 1956 and 1959 values between 0,5 and 16,4 g/l²¹ were measured in different places within the lake.

3.2.3 Natural Flow Regime of Tengiz Basin

The natural flow regime in this basin without outflow can be simplified as follows:

$$\text{EVAPORATION} = \text{PRECIPITATION} + \text{INFLOW}$$

The following account seeks to analyse and compare the Tengiz Basin's natural flow regime with the existing anthropogenic altered regime. Therefore the natural flow is divided into parts, in order to reconstruct the confluents of the Tengiz and Korgalzhyn Lakes. The accuracy of the used values is difficult to evaluate, especially since some authors don't indicate, if they deal with natural flow data or man-made affected data.

Evaporation in the basin is quite stable, whereas precipitation and confluents are subject to large variation. Corresponding to a map of average long-term open water evaporation in the climate of central Kazakhstan, the following calculations assume an average **annual evaporation** of **810 mm**.²²

Annual **precipitation** in Tengiz Basin is about **250 mm** (station Korgalzhyn).

The sum of surface area of both lakes (Tengiz and Korgalzhyn) is **1920 km²**. Taking into account the annual evaporation of 810 mm, this would correspond to a volume of open water evaporation of 1555 Mm³, out of which about 480 Mm³ are compensated by direct rainfall into the lakes. From this it is clear, that an annual inflow of about 1075 Mm³ is needed to keep the surface of the lakes permanently at the existing 100% level.

$$\begin{aligned} \text{EVAPORATION (100\%)} &= \text{PRECIPITATION (app. 32\%)} + \text{INFLOW (app. 68\%)} \\ 1555 \text{ Mm}^3 &= 480 \text{ Mm}^3 + 1075 \text{ Mm}^3 \end{aligned}$$

²¹ Altan (1997), 38.

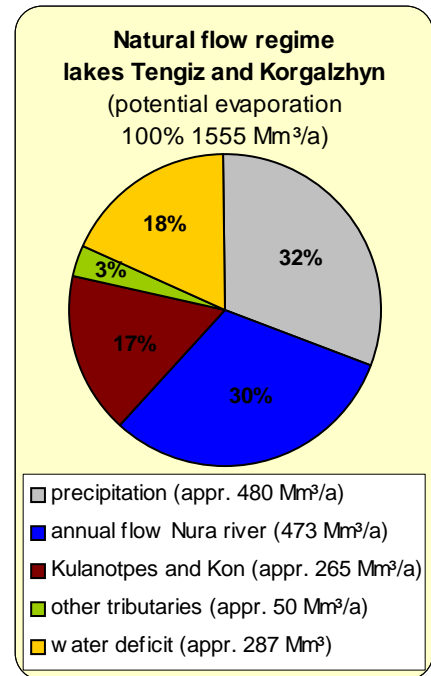
²² Grin et al (1987), 10. Grin mentions an evaporation of 1050 mm for the reservoirs. Trifonova (1960, 47) take an amplitude of 750 mm–800 mm potential evaporation as a starting point.

To keep the errors at calculating the real natural inflow into the lakes Korgalzhyn and Tengiz at minimum level, two methods of calculation are applied. Firstly, flow is calculated by: evaluation

of gauging stations' measurements. Most likely, these values are affected by man-made effects. Secondly, flow is calculated from run-off volume per unit of area (l/sec/km²) and runoff (mm) of the appropriate catchments respectively.

1. Evaluation of gauging station measurements: If one takes the Nura River flow of 473 Mm³ per year as a starting point and for Kulanotpes River 265 Mm³ respectively, and estimates the inflow out of other surface or groundwater sources at about 50 Mm³, this results in a total confluent for Korgalzhyn Wetlands (without precipitation) of **788 Mm³** (see blue, brown and green areas in Figure 5).²³ Out of the total inflow need of 1075 Mm³, which would have to compensate 68% of evaporation, only 73% are met. Taking into account precipitation, which corresponds to 32% of potential evaporation, the result is an annual water deficit of 18% or 287 Mm³, respectively (see Figure 5).

Figure 5: Origin of Tengiz Lake Water



Source: Own calculations (Martin Lenk)

2. Evaluation of run-off volume per unit of area and runoff: The values for the following calculations come from the sources mentioned beneath Table 1. If one breaks down the flow potential of Tengiz Basin which amounts to 1200 Mm³ (see Table 1), then:

- 71,6% (859,7 Mm³/a) of the water reaches Tengiz and Korgalzhyn Lakes; while
- 6,4% (app. 76,3 Mm³/a) evaporate in the Nura River lakes²⁴, which have a total surface area of 134 km²; the other
- 22% (264 Mm³) of runoff feed several other wetlands of secondary basins without outflow.

If one compares the inflow needs of the Korgalzhyn Wetlands of about 1075 Mm³ with the average flow potential of Tengiz Basin of 1200 Mm³, this would mean that 90% of the total flow would have to reach Korgalzhyn and Tengiz Lakes to keep these lakes permanently filled at the existing level. Because only about 70% of the flow actually reach the lakes, there is an annual natural water deficit of about 215 Mm³/a (1075 Mm³ – 859,7 Mm³).

²³ Grin et al (1987), 13: Altan (1997), 14.

²⁴ Other losses in the lower Nura floodplain can be substantial. However, they are not taken into account in this calculation as well as losses caused by the bifurcation.

Table 1: Distribution of runoff in the Tengiz Basin

Catchments of Tengiz Basin	Catchment area		Runoff	Flow not running of into Tengiz and Korgalzhyn lakes	Runoff into Tengiz and Korgalzhyn Lakes	Runoff
	Km ²	%	mm/a	Mm ³ /a	Mm ³ /a	l/sec/km ²
Nura River	43100	45	<i>14</i>	76,3 (evaporation of Nura River lakes)	527,1*	0,44
Rivers Kulanotpes and Kon	25900	27	<i>12</i>		310,8	0,38
Other tributaries	2250	2	<i>9,7</i>		21,8	0,31
Smaller catchments within Tengiz Basin	24000	25	<i>11,0</i>	264,0 secondary basin		0,35
			sums:	340,3 (28,4%)	859,7 (71,6%)	
Tengiz Basin (SUM/potential)	95250	100	12,6	Potential flow Tengiz Basin:	1200,0	0,40

Note: Regular numbers are form mentioned sources, number in italics are own calculations, numbers in red can be summed up to flow potential of 1200 Mm³.

*) Evaporation of Nura River lakes was subtracted from the calculated runoff [603,4 Mm³–76,3 Mm³ = 527,1 Mm³]

Sources: Sidorenko (1970), 500, Berkaliev (1959) 18, Altan (1997) 27, Atlas of Kazakh SSR, vol 1. (1982), 52.

Results: At first, the natural flow regime was determined by the flow volumes (see Figure 5) and then by runoffs (see Table 1). The results are quite similar. The annual natural water deficit in the Korgalzhyn wetlands is about 200–300 Mm³/a. The regular drying out of parts of the lakes shows this deficit. This way it turned out, that the contracting of the lakes is by no means a primary result of man-made effects, but rather reflects natural conditions.

3.2.4 Groundwater

Groundwater resources gain a special importance in an area like central Kazakhstan featuring on the one hand an average precipitation of 250 mm and on the other hand potential evaporation of up to 1000 mm, where 90% of the flow runs off at a short snow-melt time, and where in every decade there is a at least one or even several years of drought. Within the given territory groundwater is a rare resource, especially ground water of low mineralised content.

Rivers like Nura lead a permanent groundwater stream in their flood-plain sediments. The ground water stream of Sherubainura River is up to 1 m³/sec.²⁵

²⁵ Akhmedsafin and Sydykov (1960), 96, 102.

4 Chronological Inventory of Objects of Anthropogenic Influence onto the Hydrological Regime of Tengiz-Korgalzhyn basin

In the Karaganda area coal-mining and industrialization began before Soviet times. After the revolution and the incorporation of the territory into the Soviet Union this development was much stepped forward. Nowadays Karaganda is the second largest city in Kazakhstan (449,000 inhabitants²⁶). Like the neighbouring town Temirtau, Karaganda is a major industrial centre, which explains the high water demands in the area.

Table 2: Water consumption of Nura Basin (litre / day / capita)

	Karaganda	Astana	Tengiz Lake Basin (rural area)	European Union	USA
Water consumption l / day / person	420	480	166* (1985)	140 – 160	appr. 250

Source: Ilyshenko 2000; *) Kazgiprovodhoz (1988), 42.

Table 2 shows, that there exists a large potential to reduce water consumption, especially in the cities of Karaganda and Astana – so far unused. Two of the reasons for this high water consumption are leakage because of an old water supply system and wastage due to lack of water meters (no adaptation to cost saving).

Man-made effects have seriously affected the flow of the Nura River, they include large flows diverted into the Nura River since 1974 via the Irtysh-Karaganda Canal (IKC), a major scheme built to enable massive industrial and irrigation water demands at that time prevailing in the Nura River Basin to be met. Water demands on the Nura River have greatly declined since their peak in the mid-1980's, and the IKC supplies have correspondingly reduced (a peak of about 800 Mm³/year) to a current rate of about 200 Mm³/year. Other influences have been the Nura-Ishim Canal (which is currently closed, but used to pass water to the Ishim), and a smaller canal which formerly transferred water from the Nura to a copper mine in the neighbouring basin, the Sarysu River to the southwest.

Tengiz and Korgalzhyn Lakes are sensitive to river flows, they contract during prolonged periods of low flow or high abstraction. Both large reservoirs Samarkand Reservoir and Sherubainura Reservoir, built at the upper reaches of Nura River, have the potential to store almost an average annual flow of the Nura River. However, this potential can not be use as far as the reservoirs are used as cooling ponds for two power stations (see Figure 5). The characteristic

²⁶ All population figures of this paper are taken from 1999 census.

of Tengiz and Korgalzhyn Lakes to regain their maximum size during one single flood, even after a period of drought, makes the substantial difference towards lakes like Aral Lake or Balkhash Lake.

4.1 Samarkand Reservoir

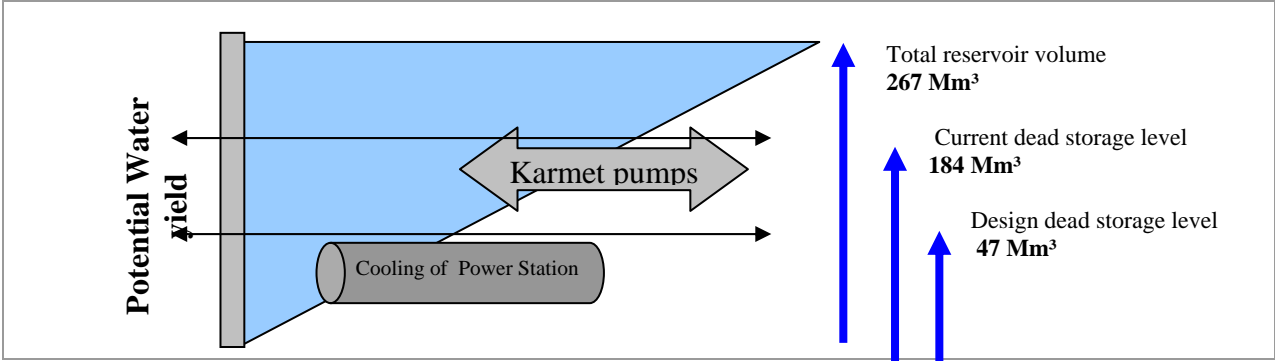
With the opening of Samarkand Reservoir in 1941 the intensified use of the Nura River as water resource set in. It was built to supply the industrial centre of Karaganda and belongs to the system of the Irtysh-Karaganda Canal. It has the following parameters:

Length	20 km
Width	6,5 km
Maximum depth	17 m
Total reservoir volume	267 Mm ³
Surface area at NLL (normal limited level)	84 km ²
Sustainable water yield NLL	51 Mm ³

Through Samarkand Reservoir a long-term regulation of the Nura River flow is possible. But the stored water capacity was not enough.

Nowadays, the pumps of Karmet steelworks, which are situated right under surface level, restricts the potential regulation level of the reservoir. Therefore, during spring flood the flow cannot be stored. At the same time the negative effect (for flow balance within the Tengiz Basin) of the reservoir as an open water evaporation surface remains.

Figure 6: Profile through Samarkand reservoir



4.2 Sherubainura Reservoir

The second comparable reservoir, Sherubainura Reservoir, which was first filled with water in 1959, has the following parameters:

Length of dam	3116 m
Total reservoir volume	274 Mm ³
Discharge capacity	1160 m ³ /sec
Surface area at NLL (normal limited level)	38,2 km ²
Surface area at dead storage level	21 km ²

Similar to Samarkand Reservoir, the design dead storage level of 93 Mm³ today exceeds to about 150 Mm³, due to the fact, that the cooling facility of Karaganda GRES-2 power station is using the reservoir for cooling purposes. The outcome is similar: Nura River spring flood flow is regulated and stored to a much lesser degree.

Further downstream from Sherubainura Reservoir Nura River is not flowing in its natural bed, since it contains mostly gravel thus posing a threat to the coal-mines, which are located underneath the river's natural bed. Instead Nura River flows through Sasykol Lake, further through lowlands and only downstream from Intumak Reservoir returns into its natural bed (see).

4.3 Irtysh-Karaganda Canal (IKC)

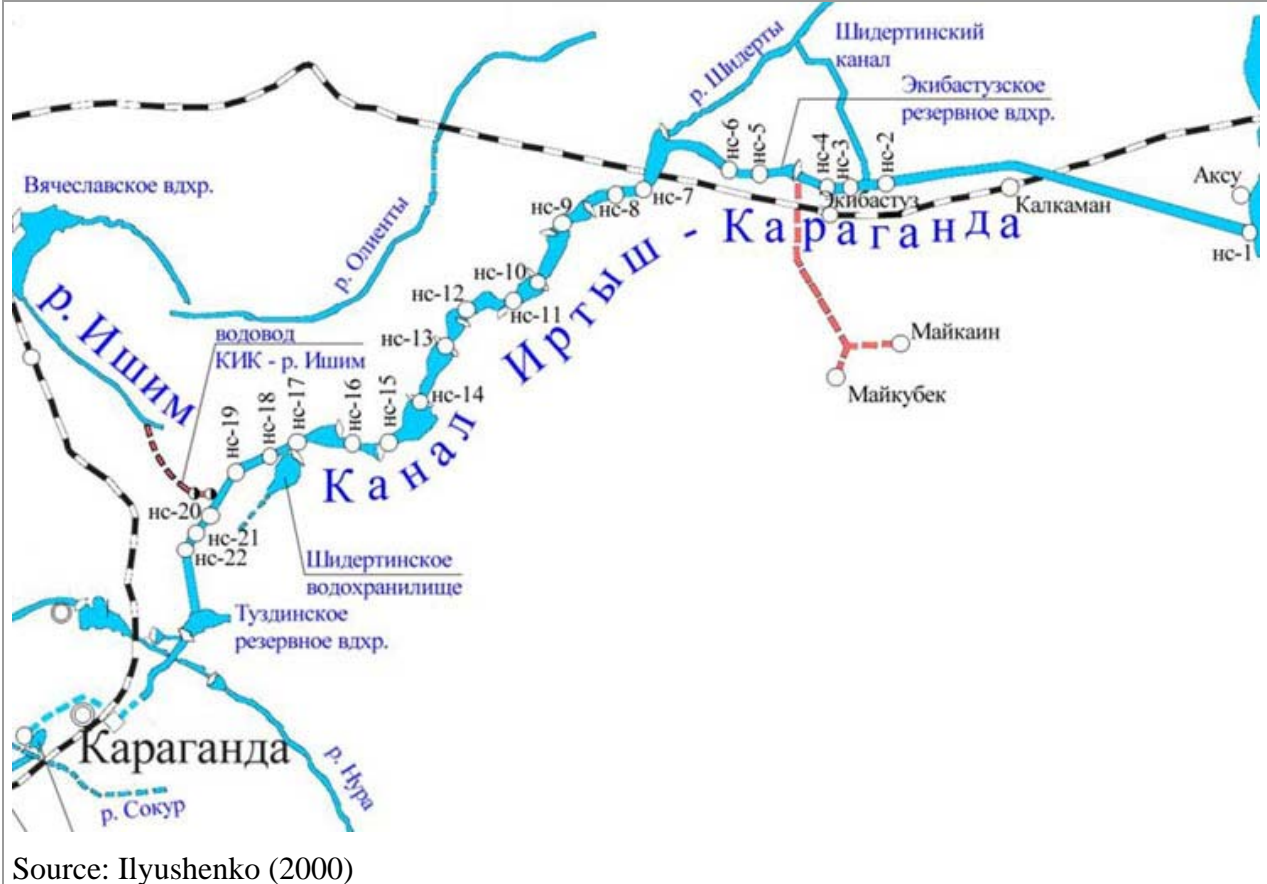
Most influential soviet planners assumed, that out of the natural flow capacity of Nura River flowing into Tengiz Basin of 26,1 m³/sec, 10,8 m³/sec (41%) could be used for water supply of the industrial centres of the area.²⁷ But the annual amount of 0,33 km³ proved to be not enough, therefore the erection of a major hydro technical facility was decided. Irtysh-Karaganda Canal was opened in 1974. In the 1980s it diverted 400 to 600 Mm³ annually into Nura River Basin.

Length	458 km
water lift	418 m
width	up to 40 m
depth	5–8 m
maximum water discharge capacity	75 m ³ /sec
average water discharge capacity	22 m ³ /sec
total pumping capacity	375 Kilo Watts

²⁷ Grin et al (1987), 13.

The Irtysh-Karaganda canal was put forward as a grandiose hydraulic engineering structure supplying water from the Irtysh not only to the industrial centres of Ekibastuz, Karaganda and Temirtau, but also to Dzhezkazgan and Astana, and a large number of irrigated agricultural areas. The main channel begins at the River Byelaya, a tributary of the Irtysh, and finishes at the city of Karaganda. The canal was constructed over a period of 10 years and is more than 450 km long. The average flow capacity is more than 2 cubic kilometres of water per year. Water is raised 420 m with the help of 22 pumping stations, whose total electricity demand is greater than the capacity of a power station such as Ust-Kamenogorsk hydroelectric power station. The main rise of 218 m occurs after the city of Ekibastuz on the site of the River Shiderty, where the water is raised through a series of 10 reservoirs constructed in the riverbed, and having a total volume of about 1 cubic kilometre. (see Figure 7)

Figure 7: Overview of Irtysh – Karaganda Canal



Source: Pyushenko (2000)

The canal has more than 100 hydro technical facilities, i.e. pumps, reservoirs, canals and others. Through its restoring buffer options of its reservoirs in spring time the canal takes water from the Irtysh River, which has a large flow. If average annual flow of Irtysh River is 26,000 Mm³, IKC intake was approximately 837 Mm³ (1982-1986) this makes up only 3,2%.

The main water losses, caused by evaporation and infiltration, occur in the Shiderty section. These losses are virtually independent of the degree of use of the canal, and equal from 100 to 200 million cubic metres per year.

The maximum transfer of water in the Irtysh-Karaganda canal does not exceed one cubic kilometre per year, thus losses make up 20-25 % of consumption. Recently the canal has been running at a quarter of its capacity, and the losses have increased to 50 %.

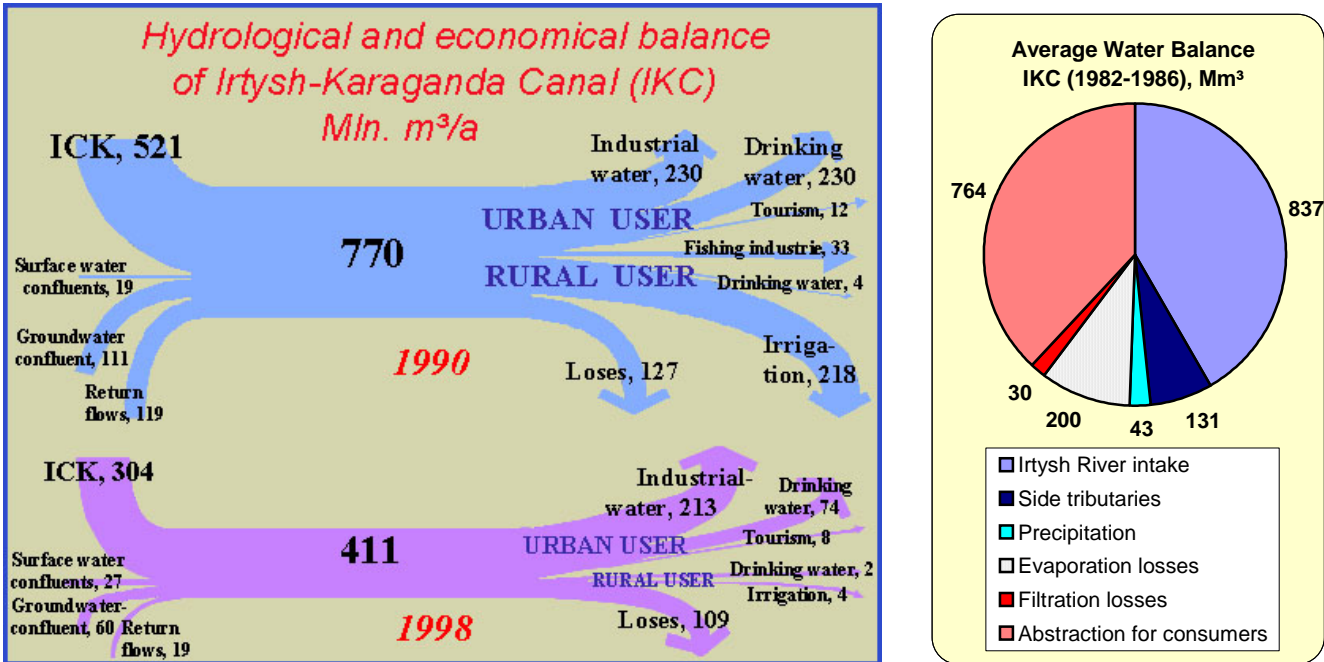
Annual discharge is shown in Figure 8. During most of the months the amount of water diverted via the canal has been more than the natural average flow of Nura River during the 1980s (see Figure 2).

The designed area of supply was envisaged to be 400,000 km², but this figure is quite conceptual and in practice the area supplied by the canal is much smaller – is largely confined to the areas along the Nura River valley and along the canal itself. The total area has an estimated population of 1,4 million people living in cities and 0,5 million living in rural areas. The water resources are used for domestic, industrial, irrigated agriculture both full and supplementary, livestock, fisheries, recreation and parks, and last but not least the Korgalzhyn terminal wetlands.

The consumers of the IKC were (1980s): (potable water in Karaganda was app. 85-87 Mm³), 44% potable water, 22% industrial facilities in the cities, 34% industry and agriculture²⁸.

Figure 8 shows the change in consumer distribution of Irtysh - Karaganda Canal during transformation in the 1990s.

Figure 8: Water balance of Irtysh – Karaganda Canal



Source: Ilyushenko 2000.

Source: own calculation

²⁸ Grin et al (1987), 48ff.

In recent years there has been a major change in water use of the IKC. By far the greatest user is the Karmet steelworks at Karaganda. But much of the other industry that used its water has been closed down due to free market economics. Much of the former irrigated land is no longer irrigated as many farmers can no longer afford the lift the water the few meters up from the Nura River. They cannot pay even a fraction of the true costs of pumping in the main canal.

In 1998 the annual amount of water distributed from the canal was about 301 Mm³, while during the 1980's it was 764 Mm³, which means an decrease of 60%. (see Figure 8) Between 1990 and 1998 use for irrigation dropped from 218 Mm³ to only 4 Mm³. The main reason here are the high costs of the water.

Financial viability of IKC. After the breaking up of the Soviet Union the government funding for the canal's operation and maintenance ceased. Due to the collapse of the economy in the region most user were no longer able to pay for the water. As a result, efforts to maintain to canal dropped to a minimum during the past 4 years. Formerly, 40% of the water was used for irrigation. According to the opinion of economists, a water lift of 10 m is the maximum to keep the water costs for irrigation effective. The 418 m water lift therefore seems to limit the capacity of the canal to supply water for irrigation purposes, economically.

4.4 Expansion of irrigation farming

Irrigation of hay lands (also called: Limans). Today this form of irrigation is dominating. It is using the spring flood (see Figure 14). During Soviet times there were 15,000 ha irrigated land in the lower reaches of Nura River, of which nowadays only 4,500 ha remained.

The farming with machines leads to a change of soil behaviour: the water harder seeps into the soil due to its fortification by machines.

4.5 Nura-Zhezkazgan Canal

The Nura-Zhezkazgan Canal was built to supply water to the town of Zhezkazgan (176,000 inhabitants), which is situated in the Sarysu River Basin. The canal was supposed to use 110 km of the bed of Nura River. Due the mercury pollution of Nura River the canal was closed down immediately after its opening in 1978. Today the canal is abandoned, the hydraulic engineering structure does not exist anymore.

For the water balance of Nura River Basin and the Korgalzhyn terminal wetlands the closing of the canal is a positive factor, since it was supposed to diverted water out of the Nura River basin.

4.6 Nura-Ishim Canal

Nura-Ishim Canal is about 25 km long and was built in 1974 to supply water to the city of Celinograd, which is renamed into Astana. The maximum discharge capacity is 12,3 m³/sec. Due to the mercury pollution of Nura River it was closed in 1977. The barriers are located on both sides. Generally the canal is designed to foster a current without any pumps. Regardless the mercury problem, quite a number of private gardens are taking irrigation water from the canal in the present.

5 Current water resources inventory

The following chapter shall give a short assessment of the water resources of the basin incorporating surface water, groundwater and water quality.

5.1 Data availability

The assessment of the water resources of the basin is an essential part of the Nura Ishim River Basin Management Project, being itself part of the so called Umbrella Project of the Government of the Republic of Kazakhstan of March 18, 1999 (see 8.2 page 223 *Umbrella Project and Nura Ishim River Basin Project*). The assessment, which includes:

- a current assessment of the reliable yields of surface and ground water;
- a current assessment of the water quality in various reaches of the Nura River, as well as in the reservoirs and lakes and in the groundwater a data base for input to the River Basin Planning Model for the above.

These components have been completed.²⁹ Despite the closure of a number of hydrometric stations, historic data are available. With the help of stations still fully operational, recent and earlier data gaps can be filled to provide long and continuous flow data series to create a water balance model created within the Nura Ishim River Basin Management Project. Rainfall, evaporation and flow data (all in monthly format) have been collected for periods in some cases going back to the 1800s. These data have provided the means for defining the general hydrological characteristics of the Nura River Basin.

Open water evaporation data has been obtained for 6 stations in the Nura and Ishim river basins with average data periods of 13 years. These data indicate a range of open water evaporation of 569 mm (Petropavlovsk) to 1040 mm (Zhartas).³⁰

5.2 River flow

For the River Nura, flow data were obtained for 13 stations, averaging 27 station-years, the earliest data being for the year 1916-1917 (Romanovskoye with 67 complete water-years). The Nura stations include the Irtysh-Karaganda Canal flows at the point where it meets the Nura

²⁹ The source for the following overview is the international consultant's report: Committee for Water Resources/Jacobs Gibb: Nura Ishim River Basin Management Project. March Quarterly Report. Vol. 1 – Main Report. March 2003, p. 5-1– 5-6.

³⁰ These evaporation data relate to the seven month April to October only, the other months of frozen winter being deemed to have very little effective evaporation.

(Sergiopolskoye). The flow regime on the River Nura has been complicated by the construction of reservoirs to support irrigation, industry and municipal water supply. The Irtysh-Karaganda canal, completed in 1973 to support the industries of Temirtau, which has brought the so much needed additional water intake into the River Nura basin, also complicates the flow processes.

Water demands grew rapidly until the end of the 1980s, after which irrigation and industrial demands collapsed, and with it the IKC transfers. Currently municipal demands are rising significantly, and it is possible that in the coming decades at least some of the former irrigation and industrial demands may return.

Unravelling these complications to provide naturalised flows is a major undertaking out of the scope of the cited study. Instead a gap-filled flow data series was generated from the available data to replicate flows that would have been recorded historically. By taking into account the consumptive use, return flows, evaporation losses, and reservoir first filling, refilling after dry years and temporary storage of floods, the model may be able to generate flows that better approximate natural conditions.

5.3 Groundwater

Within the cited Nura Ishim River Basin Management Project the information on groundwater resources, quality and abstraction rates has been prepared for input into the Nura River GIS. Key parameters identified as inputs into the water resources model are:

- amount and quality of available resource;
- groundwater levels and their potential change with abstraction;
- abstraction rates (typical available discharge per well / per well field).

Available Groundwater Resources. Groundwater resources were evaluated in the 1960s and 1970s primarily to ascertain if adequate supplies were available to support industrial platforms and the population linked to them. The volumes of water predicted were based on a 25-year operational life and thus the groundwater deposits are now undergoing a revision in terms of available amounts. One of the key re-evaluations that have been undertaken is the increased recognition of the importance and influence that surface (river) water has on flood plain groundwater deposits. Depending on the hydro geological characteristics of the flood plain deposits and the location, spacing and direction of shallow wells, the contribution of river water to the volume of “groundwater” abstracted can vary between 0 and 100%. For example, the re-evaluation of the Verchnyi Bief deposit indicated that surface water contribution to groundwater abstraction was around 75%.

5.4 Water quality

Water quality data have become difficult to obtain. The number of monitoring locations has been reduced and the number and quality of labs has been reduced.

In the following data from the years 1998 and 1999 are used. The main conclusion emerging from data analysis for the Nura River Basin is that there is little relationship between river flow and water quality, with the exception of some relatively weak links for suspended solids. Similarly, there is little seasonal variation in water quality, although pronounced seasonal variation occurs in in-stream pollution loads. This is typical for substances such as pesticides, as they are washed off the catchment very rapidly after rainfall events, so are either missed by monthly sampling or very high peaks are recorded. This also may be an effect of the reduced agricultural activity in the Nura basin in the Post-Soviet Union period. The lack of flow-quality relationship for parameters such as nutrients is not uncommon in rivers which are significantly impounded, which the Nura River is.

The concentrations of nutrients in the Nura are generally very much lower than in rivers like for example the Thames, a river draining a much smaller catchment, but with higher rainfall and more intensive agriculture. The conclusion, therefore, is that it is likely that the reservoirs on the Nura are responsible for trapping much of the phosphate and, because of the long retention times in the reservoirs, much of the nitrate is lost to the atmosphere via denitrification.

The Nura and Ishim rivers are typical of rivers in which a major portion of the annual river discharge occurs over the short snowmelt period in that reservoir development constitutes the main method of managing water resources. This also has benefits in terms of water quality, since many of the pollutants are removed from the water column by sedimentation. However, this raises also questions of sustainability since, while some pollutants will degrade or become firmly bound to sediment, others will be re-released into the water column, for example during extended periods of strong wind of stratification as a result of strong sunlight.

5.4.1 Nura water quality compliance with Kazakhstan standards³¹

Compliance with existing Kazakh standards throughout the Nura River Basin highlight some interesting facts. Overall compliance with fishery standards tend to be considerably worse in the Nura than the Ishim, notably for such an important parameter as BOD (biological oxygen demand), though the compliance with the dissolved oxygen standard of 6 mg/l is very much better.

³¹ Committee for Water Resources/Jacobs Gibb: Nura Ishim River Basin Management Project. March Quarterly Report. Vol. 1 – Main Report. March 2003, p. 5-11– 5-13.

Compliance with the fishery sulphate standard a long way from being perfect in the Nura. Knowledge of where this sulphate is derived from and its toxicology to fish populations is essential to understanding whether the standard is appropriate, especially since no sulphate standard exists in the EU Freshwater Fisheries Directive.³² Compliance with standards suggest that copper toxicity is a major problem at most sites in the Ishim basin and to a lesser extent in the Nura Basin. Unlike the Ishim, compliance with the fisheries zinc standard of 10µg/l raises cause for concern in the Nura, in addition to magnesium levels, which are usually in excess of those in the Ishim.

Mercury pollution is clearly a problem (see section *Nura River clean up Project*), in the Nura, where data exist, not one sample complies with the fisheries mercury standard. Compliance with the domestic water quality standard for mercury is considerably better in both river basins, since it is 50 times greater than the fishery standard.

Indeed, compliance with the domestic water quality standards is often better than compliance with the fishery standards, since the domestic standards are usually less stringent. The Kazakh standards for cadmium, iron, dissolved oxygen and oil products are unusual in this respect, since the domestic standards are stricter than those for fisheries. However, the domestic standards include a greater number of parameters than the fisheries standards, including smell, transparency, temperature, suspended solids, dichromatic oxidation, silicate, hardness, salinity, silver, titanium, and bismuth.

The greatest water quality problems in the Nura River Basin is associated with pollution by oil products/phenols, organic enrichment (including elevated ammonium and nitrite levels), sulphate, magnesium, copper, zinc, fluoride and mercury. Of these it is unclear whether the sulphate and magnesium levels are naturally high. Several other parameters seem to be troublesome, including salinity and hardness, but concentrations of these parameters are likely to be naturally elevated.

6 Future Projects in Tengiz-Korgalzhyn basin

6.1 Water supply to the City of Astana

One of several reasons to transfer the capital of the Republic of Kazakhstan, which was announced by the Government in December 1997, was the solution of issues connected with new

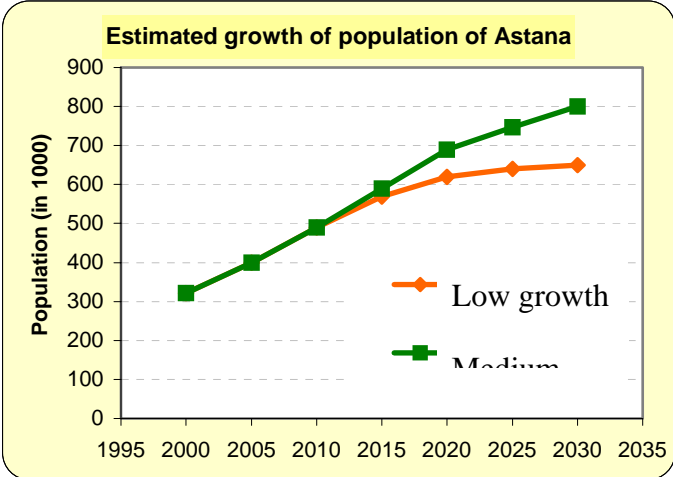
³² If these concentrations are derived from local soils, there is little that can be done to control them and the standards require revision or abolition. Natural background concentrations should be taken into account when setting water quality standards.

statehood and problems left by the Soviet Union. Astana City is situated in the middle Asia steppe along the Ishim river, the central part of the country, a clear advantage to the former capital Almaty, located too close to the rim of the republic to the southeast, with no possibility to expand, but moreover located in an area not free from earthquakes. The new capital Astana has good access to all major cities of the republic by rails and roads.

6.1.1 Population Forecast Astana City

Astana city has 322 thousand inhabitants as of January 2000. For future population growth, two forecasts are prepared: 650 and 80 thousand in the year 2030, with annual growth rates of 2,4% and 3,1% in the period of 30 years, respectively.³³ The two forecasts have the same projection up to the year 2010. Considering experiences of 3,5% annual growth rate in Almaty or 3,3% in Canberra, case 2 seems to be more realistic.

Figure 9: Estimated growth of Astana until 2035



Source: The JICA Study of the Master Plan for the Development of the City of Astana. 2-9, 2-24, 2-25.

6.1.2 The Existing Water Supply of Astana

At present two water supply systems are maintained in Astana: The centralised combined system of domestic, industrial (majority of industrial plants), fire-prevention water supply, irrigation needs of population. The present system provides 200 000 m³/day (using European norms this is the amount of domestic water that would be used by a population of 1 million people). Surface flow of the Ishim river is the main source (97%) of water supply.

The centralised system of industrial water supply. Provides some industrial enterprises with technical quality water. Uses surface flow of Ishim river for supply.

³³ These considerations are based on the Masterplan for the development of the City of Astana prepared by a Japanese team headed by Kisho Kurokawa. Japan International Cooperation Agency. Capital Development Corporation City of Astana: *The Study on the Master Plan for the Development of the City of Astana in the Republic of Kazakhstan*. Final Report Volume II: Main Report. June 2001. Scope of work for the feasibility Study for water supply and sewerage was signed by the Kazakhstani and Japanese sides, whereupon the Feasibility study was incorporated as an integral part of the Master plan.

The Ishim river originates in the Niaz mountains in the Karaganda region and flows into the Russian Federation after passing through Akmola and North Kazakhstan regions. Spring floods after snow melt contribute 80 to 85% of the annual flow. From April to October evaporation exceeds precipitation in the Ishim river basin. The basin has experienced several occasions of multi-year dry periods since 1932. The discharge of the Ishim river at 50% flow availability and a catchment area of 7400 km² is 6,45 m³/sec at Astana City.

The infrastructure planning for the water sector was carried out in consideration of the following³⁴:

Vyacheslavsky reservoir constructed on the Ishim river 51 km upstream Astana city in 1970 has been since the major water source of the city. The design annual exploitable water yield was 67,2 Mm³ at 95% dependability, but has been reviewed based on the past inflow records as input to the reservoir water 1970–1999 with the result of an annual yield of 89,2 Mm³.³⁵

For additional water supply the Irtysh-Karaganda Project, which diverts water from the Irtysh-Karaganda canal to Vyacheslavsky reservoir (“malaya perebroska”) has been constructed 2001-2003. The Irtysh-Karaganda-Ishim canal was constructed to replenish water for the reservoir in order to meet the increasing water demand in Astana. A raw water transmission pipeline rehabilitation project (“Third Pipeline Project”), planning to install a pipeline between Vyacheslavsky reservoir and Astana City is approaching construction. Both projects have been planned and have been or will be constructed for stable water supply to Astana City.

The Kazakhstan Government has invested in both projects utilizing state budget.

Wastage or leakage of water in the existing water supply system is estimated to be very high at present, and is probably one of the major reasons for water shortage in the future. Reduction of wastage or leakage of supplied water is therefore proposed as an effective measure for further reduction of water use and investment costs in the water sector.

Treated wastewater is generated constantly, and should be considered as a useful water resource. Re-use of treated wastewater especially for irrigation purposes is recommendable.

6.1.3 Current and future water consumption

The recent annual amount of raw water for drinking water purposes from Vyacheslavsky Reservoir (see Figure 16 page 232) to Astana City was about 40–60 Mm³/year (1991-1996). The annual intake of technical water decreased from about 10 Mm³/year to now 5 Mm³/year due to the decline of demand as a result of closing down of industrial facilities in Astana City. Irrigation

³⁴ Study on the Masterplan, p 4-3–4-4.

³⁵ Study on the Masterplan, p. 4-9.

water taken from the reservoir or directly from the river decreased considerably from 19,3 Mm³ in 1991 to 2,7 Mm³ in 1999 which reflects the sharp decline in irrigated farmland due to social and economic changes in Kazakhstan.³⁶

Taking into account an increase of the population from 277 100 in 1996 to about 550 000 up to 2015 it becomes clear, that the water demand will rise. The following table gives an overview on the dynamic of a future demand.

Table 3: Annual Water demand in target years (Mm³/year)

Item	1999	2010	2020	2030
Drinking	50,4	55,4	79,2	96,6
Technical water	6,5	8,5	9,7	11,2
Irrigation	2,7	20,7	25,2	30,8
Greenery	0,1	0,3	0,4	0,5
Sanitary flow	5,0	5,0	5,0	5,0
Landscaping	-	3,0	3,0	3,0
Water loss	-	12,0	12,5	13,1
Total	64,7	104,9	135,0	160,2

Source: The study on the Master plan, p. 4-14–4-17.

The data of Kazvodokanalproekt in 1996 the water demand in Astana (including irrigation and industrial demand) was 476l/day.

6.1.4 Assessment of Alternative Water Resources

The present water source provides 89,2 Mm³ at 95% availability (see section 6.1.2). With the projected increase in demand, a water deficit of 15,7 Mm³ will occur in 2010 unless some effective expansion of water resources is utilized.

Table 4: Water Balance without Additional Water Resources

	2010	2020	2030
Water demand	104,9	135,0	160,2
Water supply from Vyacheslavsky reservoir	89,2	89,2	89,2
Deficit	15,7	45,8	71,0

³⁶ The Study on the Masterplan, p. 4-12–4-13.

Development of additional water resources by 2010 is therefore essential to fill this deficit. As mentioned earlier, the Government of the Republic of Kazakhstan decided to implement the IKC-Ishim pipeline project to use IKC water. The project is to be implemented in two stages. In the first stage, the construction of the pipeline has been completed (2001-2003). The design annual water supply capacity to Astana City is 126 Mm³/year after second stage construction, which will cover the minimum water requirement of Astana City as of 2030 even in the severest dry condition of Ishim river basin in these 30 years. Accordingly, the on-going pipeline scheme has been adopted by the government as the development plan of IKC water and is adopted in this study as the alternative for the development of water resources. In comparison of potential water supply options, there development costs and water quality, the development if the IKC-Ishim pipeline has been selected as the preferred alternative plan.³⁷

Water supply development plan. The service area of water supply is planned to cover the city, in order to distribute water to all the residents and commercial and industrial enterprises in Astana. The water treatment capacity is planned to expand to 320 000 m³/day in 2030. The existing water supply system shall be rehabilitated and utilized as much as possible. Reduction of wastage and leakage of supplied water meters and replacement of old pipes are recommended as measures for non-revenue water reduction. Water meter system (a consumer pays water charge based on amount of consumption) is expected to reduce wastage of water use, adapting to cost saving the minds of individuals. Replacement of old pipes is expected to reduce leakage water especially in distribution.

Sewage Development Plan. Due to expansion of sewerage system, 66,0 Mm³/year of treated sewage generation is expected in 2030. Treated sewage of 1,3 Mm³ used to be reused for irrigation of 1700 ha agricultural land to the south of Astana until 1995. Keeping in mind the water balance of Ishim river, treated sewage should be discharged to the Ishim River since all the water comes originally from that river through Vyacheslav reservoir.

6.2 Astana sewage water disposal

Current sewage water generation of Astana City is 85,000–100,000m³/day. The following Table 5 presents the sewage generation forecast.

Table 5: Sewage Generation Forecast, m³/day³⁸

Year	Domestic	Institutional	Commercial	Industrial	Filtration	Total
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³⁷ The Study of the Masterplan, p. 4-18–4-20.

³⁸ The Study on the Masterplan, p. 4-39.

1999	66,810	5,199	0	22,658	9,466	104,133
2010	69,020	5,958	10,744	16,299	10,203	112,224
2020	111,977	8,651	15,654	19,421	15,570	171,273
2030	147,492	10,003	18,781	20,853	19,713	216,842

All the effluent from the sewage treatment plant (STP) in Astana is presently discharged to Taldy Kol Impounding Reservoir³⁹ by pumping facilities. While the reservoir was designed to evaporate all the effluent, it does not have enough capacity for the volume of the present influx. Irrigation of only 1500 ha land by sewage water led to overflowing and infiltrating of water through the dams and body of the reservoir. Therefore a drainage for the filtrating water was added, through which it is supposed to be discharged into Ishim River. But in reality the water not evaporating in Taldy Kol Reservoir is not reaching Ishim River, but is discharged through an emergency pipe up a low-lying wetland northwest of the reservoir.

Table 6: Tentative Development Plan for Agriculture Land for Re-Use of Treated Wastewater

	Before 1995	2000	2010	2020	2030
Development area for irrigation (ha)	1,700	0	1,700	8,500	8,500
Irrigation Water Use (Mm ³ /year)	6,8	0	6,8	34,0	34,0

There is a widespread conception, that Taldy Kol Reservoir is a heavy polluted water body, as it receives effluent of STP. In, reality the water quality of Taldy Kol Reservoir is much better than it is generally conceived, due to the proper treatment of wastewater at STP and additional natural treatment process in effect in the reservoir. Taldy Kol nonetheless poses some issues regarding the development of Astana City, due to the following reasons:

Taldy Kol occupies a large area near the centre of Astana City;

Infiltrating and overflowing water from Taldy Kol Reservoir creates swamps around the reservoir:

Due to future development of Astana City, the amount of outgoing water is expected to increase.

In order to not surpass the capacity of Taldy Kol in the future, the volume of effluent water to be discharged to the reservoir needs to be reduced in one of the following ways:

Discharge the effluent to Nura or Ishim Rivers;

Use effluent for irrigation.

³⁹ Taldy Kol Reservoir was projected in 1964 for seasonal regulation and irrigation of the surrounding irrigational fields around Astana by sewage water (13,000 ha). The reservoir, built in 1970, with a surface area of 21,03 km² (at NLL 347,2 m), has a total volume of 65,2 Mm³. The reservoir is constructed over a mashy terrain with dykes around, and thus the normal water level is higher than the surrounding ground.

At present, two possibilities of future sewage water discharge are discussed: discharge into Nura River or into Ishim River. Both projects contain risks, advantages and disadvantages, as well. The decision will be made by the Government.

Variant 1: Discharge into Ishim River⁴⁰. Discharge into Ishim River is planned through a buffer reservoir situated 3 km further north. This option is also recommendable from the viewpoint of water balance of Ishim River.

Variant 2: Discharge into Nura River. To discharge into Nura River, effluent needs to be stored in a buffer reservoir where sewerage is processed through additional aeration and storing by which reagents (chlorine) are removed. The buffer reservoir (112,5 ha) is planned to be built in the southwest of the existing Majbalyk fishing Ponds, which have been closed (see: Figure 13). To evaluate influence of sewerage discharge onto the rivers, there has been an orientating assessment for both variants (for low water period), which has shown, that the discharge of the treated sewerage would not worsen water quality.

Source of water supply for the villages surrounding Taldy Kol Reservoir is groundwater. The elimination of the reservoir would improve the hydro chemical situation of groundwater resources in that territory, which has been worsened by the infiltrating sewerage from Taldy Kol Reservoir.

Economic aspects, financial calculations led to preference of the first variant: discharge into Ishim River. But taking into account, that many villages along Ishim River use the river as primary source for potable water, this variant may cause social unrest in this area.

6.3 Mercury pollution: Nura River Clean up Project

The solution of the problem of Nura River mercury pollution is an issue of utmost importance to the Government of the Republic of Kazakhstan due to several reasons. First measures in direction of its remediation were taken in 1999 when the Umbrella Project “Improvement of the environment for sustainable development of Akmola, East Kazakhstan, Pavlodar, and Karaganda provinces and the City of Astana of the Republic of Kazakhstan” was adopted March 18, 1999.

⁴⁰ Even if 8,500 ha of agricultural land is developed for the reuse of the treated wastewater, all the effluent could not be used up. For using all of the effluent of STP in 2030, 16,500 ha of agriculture land would be necessary. At present it is difficult to propose a development plan of this extent of agricultural land without a detail study for the development. The Masterplan proposes the discharge part of the treated wastewater to the Ishim River in winter season on the long-term. Advanced treatment process would be required at STP to discharge into Ishim River. Furthermore the Masterplan for the Development of the City of Astana foresees to keep Taldy Kol Reservoir as a seasonal storage pond to allow for an effective operation of the irrigation system. The Masterplan calculates with a large potential of agricultural development south of Taldy Kol Reservoir. The Feasibility Study of water supply and Sewerage for Astana indicated, that 8,500 ha of land has the potential for irrigation using the treated wastewater.

See: Study on the Masterplan, p. 4-42.

The cleaning of the river is part of the “Nura Ishim River Management Project” which belongs to the mentioned Umbrella Project. The Nura River Clean up Project is realized with financial support of the World Bank (loan 4693 KZ) and headed by the State Committee for Water Resources at the Ministry of Agriculture.⁴¹

6.3.1 Mercury in the Nura River – description of the problem

The main source of the mercury pollution in the Nura was the Karganda Synthetic Rubber Factory at Temirtau. One of the process units at this plant, the acetaldehyde unit used sulphuric acid and a sulphate salt of mercury (II) to catalyse the hydration of acetylene to acetaldehyde, a key component of synthetic rubber. This unit had a design capacity of 43 200 tonnes per year, expanded to 65 000 tonnes per year by 1964, and to 76 500 tonnes per year by 1975. The plant became the joint stock company AO Karbide in the early 1990s. By 1995 output had been reduced to 36 000 tonnes per year due to a decrease of demand for acetaldehyde and equipment wear. Production at the acetaldehyde unit ceased in 1997, and in 1998 AO Karbide was split into three independent plants. The acetaldehyde unit was retained by state-owned AO Karbide.

During the acetaldehyde reaction process some of the mercury was transformed to metallic mercury and organic mercury compounds. Most of the mercury left the process either as a sludge from contact acid regeneration or in the residue from the distillation unit that separated acetaldehyde from acetylene that didn't react. Distillation of mercury sludge from the contact acid regeneration process resulted in a treated sludge that from 1976 had been sent to the Nikitovski Mercury Combine for reprocessing. Mercury was also released to the atmosphere as gaseous emissions through venting of impurities from the hydration process, as well as from chilling of re-circulated cooling water and contact acid sludge dry distillation. Much of this was thought to be deposited on the grounds of the plant.

A significant amount of mercury entered the AO Karbide plant waste water stream. The first stage of waste water treatment at the Karaganda SR Factory began operations in 1950 at 3 000 m³/day, and the second stage in 1954 at 5 500 m³/day. Both stages featured biological filter beds. The sewage was then transferred into treatment tanks where it was chlorinated and silt from the bio filters settled. Overflow was discharged to the Main Drain through an underground collecting channel, and from there into the Nura River. Tank silt accumulated in the treatment tanks were deposited onto sludge drying bed. Further expansion of treatment facilities was completed in

⁴¹ Special investment loan, volume \$40,39 mil., project implementation period: 6 years, date of expected effectiveness: 01/15/2004, expected closing date 09/30/2009. Project Appraisal Document on a Proposed Loan in the Amount of US\$40,39 Million to the Government of Kazakhstan for the Nura River Clean up Project, March 27, 2003. see: http://www-wds.worldbank.org/servlet/WDServlet?pcont=details&eid=000094946_03043004021084

1966. Until 1969, sludge of poor quality was discharged into the depression known as the Zhaur Swamp, which is un-drained. In 1969 sludge filtration beds were constructed at the AO Karbide site.

Mercury-containing sludge had also been deposited throughout plant operations in the 'old' ash lagoon of the KarGES-1 thermal power plant, located on the banks of the Nura River. There were numerous failures in the KarGRES-1 lagoon, which lead to periodic uncontrolled discharges of power plant ash and mercury-containing sludge to the Nura River.

Until 1975, waste water treatment was not designed for removal of mercury from the waste water stream. In that year a plant designed for removing mercury was conceived, and operations began in 1977. This treatment included neutralisation of waste water by alkali (sodium hydroxide) and coagulation. The plant capacity is 180 m³/hour, and purification of inlet water (3 – 10 mg/l) was provided up to 0.7 to 1.0 mg/l. Dilution of this waste stream lead to a further reduction in mercury concentration to 0.001 to 0.002 mg/l in the discharge from the Main Drain. After treatment in the city's water treatment plant, further mixing, and dilution with wastewater from Ispat Karmet metallurgical plant, the wastewater is discharged to the river 2,5 km downstream from Samarkand reservoir.

At present, however, the amount of discharged mercury has been stopped because of the closing down of acetaldehyde production as a result of the economic crisis.⁴²

Numerous research projects have dealt with the mercury pollution in the Nura River.⁴³ The research projects have obtained the following results.⁴⁴

Discharge of mercury-containing wastewater into the River Nura began in the 1950s, when an acetaldehyde production plant was set up at PO Karbide. In the same year, a little upstream, dumping of coal ash began from KarGRES-1 power station. About 5 million tonnes of ash went directly into the river. In the river bed, mercury compounds were absorbed by the ash, forming

⁴² BCEOM, French Engineering Consultants. Nura-Ishim Basin Environmental Management and Rehabilitation Project. Project Report March 2002, p. 15.

⁴³ For example the following research projects:

- (a) 1975-78 Investigation of mercury in the soil and groundwater by Karaganda Hydrogeological Group and Institute of Applied Geophysics Moscow (in connection with the planned extension of the Karaganda-Irtysk canal to the city of Dzhezkazgan;
- (b) 1986-1988 most complete work until today by the Institute of Mineralogy, Geochemistry and Crystal Chemistry of Rare Elements Moscow;
- (c) 1990 expeditions by Kazakh Institute of Mineral Resources, the Institute of Microbiology MN-AN RK, the Republic Centre for Observation of Environmental Pollution, and the Kazakhstan State National University Al-Farabi.
- (d) 1997 Chair of Environmental Technology deals with this problem. Several projects funded by the European Union such as INCO-Copernicus IC15-CT96-0110 and INTAS-Kazakhstan 95-37. The work involved field and laboratory research and computer modelling of mercury pollution in the Nura River and its distribution processes.

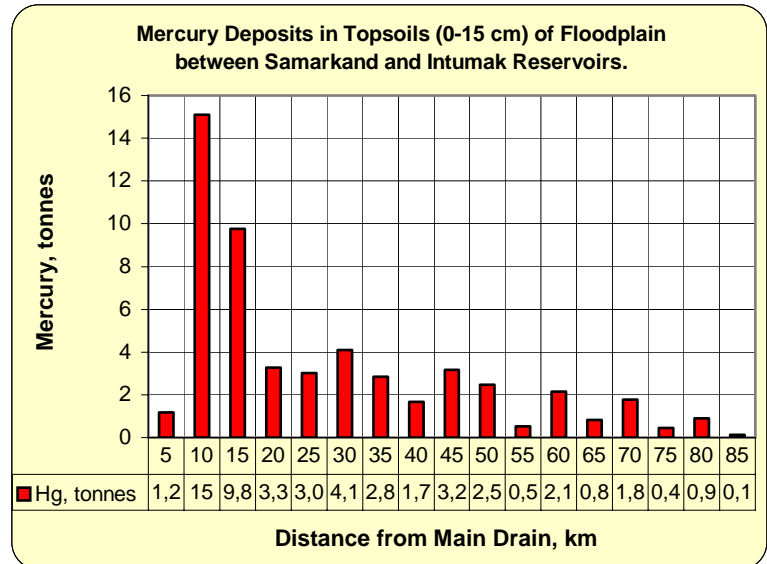
⁴⁴ Ilyshenko (2000).

technogenic mercury-containing silts. During floods, the silts are carried out of the river onto the floodplain, forming thick deposits of ash on the banks.

In addition the silts were carried by the floodwaters across the full width of the floodplain, polluting the topsoil with mercury. Some sites are polluted to a greater degree than others, depending on the relief and the geomorphology of the river. The most polluted part is the section of the floodplain close to Temirtau with a length of 15 km. About half of the total amount of mercury in the topsoil occurs in this section.

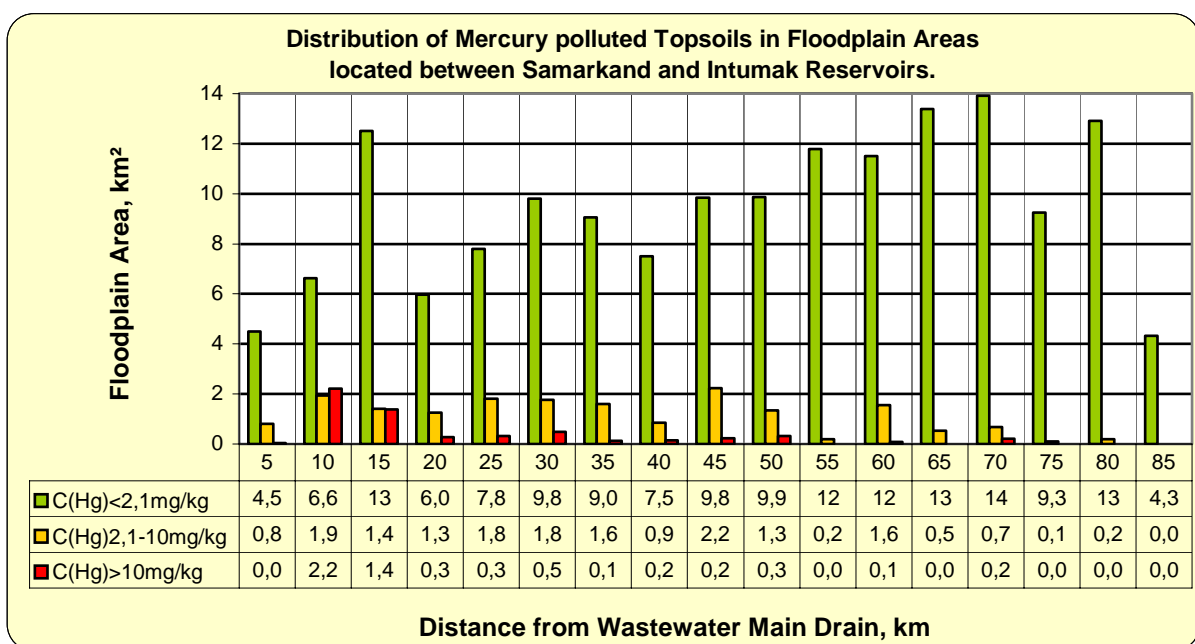
The largest quantity of mercury is found in the ash deposits on the banks of the river. These deposits reach a thickness of 2-3 metres and are frequently covered with a layer of soil above. The main mass of mercury occurs in silts on the banks and bed of the river, in the first 25 km below the city of Temirtau. The highest mercury concentrations also occur in this area.

Figure 10: Distribution of mercury in the Nura floodplain



Source: Ilyushenko (2000)

Figure 11: Mercury in the topsoil 0 - 85 km downstream of the Temirtau



Source: Ilyushenko (2000).

The total quantity of technogenic silt in the 70 km below Temirtau is almost 4 million cubic metres. The majority of the silt, and the most mercury-contaminated material, is concentrated near Temirtau.

For most of the year, the mercury stays strongly bound to the ash. The mercury concentration in water from the River Nura rises to a dangerous level only during flood periods.

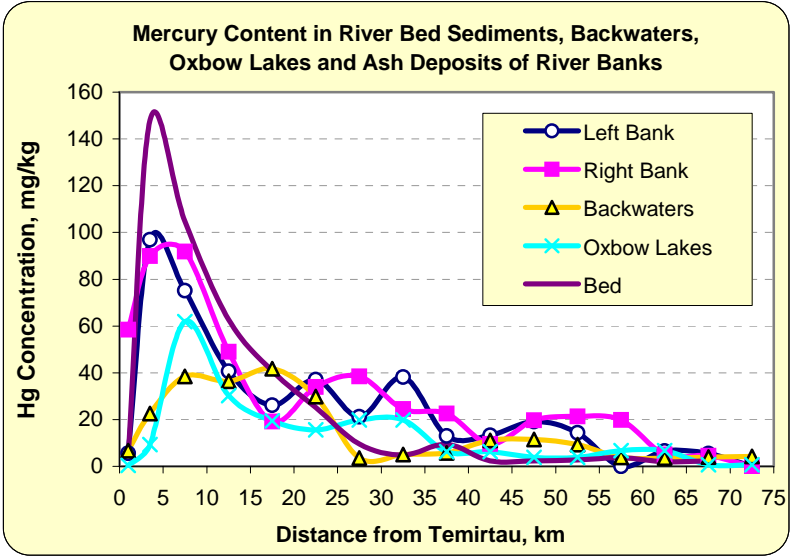
The river bed between Samarkand and Intumak reservoirs contains significantly less polluted material than first reported, that is about 550 000 m³ of silt and 10 tonnes of mercury. Most of the silt and over 90% of the mercury is concentrated 25 km

down the river from Samarkand reservoir: approximately 80% of the contaminated material occurs in 10% of the river cross-sections. A further 160 000 m³ of silt (4 tonnes Hg) is located in the backwaters of the river, and 290 000 m³ silts (2 tonnes Hg) in the oxbow lakes on the floodplain.

The floodplain topsoil contains approximately 53 tonnes Hg.

About 3% of the flood-plains belong to the hazardous category (more than 10 mg/kg Hg in top soil), which equals 5,8 km² or 880 000 m³ Hg. Out of these deposits 70% are located in within a distance of 25 km from the source. About 1 717 000 m³ of silts containing 65 tonnes Hg are deposited in flood-plain layers up to 3 m thick. The majority of the contaminated materials (about 80% of silts and 90% of Hg) are located within the 25 km distance up the river from the source. About 5 million tonnes of ash went directly into the river.

Figure 12: Mercury content in the river sediments



Source: Ilyushenko (2000).

In the river bed, mercury compounds were absorbed by the ash, forming technogenic mercury-containing silts. During floods, the silts are carried out of the river onto the floodplain, forming thick deposits of ash on the banks.

Table 7: Content of Mercury and technogenic silts deposits in Nura River Valley between Samarkand and Intumak Reservoirs.

Place	Volume technogenic silts, m ³	Hg, tonnes
River bed	550 000	10
Topsoil	880 000	53
River banks	1 717 000	65
Backwaters	161 500	4
Oxbow lakes	293 000	2

There does not appear to be a single parameter (i.e. pH) which can be used to control the rate of Hg methylation in the river. The high pH of the water and sediments keeps the amount of Hg in the water column low. Most of the Hg in the water column is bound to sediment and can be settled to remove Hg. In the water column Hg is high only during flood season.

6.3.2 Nura River Clean up Project

The project would directly address the main sector issues, as they relate to the Nura River Basin, in the following manner⁴⁵:

- Remediation environmental degradation, and alleviating current and potential risks to the local population, by cleaning up mercury pollution at and downstream from Temirtau, overseeing remediation efforts and monitoring their effects;
- Ensuring effective management of the land fill site where contaminated soil and other residues from the Karbide plant are to be contained;
- Improving the capacity to manage flows in the river, in order to alleviate downstream problems with seasonal flooding, and with irregular and often inadequate supply of water to the Kurgaldzhino wetlands;

⁴⁵ See Project Appraisal Document:
http://www-wds.worldbank.org/servlet/WDServlet?pcont=details&eid=000094946_03043004021084

Enhancing the capacity for integrated management of the river (including pollution control) by:

- (i) supporting an improved regulatory framework for integrated management of the Nura-Sarysu Basin, and
- (ii) improving the resources management capacity of the Basin Authority; and
- (iii) enhancing the capacity of regional agencies to monitor and manage water quality, pollution levels, and health related aspects in the river;

Ensuring sustainable and cost effective water supply for communities in the Nura River Basin, including the capital city of Astana.

Component 1: Nura Valley Mercury Clean-Up (\$44.08 million) This component of the project will include financing for (i) construction of a secure landfill for proper containment of contaminated soil and materials, (ii) excavation of contaminated hotspots at the AO Karbide plant site at Temirtau (factory building, main drain, and adjacent waste disposal sites), and (iii) excavation of other highly contaminated areas including the Zhaur Swamp, and critical areas of mercury accumulation along the banks and floodplains of the Nura River, as well as the transport of the materials to the landfill site. A suitable landfill site has been identified at Opan, near Temirtau, adjacent to an existing landfill associated with the Ispatkarmet Metallurgical Plant, and the Government, through the Committee for Water Resources, has reached agreement with parties having an interest in the site over acquisition of title.

The project would also finance the initial operation of the landfill, and the establishment of a long-term monitoring and maintenance program. Additionally, as part of this component, funding would be provided for inspection and monitoring of the landfill construction and soil-excitation process by independent experts to ensure that the selected contractors meet all technical and environmental standards and safeguards.

Component 2: Intumak Reservoir Rehabilitation (US \$119.13 million). Component 2 would finance rehabilitation of the Intumak Reservoir, including reinforcement of the dam and completion of the spillway and gates to allow the dam to operate as a mechanism for flow control at its original design reservoir level. This would allow development and implementation of an integrated water resources management plan for Intumak and the upstream Samarkand and Sherubianur Dams and reservoirs.

However, owing to uncertainty about the effect of raising the operating level at Intumak Reservoir on mercury methylation, a one-year monitoring program would be carried out as a precautionary measure, and the results analysed and modelled to assess the inherent risks. The program of required works, as well as the dam operational manual, would be developed based on

the findings of this analysis and would be reviewed by an International Expert Advisory Group. Any disbursement for civil works related to this component would be conditional on the agreement of the Expert Advisory Group. In the event that the results of the monitoring and assessment indicate a risk of unacceptable levels of mercury methylation associated with increased operating levels, completion of the spillway and gates would be postponed until mercury deposits in the bottom of the reservoir could be removed and transferred to the landfill. Provision has been made in the cost estimate for this component to cover the cost of any additional dredging works required. Component 3 includes funding for the design and implementation of the monitoring program, and the participation of the International Expert Advisory Group. While the exact amount of dredging would be based on the further monitoring and analysis, it is expected that the volume would be small in the context of the overall project, and the cost would be minor.

The **project is expected to be implemented** over a period of six years, from September 2003 until March 2009. The Loan Closing Date would be September 30, 2009. Disbursements are expected to conform fairly closely to standard disbursement profiles for projects of this duration, with the exception of above average disbursement in the initial years owing to the urgency of remediation works at the AO Karbide plant site, and a possible hiatus in mid-project prior to the commencement of civil works at Intumak Dam.

International Expert Advisory Group. An international team of experts would be formed, consisting of specialists in fields such as mercury toxicology, risk assessment, environmental impact assessment, hydrology, public health and ground remediation engineering, to provide advice on project activities and monitoring. This group would also be responsible for reviewing the findings and recommendations arising from the monitoring of pollution levels in the Intumak Reservoir and reviewing the recommended program for dam and reservoir rehabilitation.

6.4 Dry lands Management Project

The Dry lands Management Project (US\$5.27 million), which has been approved June 19, 2003, will demonstrate the environmental, social and economic viability of shifting from the current unsustainable cereal-based production in dry land ecosystems to traditional livestock-based management. The project is funded by a grant from the Global Environment Facility (GEF) Trust Fund, with additional contributions from other co-financiers and project beneficiaries of about US\$4.43 million.

Expansion of cereal production into the Steppe region of Central Asia led to widespread land degradation. Many of these areas have either been abandoned or are producing grain yields that

are now neither financially viable nor ecologically desirable. It leads to reduced biodiversity, endangers certain species, lowers carbon sequestration, **adversely affects water quality and reduces water supply and leads to desertification.**

The project⁴⁶ will launch a set of activities in a pilot area of the Shetsky district of Karaganda oblast (province), situated in the Nura River catchment area. It includes: (1) developing sustainable land use systems; (2) providing initial service support to producer groups; (3) improving national capacity to quantify and monitor carbon sequestration; and (4) undertaking a broad public awareness campaign and develop a strategy so that project interventions could be replicated in similar areas of Kazakhstan and other Central Asian countries. The project will be implemented over a period of five years.

The proposed project is consistent with the newly created Operational Program 12, (GEF OP-12) “*Integrated Ecosystems Management*” which promotes land generation and biodiversity. It provides a comprehensive and cross-sectoral approach to addressing many of the goals of global environment conventions, including the Convention on Biological Diversity (CDB), UNFCCC and CCD. The project provides an integrated approach to achieving ecological, economic and social goals to achieve both local and global benefits. It addresses three program objectives of OP 12 as follows:

Conserving and sustainable using biological diversity, as well as the equitable sharing of benefits arising from bio-diversity use, for example, promoting eco-tourism and using biomass for energy;

Reducing net emissions and increasing storage of greenhouse gases in terrestrial ecosystems; and
Conserving and sustainable using water bodies.

By the time the project is completed, thousands of hectares of land abandoned in the transition years should be brought back to economic use, thus contributing to the poverty alleviation in the region.

Within the first and key component of the project, the **development of sustainable land use systems**, the following measures with improving effect for water quality and water supply are taken:

(a) Revegetation of abandoned lands (equivalent to about 90% of abandoned cereal and forage areas held by farmers) with perennial grass species and assisting with improved management of rangelands.

⁴⁶ For further information see:

http://www-wds.worldbank.org/servlet/WDSServlet?pcont=details&eid=000160016_20030602163856

(b) Planting of adapted shrubs, bushes and trees to improve biodiversity and carbon sequestration. At present, there are only a few perennials within the project area. Wild fires have damaged numerous natural trees and shrubs and many planted species are being neglected because they do not belong to the farmers. Also farmers do not realize the full potential benefits of trees within the farming systems. In part, this is due to past practices when shelterbelts and other block plantings were owned and managed by the state. They are still state owned, but little management is now undertaken. Thus, farmers have little incentive to manage such areas. If the ownership could be vested in the individual or groups of farmers, then there should be the incentive to manage the existing tree formations.

7 Research and monitoring in Nura River Basin

7.1 GEF Wetlands Project “Integrated Conservation of Priority Globally Significant Migratory Bird Wetland Habitat: A Demonstration in Three Sites”

This project (implementation 2003-2009) is designed to demonstrate the integrated conservation and sustainable use of biological diversity in three priority wetland sites. The three sites lie along different migratory flyways and each enables the project to demonstrate solutions to different pressing issues affecting Kazakhstan’s wetland biodiversity resources. Korgalzhyn Nature Reserve is one of the demonstration sites. In terms of GEF financial input (US\$ 8.71 million) this is the biggest GEF project in Kazakhstan ever. The inception meeting has taken place on 12th of December 2003 in Astana at the Ministry of Agriculture.

A lack of experience stakeholder involvement has led to the practical absence of active wetland conservation management in the past.

The GEF wetland project is designed to provide a policy and regulatory framework to support wetland conservation and sustainable use. The GEF supported alternative is designed at the ground level to integrate biodiversity conservation and sustainable development in three priority protected sites and the relevant surrounding territories. The three protected area were chosen by an expert committee in part because each enables the project to demonstrate solutions to different challenges facing management of Kazakhstan’s wetland biodiversity resources.

The Tengiz-Korgalzhyn site will enable the project to demonstrate a more effective management approach for zapovedniki (strictly protected natural areas) in Kazakhstan’s new social and economic landscape. Emphasis will be placed upon demonstrating more sustainable water resource management with a river basin management perspective

The planned project is in line with other projects and first of all with World heritage objectives. Among the relevant project components, which will be realized are:

Output 1 (A national integrated institutional, policy and regulatory framework for wetland biodiversity conservation and management) is designed to improve the overall institutional and policy support for wetland conservation in Kazakhstan. Currently, it is inadequate and this serves as an existing barrier to wetland conservation. Activities under Output 1 will construct an institutional, legal, and regulatory framework for integrated wetland biodiversity conservation and management to support the conservation and sustainable-use of wetland biodiversity. At the centre of this national structure will be a “National Wetlands Conservation Law.” The regulatory framework will require government agencies to apply some sustainable development approaches in areas around priority wetlands and make commitments to maintain wetland health by ensuring an adequate supply of water to priority wetland areas.

Wetland management capacity at the national and Oblast level will be improved. Policy experts’ knowledge on how to assess values and services provided by wetlands will be strengthened, as will their knowledge on how to include tax and financial incentives in the regulatory framework for wetland conservation. In-country training will be conducted and study tours organized to a country with model wetland conservation laws appropriate to Kazakhstan’s context. Guidelines will be prepared for the regional Akimats to ensure that the various users of wetland resources undertake integrated management measures.

Output 2 (Strengthened Protected Area Operations) will strengthen the management presence at each of the three areas in a manner appropriate for each site based upon expert recommendation and consultations with local communities and officials. The buffer zone of the Korgalzhyn zapovednik will be expanded and the Korgalzhyn complex nominated for UNESCO Biosphere Reserve status.

Training will be carried out to strengthen the overall management capacities of the protected area. Training will be provided to protected area staff in relevant fields, including conservation biology, species management, and community-based management approaches to biodiversity conservation. In addition, training will promote a common understanding of integrated wetland management and practical knowledge in how to deal with day-to-day situations and public awareness.

A systematic monitoring and information management program will be developed to support the conservation of biodiversity within the protected area. For example, the protected area will monitor habitat quality, fauna and flora numbers and locations, and level of resource use (where allowed). This work will also be an important component of the project’s M&E program.

Three other outputs of the project are:

- Output 3: Increased stakeholder awareness and support
- Output 4: Stakeholders Empowered to Sustainable Utilize the Productive Landscape around Priority Sites
- Output 5: Migratory Bird Wetland Conservation Fund

7.2 TWINBAS – Twinning European and Third Countries River Basins for Development of Integrated Water Resources Management Methods

Scientific objectives. (1) In agreement with the overall objective of Integrated Water Resource Management (IWRM), TWINBAS aims at **enabling development of water management action plans** that have been analysed from all perspectives and have been found to give acceptable results to all stakeholders. Proposed actions should be sustainable, the most cost-efficient, taking all fields of water issues into account.

A key feature of IWRM is that solution are no longer analysed from the perspective from only one area, i.e. water availability, but instead, problems in different water fields are analysed in a coherent manner. That is, **measures proposed for reduction of one problem, i.e. surface water quality, are analysed regarding biological, chemical, physical, economical and societal consequences also for the other areas, i.e. ground water quality or shortage, industrial use etc.**

(2) **Central objective** of TWINBAS: fill gaps in knowledge and data, in order to enable implementation of harmonised IWRM approach that addresses the European Water Initiative, in five river basins, including Nura River Basin. Twinning the rivers and tying together water researchers with expertise on these rivers, large assets of experience and knowledge can be utilised.

(3) The second objective of the project is to enable and to perform a **vulnerability assessment** and produce **integrated river basin management plans** with optimal combinations for actions. In order to meet that objection, a number of research tasks on hydrology, modelling of pollution flow, impact assessment, socio-economics, scenario analyses, effects of actions need to be carried through with the goal to raise information to a level, where IWRM can be implemented.

State of the art. Development tasks for Nura River are: developing solutions and structures that will improve water quality, water availability, as well as ecological vulnerability assessment for the terminal wetlands of Korgalzhino.

Relevance / definitions. The focus of TWINBAS is to develop integrated water resources management concepts onto tools, guidelines, policies and plans for integrated catchment

management in twinned case studies in order to contribute to the objectives of the EU Water initiative launched in Johannesburg 2002. Through the Water Initiative the EU seeks to transfer its operational knowledge globally. Important goal in this context is to contribute to balancing the interests of development against the needs of environment in the more fragile contexts of the developing world.

One of the conclusions of Stockholm Water Symposium was to promote holistic, participatory and decentralised water management approach, to reach fair allocation mechanism between competing water uses and to promote sustainable economic growth.

The twinning strategy. The overall structure of the project proposal is designed to enable twinning, i.e. intensive collaboration in all fields of activity, and utilisation of expertise and experience from other river basins.

The Work plan – an overview:

- History, current status and stakeholder structures (compilation of existing monitoring data)
- Monitoring: produce monitoring programme, conduct monitoring during full two years (report with surface and groundwater monitoring programmes, report on finalised monitoring efforts, including problems and description of data)
- Public participation: Create communication plan.

Hydrological modelling and water abstraction:

(a) to fill gaps in hydrological knowledge especially for Nura River – needed for accurate analysis of water dynamics, surface-groundwater interaction, water availability compared to water requirements, pollution flows and thus for pressure analysis;

(b) to identify water abstraction with a significant impact on local water resources.

Most highly regulated rivers have a water resources model based on historic data to aid planning – Nura does not have numerical water resource management models for sustainable allocation and management of water resources. These models will be built based on historic flow data, climate data, engineered infrastructure and abstraction and return flow data. The model will include the terminal wetlands. This means a complete hydrological modelling of river basin, data on current water abstraction activities, that has a significant impact on surface and groundwater availability.

Pollution pressure and impact analysis: complete assessment of pollution pressure.

Classification of water bodies (GIS layers with protected areas), and GIS layers categorised water bodies for the Nura basin.

Climate change effects and vulnerability assessment: completed list of climate change and human development scenarios are to be modelled. This includes the estimated level of change in water availability, physiochemical and ecological status for each water body and assessed level of vulnerability.

8 Management of Water Resources

8.1 Overview Environmental Law and Institutional Context

The constitution of the Republic of Kazakhstan (paragraph 3 article 6) defines, that "...the ground and its bowels, water, flora and fauna, other natural resources are in a state ownership...". This position also is in force in nature protected areas (NPA).

The basic law in Kazakhstan, passed in 1997, is the law "On the protection of the Environment". It is setting the framework for environmental protection issues in Kazakhstan. The purpose of the law is to consist in prevention of pollution and to stimulate rational use of the environment. Prevention and the control over pollution of wetlands is the most important measure of Kazakhstan at the legislative level. The law demands involvement of local authorities and stakeholders in the management of natural resources of the country, and for the first time some principles of the free market are included in the nature protection policy of Kazakhstan, such as "polluter-pays-principle!".

The Ministry of Environment is responsible for realization of a nature protection policy of Kazakhstan and amplification of laws on protection of air and water resources; ecological standards in petrol-industry and other industries, and also actions on cleaning the environment.

The water code of Republic Kazakhstan defines legal position in the field of use and protection of water resources. By clauses 82 and 83 it is determined, that "water bodies of national parks, the state natural reserves and other kinds of protected natural territories form the category: water bodies of especially protected natural areas".

8.2 Umbrella Project "Improvement of the environment for sustainable development of Akmola, East-Kazakhstan, Pavlodar, Karaganda Provinces and the City of Astana of the Republic of Kazakhstan"

The Umbrella Project: Improvement of the environment for sustainable development of Akmola, East-Kazakhstan, Pavlodar, Karaganda Provinces and the City of Astana of the Republic of Kazakhstan", adopted March 18, 1999 deals with the crucial issues of maintaining the existing

natural flows of Nura River and the containing the deposits of mercury pollution, through its Nura Ishim River Basin Management Project.

In the process of implementation of the above mentioned project, the following issues are addressed:

- Assessment of possibility of change of hydrological and hydro geological situations, and change in character of distribution of technogenic pollution (mercury) in flood-plain sediments;
- Research on possibility of entering of pollutants into Korgalzhyn wetlands, and technical equipment to contain distribution of pollutants reaching Korgalzhyn Nature Reserve;
- Assessment of variants of Astana City sewerage discharge and its usage for irrigation;
- Maximum usage of treated wastewater before discharging into any river.

In its letter to the Vice President of the German Society for Conservation of Nature (NABU) from October 17, 2003, the Vice-Minister for Environmental Protection stated, that the Umbrella Project and its part the Nura Ishim River Basin Management Project will not influence the existing balance in Korgalzhyn Nature Reserve in any way.

8.3 Nura Ishim River Basin Management Project

The first part of the Project consisted of a review of the institutional and legal framework for water and sanitation. It began in July 2001 and recommendations were made in institutional development and the new Water Code.

The second phase of the project, which began in October 2002, focussed on improving water resources planning and management with the development of a strategy for capacity building in the River Basin Organizations. A central component of the planning and management components is an Integrated Water Resources Planning and Management Decision Support System which is being developed in the Nura and Ishim River Basins. Following on from the development of the decision support system is an Integrated Water Resources Development Plan for the Nura and the Ishim River Basins. Institutional aspects are also being considered and recommended. A monitoring system for hydrometry and water quality was designed.

8.4 New Water Law 2003

In 1993 in Kazakhstan the new law on the property rights on water resources and the rational use of water resources has been accepted. The new law the “Water code of the Republic of

Kazakhstan”, determines that all water resources in Republic Kazakhstan are the property of the state. The responsibility for rational use of water resources is assigned by the Code to Committee on water resources management, belonging to the Ministry of Agriculture.

In July, 9, 2003 a reconsidered version of the Water code of Kazakhstan was passed, which improved the management competences of the water basin Authority.

The new competences are:

- Planning: yield assessment and a their prediction, plans for development of the basin, drawing up of long-term budget, drawing up of year budgets and forecast for water demand and the protection of the basin.
- Management of information: a specialized monitoring, the maintenance of the water cadastre, public information public awareness rising, cooperation with other executive institutions working on water issues.

Others of the competence have been appointed in existing laws on water resources management though they at present for the lack of financing are not yet executed well.

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10 Appendices

Photo 1: Kysyltas mountains near the headwaters of Nura River in fall 2003



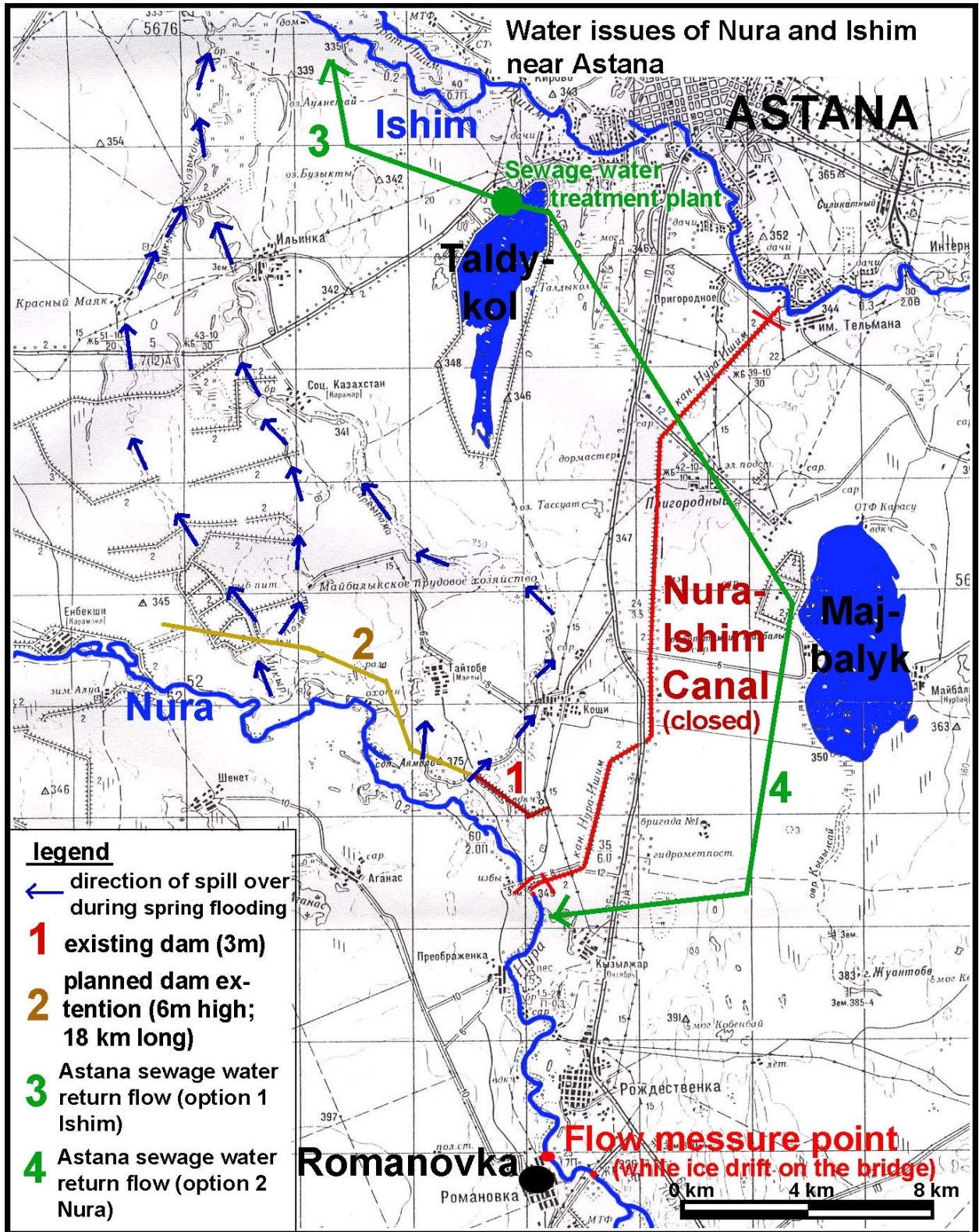
Source: M. Lenk 2003.

Photo 2: Spring of Nura River in fall 2003



Source: M. Lenk 2003.

Figure 13: Water issues of Nura and Ishim near Astana (Sewage water, bifurcation, Nura-Ishim canal)



Source: Martin Lenk 2003.

Figure 14: Nura River satellite image of the exceptional high spring flood in April 2002

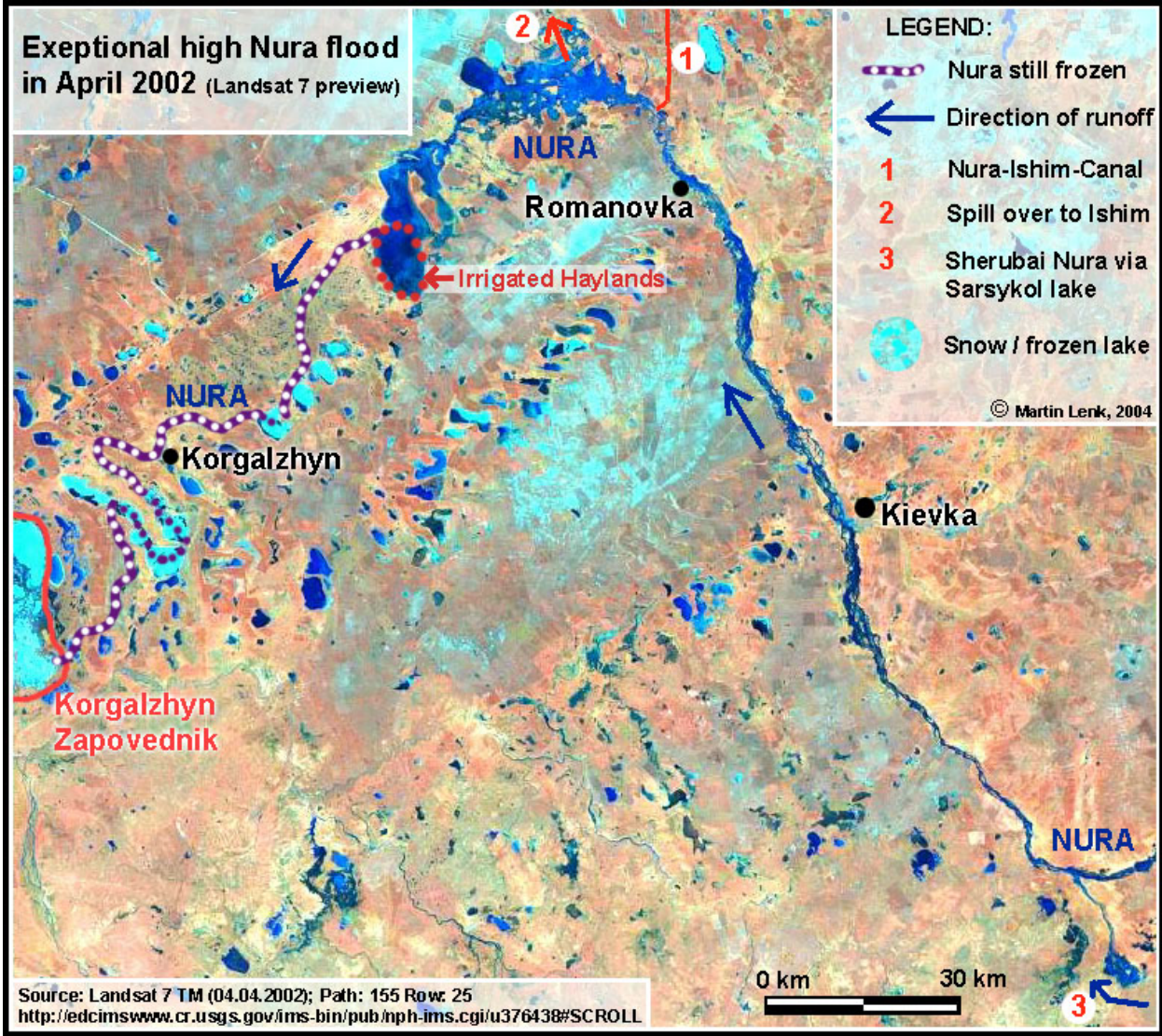
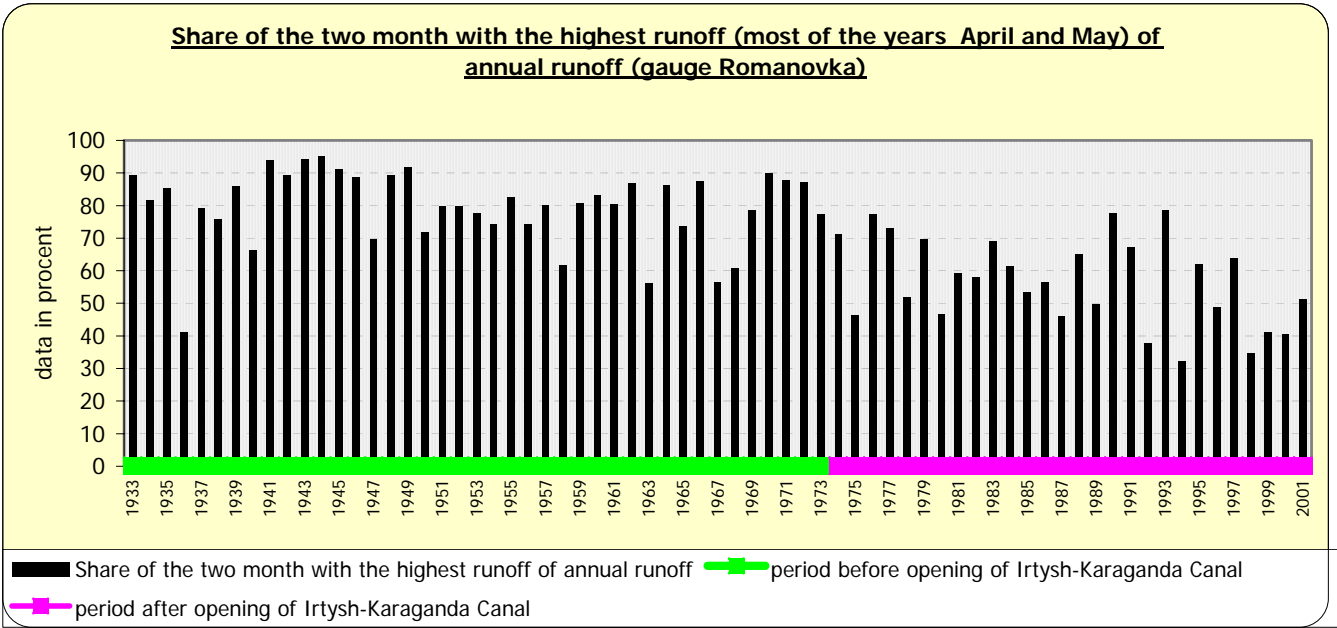
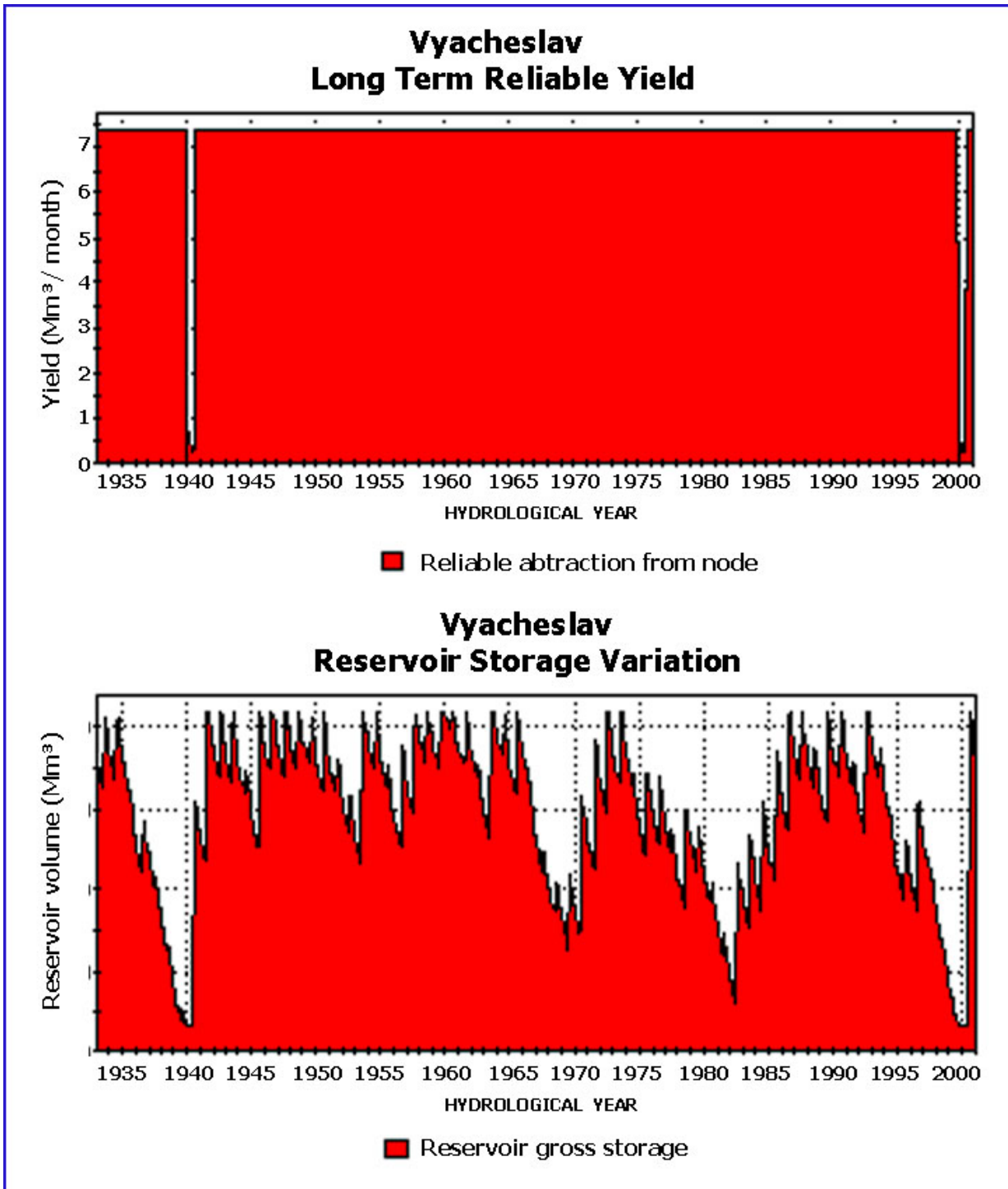


Figure 15: Share of the two month with the highest Nura runoff



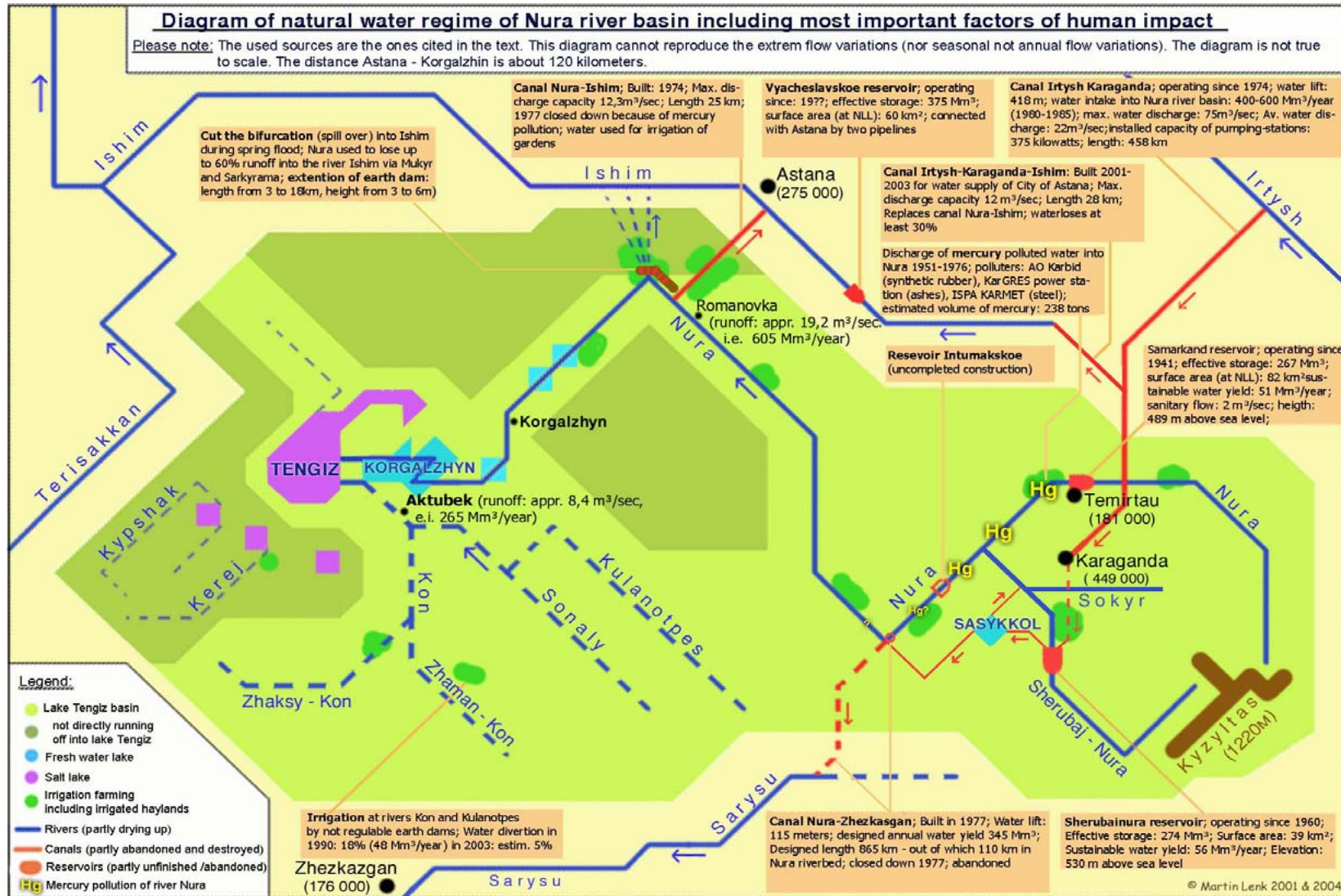
Source: own calculations

Figure 16: Vyacheslav Reservoir storage variation and long term reliable yield



Source:

Figure 17: Diagram of natural water regime and human impact in the Nura River Basin



Document 20.) Information on the Nura Clean up Project

**Information about process of project “Purification of Nura River”
from 18 of April 2005
Water Committee at the Ministry of Agriculture**

The loan agreement № 46930 KZ on above mentioned project to the sum of 63.24 million US dollars, including co-financing of 22.85 million US dollars as from budget of Kazakhstan was signed on 17 of December 2003.

Loan term is from 2004 till 2009. The loan agreement was ratified by Act of Kazakhstan Republic dated 26 of May 2004 № 556 – II «About loan agreement ratification (**project “Purification of Nura River”**) between Republic of Kazakhstan and International Bank of reconstruction and development.

Divide on categories (components cost was established on the basis of technical and economic assessment and at the moment are specified by developers):

Loaning terms are:

- 15 years, including 5 years of grace period.

Aim of project is to improve welfare of people, living in Nura River basin by purification of adjacent territories from mercury pollution;

The following construction works are planning within the period of project:

- Building and operation of site to be cleaned ;
- Cleaning of “Karbid” factory territory, the water power plant and runoff ditch
- Purification of Nura River canal and Zhaurskiy swamp;
- Reconstruction of Intumaksiy reservoir storage.

For preparation of structural contracts:

- The contract with consulting company Posh & Partners (Austria) for preparation of detailed component planning «Purification of Nura River canal and Zhaurskiy swamp» was conclude on 25 of June 2004.

- The contract with consulting company COWI A/S (Denmark) for preparation of detailed components planning “Building and working of site; «Refining of “Karbid” factory territory, water power plant, runoff ditch» was made on 8 of July 2004

The beginning of design work on component “Reconstruction of Intumaksiy reservoir storage” is planned on 2006.

At the present time consultants are finishing designing and preparation of tender documentation on contracts. NRC-A1, NRC-A2 и NRC-A3.

PROCUREMENT PLAN (Works and Goods)

Description of Works/Goods	Estimated Cost (Rs. Million USD)	Design/ Investigation completed (Date)	Estimate Prepared & Sanctioned (Date and Value)	Preparation of Bid Document (Date)	Bank's No Objection to Bidding Document (Date)**	Bids		Contract Award decided (Date/ Value/ Currency)	Bank's No Objection to Contract Award (Date)**	Contract Signed (Date/ Value/ Currency)	Contract No.	Name of Contractor/ Nationality & ZIP Code	Date of completion of Contract	Expenditure incurred to Date
						Invitation (Date)	Opened On (Date)							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Works														
"Clean-up contaminated territories, landfill construction and operation"		2002	Sept.05	Sept.05	Oct.05	Nov.05	Feb.06	March 06	March 06	Apr. 06	NRC-A1-1-Single	-	Dec. 08	-
"Rehabilitation and technical reequipment of Yntumak reservoir"		2002	Sept.06	Oct.06	Nov.06	Dec.06	March 07	May 07	June 07	July 07	NRC-A4	-	Dec.07	-
Goods														
Laboratory equipment for laboratories of environmental authorities				Feb.04	March 04	March 04	Apr.04	Apr.04	Apr.04	Apr.04	NRC-B1/1	PLC "EvrasiaFarm"	June 04	0,088
Laboratory equipment for laboratories of environmental authorities				Feb.04	March 04	March 04	Apr.04	Apr.04	Apr.04	Apr.04	NRC-B1/2	PLC "Create"	June 04	0,029
Equipment for 17hydroposts				Jan.04	Feb.04	March 04	May 04	June 04	June 04	June 04	NRC-B2	PLC "EvrasiaFarm"	Sept.04	0,319
Sampling materials				Jan.04	Feb.04	March 04	May 04	June 04	June 04	June 04	NRC-B3	PLC "EvrasiaFarm"	Sept.04	0,512

Document 21.) Information on the GEF/UNDP Wetland Project in Kazakhstan

Full title: “Integrated Conservation of Priority Globally Significant Migratory Bird Wetland Habitat – A demonstration on three project sites”

Why is it important to protect wetlands in Kazakhstan?

Kazakhstan has a dry, continental climate and therefore questions on the protection and rational use of water resources are a key issue. Wetlands in Kazakhstan are an oasis in the steppe and desert region that support a high concentration of natural and cultural heritage for generations to come.

Wetlands in the Eurasian continent are linked by two major migratory birds' routes. They are the Central Asian Indian and Siberian western African flyways. This highlights the international importance of Kazakhstan for migratory birds. Kazakhstan's wetland supports one of the largest water bird populations in Asia.

The **implementation** of the project started with the financial and technical support of the Global Environmental Facility. It was then carried out by the United Nations Development program. In addition, the Committee for Forestry and Hunting at the Ministry of Agriculture is implementing the project from the side of the Kazakh Government.

The **timeframe** of the project seven years from 2003 till 2010.

The **finances** in the project is 36 Million USD (GEF 8,7 Bln, Government 24,3 Bln., Third party 3 Bln.).

Objectives of the project are to work out new ways to manage and use globally important wetlands biological resources in a sustainable manner. This includes the participation of local communities and stakeholders.

Goal: To protect globally significant wetland biodiversity in Kazakhstan

Purpose: Government agencies, non-governmental entities, and local communities are maintaining and improving the integrity and viability of Kazakhstan's priority wetland ecosystems. **Output 1: National wetland biodiversity conservation policy, regulatory and institutional framework approved and in place. Output 2: Well planned and effective protected area management**

Output 3: Established awareness of wetland biodiversity values among local stakeholders and process for generating lessons learned. Output 4: Enabled Conservation and Sustainable Use of Wetland Biodiversity in the Productive Landscape Output 5: Sustainable financing for wetland conservation

The **Tengiz-Korgalzhyn lake** system is crossed by two main flyways for migratory birds. It is therefore a globally significant wetlands conservation site. In 1976 the lake system was nominated as a Ramsar convention site. Lake Tengiz is part of the world wide environmental conservation network - “Living Lakes”. The network includes the most important and unique lakes on the planet.

The wetlands complex supports numerous birds due to its ideal feeding and breeding grounds. One can find one of the biggest colonies of Dalmatian pelican, White-Headed Duck and the most northern flamingo colony in the world. Other rare species found on the project territory include the Sociable Lapwing, Little Bustard, Ferruginous Duck, White-Tailed Eagle and Red-Breasted Goose.

In the area of the lake system Saiga antelope, wild bores, wolves and foxes are prevalent. Although the Korgalzhyn fresh water lakes support only a few fish species, the population is highly productive.

The locals make their living from ranching, dairy cows, horses and some fishing. During Soviet times the region focused on wheat production which still currently plays an important role in the northern part of the project area.

The **Ural Delta** is located at the northern Caspian Sea coast and plays a vital role for migratory birds on the East African flyway. The wetlands supports high numbers of water fowl such as duck, geese and swan species. In the vast reeds of the delta ecosystem, rare birds such as White and Dalmatian Pelican, Cattle and Little Egret, Spoonbill and Glossy Ibis can be found nesting. During migration periods, thousands of migrating pelicans stop over here as well.

The river delta and the sea are feeding and breeding grounds of the Caspian Seal as well as rare fish species such as Volga Shad and Caspian Lamprey. Also both important for commerce and biodiversity are the sturgeon species Beluga, Russian and Star sturgeon.

The majority of the local community makes their living from fishing. Less important is farming and ranching.

Alakol-Sassykol Lake system is situated between the Dshungar Alatau and Tarbagatay mountains. Alakol Lake is one of the two places in the world that is known to support Relict Gull breeding colonies. In addition, the lake system supports breeding populations such as Dalmatian and White Pelican as well as the Ferruginous Duck. Also important are the breeding populations of the White-Headed Duck and White-Tailed Eagle.

Part of the lake system is Lake Shalanash Kol which is positioned in the stone desert. This desert supports rare mammals such as Goitred Gazelle, Desert Dormouse and in the adjacent mountain ranges the Pallas's cat. In addition, several Bustard species can be found including the Great, Little and Houbara Bustard.

The highly productive fish populations, include some protected species such as Balkhash Marinka and Perch.

The economy of the region is based on irrigated wheat and vegetable production, as well as milk, meat and fish production.

**Full project document available under
www.wetlands.kz**

Document 22.) Information on the GEF/UNEP Siberian Cranes project in Kazakhstan.

Full title: «Development of a Wetland Site and Flyway Network for Conservation of the Siberian Crane and Other Migratory Water birds in Asia»

The objective of the project – contribution to protection of the richest wetland complexes in the Kostanai oblast, globally significant waterbirds flyways, places of their rest feeding and nesting places of the local fauna.

The project includes the current analysis of the oblast water bodies concerning species biodiversity and natural complexes conservation; study of the waterbirds and the factors making impact on the state of their populations and preferable biotops; finding out the places of waterbirds concentration paying special attention to migratory, rare and endangered bird species including the ones which are registered in the Red Data Book. The Siberian Crane was chosen as a priority project species, which is one of the most endangered one in the world fauna.

The Siberian Crane has become a logo species of the Project, it is a rare and beautiful bird demonstrating a fine breeding ritual and flying the longest and complicated ways stretching across many countries, compared to other crane species.

The four lake systems: Naurzum, Zharsor-Urkash, Kulykol, Tontegir – Shanshura located in the Kostanai oblast have been chosen as project sites and they are globally significant territories for various waterbird species and first of all for migratory species including globally endangered ones. The chain of these lakes is known as one of the greatest waterbird flyways in the Eurasia. Totally on the lakes of the Northern Kazakhstan there are up to 115 waterbird species and 70 of them are nesting there.

The Naurzum Lake System

It is within the boundaries of the Naurzum Reserve and it is located in the Naurzum rayon of the Kostanai oblast.

The total square of the wetlands is about 38.000 ha. including 12 large lakes with the square of 300 to 21 thousand ha, and more than 15 smaller ones.

In the years of flooding the Naurzum lakes is the area of mass nesting and moulting of water and wetland birds: *Anseriformes*, *Rallidae*, *Podicipediformes*, *Laridae*, *Pelecaniformes*, *Ciconiiformes* and sandpipers. Such rare species as *Pelecanus crispus*, *Pelecanus onocrotalus*, *Cygnus cygnus*, *Oxyura leucocephala*, *Larus ichthyaetus*, *Chettusia gregaria* make nests here. Being located at one of the largest flyways the Naurzum lakes serve as a place of a long stay for hundreds of thousands of birds, including rare and globally endangered ones – the Siberian Crane, *Cygnus bewickii*, *Melanitta*, *Anser erythropus*, *Branta ruficollis*. The territory maintains sustainable existence of the largest in Kazakhstan nesting groups of a white-tailed sea eagle, *Aquila heliaca* and also *Aquila chrysaetos* and *Falco cherrug*. On the territory of the wetland 44 mammal species, 282 bird species, 3 amphibian and 3 reptile

species and 10 fish species are registered. Wetland birds group is a group of the greatest diversity, among them there are 110 species.

The Naurzum lakes are the key territories for protection the rarest bird of the Northern Eurasia during the flight – the Ob population of the Siberian Crane (*Grus leucogeranus*). It is one of the two places, where the Siberian Cranes stay for a long period up to 2 weeks and more at the whole length of the flyway from the nesting places to wintering places in Iran.

The main factor, which makes impact on the wetland birds of the Naurzum lakes is a natural cycle of the hydrological regime. For the last years a considerable threat is made by uncontrollable steppe fires. Optimisation of the borders through moving them at a longer distance from the lake hollow and inclusion of Suly, Kansuat and Kulagul lakes into the reserve should contribute to improvement of protection.

Kulykol site

The system of lakes Kulykol-Taldykol is located on the right bank of the upper stream of the Tobol river on the border line of Terseksko-Adayevsk plateau with the hilly Zauralye plateau. The total square of the water land is 83 square km, of which the square of the lakes when the water level is high is about 45,3 square km.

Kulymkol is a fresh water lake, when the water is shallow it is salty, having cyclically changing hydrological regime and periodically it dries up. In the periods of high and average water level the area of mass nesting and moulting of water and wetlands birds is one of the most important places of rest for *Anseriformes*, especially geese and also *Rallidae* and sandpipers during migration.

In the fauna of the wetland birds 99 species (including 45 nesting species) are described, the most numerous of them are *Anseriformes*, *Rallidae* and *Laridae*. The population and number of the nesting wetland birds is changing due to the lake water level. The general number of migrating water birds in autumn is up to 450 000 birds. Usual and numerous flying by species are globally endangered *Branta ruficollis* – up to 35- 40 thousand and *Anser erythropus* – up to 11 thousand and also *Cygnus cygnus* - 300-400, *Cygnus bewickii* – up to 20. Some Siberian Cranes were recorded as well. There is mass migration of sandpipers (*Philomachus pugnax*, *Calidris minuta*, *Calidris alpina*, *Phalaropus lobatus*), seagulls and sea swallows, usually there are grey cranes. In 1996-2003 16 bird species were registered, which are related to the category of rare and endangered ones.

Both lakes is a hunting economic unit, however hunting at the Kulykol lake and at a distance of 500-meters from it is prohibited. In the frames of the project it is supposed to establish zakaznik at the lake.

Tyutyugur and Zhanshura site

The Tyutyugur and Zhanshura lakes are located at Ubagan-Ishim watershed in the Karasus rayon of the Kostanai oblast. The total square of the lakes is about 7000 ha, including Tyutyugur – 5430 ha and Zhanshura – 1570 ha.

It belongs to the group of lakes with flood type of filling and cyclic hydrological regime. When there is maximum water level it merges with Koibagar lake. There are up to 95 water and wetland bird species, 39 of which make nests here. During migration the number of *Branta ruficollis* which stay here is 50.000, *Anser erythropus* - 4.000. Besides the lakes are the places for stay of the Siberian Crane.

The main threats to the wetland birds are considerable commercial fishing press and hunting.

In the frames of the project it is necessary to establish seasonal ornithological zakaznik with full banning of hunting at the lakes and at one kilometre distance from around them.

The Zharsor-Urkash Lake System

The lakes are located in the central part of the Sypsynagash hollow in the Kamystin rayon of the Kostanai oblast. This territory is a system of salt lakes, sores, steppe rivers-karagus, small fresh water lakes and swamps. The total square of the rayon is about 240 km². The area is a place of unique concentration of grey cranes and beauty-cranes in the period after nesting and during migration and also it is a place of stay of the Siberian Crane. River ducks, grey geese, coots and *Podicipediformes* make nests there. A great number of Northern sandpiper species and also ducks and seagulls stay here during migrations.

All the lakes both salt and fresh water ones are filled by thaw waters, and that is why due to water amount of concrete years there are many years fluctuations and summer evaporation influences the seasonal changes of the water level.

The main problems are connected with poaching cranes, steppe fires and partially with ploughing the land plots for melon-fields. An important project direction is monitoring of cranes during the flight, especially due to the fact that among them there may be young Siberian Cranes which are released to grey cranes in the Kurgan oblast of Russia.

THE PRIMARY OBJECTIVE

Secure the ecological integrity of the network of critical wetlands needed for the survival of the Siberian Crane, migratory waterbirds and other globally significant wetland biodiversity on this territory.

OBJECTIVES AT THE SITE LEVEL

- o Appropriate legal protection, clear requirements and obligations on project implementation at the selected project sites
- o Development and implementation of the plans on management and conservation of biological diversity at the selected sites
- o Decrease of threats within the sites through the activity implemented outside the boundaries of the site
- o Implementation of site management plans on the basis of the results of the applied field researches
- o Development of long term projects on alternative economic activities for local population at the selected project sites and the adjacent territories.

- o Extension of the possibilities of the personnel of the related organisations with the purpose of effective implementation of plans on site management.
- o Dissemination of the information on WL biodiversity among the concerned parties.

OBJECTIVES AT THE NATIONAL LEVEL

- o Updating of the legislation and financial mechanisms for conservation of migratory waterbirds and WL biological diversity.
- o Planning of the oblast land using and water resources management taking into account WL biodiversity with use of basic researches, monitoring and inter-branch cooperation.
- o Implementation of monitoring programmes on the flight of the Siberian Crane and other waterbirds species of global importance.
- o Strengthening of the international cooperation
- o Implementation of the training programmes on WL and waterbird management
- o Environmental education and public awareness raising.

The project is running in Kazakhstan from 2005 till 2009 with an overall budget of 3,7 Million USD (GEF 1 Bln, Government 2,5 Bln., Third party 0,2 Bln.)

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Document 23.) Letter of the Parliament of the Republic of Kazakhstan supporting to grant a status of the World Heritage to the proposed property

Translation

Whom: Mr. N. Ishvaran Fax: 014568-1559
Director of the World Heritage Center of UNESCO

***Topic: Nomination of a Natural Site in the RK
to get on the list of Natural and
Cultural World Heritage of UNESCO***

**Date: 11th
January 2002**

Dear Mr. Ishvaran,

The committee for ecology and natural resources of the Parliament of the Republic of Kazakhstan (RK) supports the work of the Ministry for Natural Resources and Environmental Protection of the RK on the nomination of the site “Steppe and Lakes of Northern Kazakhstan” (on the base of Korgalzhyn and Narzum State Nature Reserve) to the List of Natural and Cultural World Heritage of UNESCO.

Yours sincerely,

Member of the Committee
For ecology and natural resources
of the Republic of Kazakhstan T.U. Sysdykov

Document 24.) Letter of the Ministry of Natural Resources and Environmental Protection of the Republic of Kazakhstan to the UNESCO National Commission of the Republic of Kazakhstan, No. 03-05-03/282, February 3, 2001

Translation

To the Chairman of the
National Commission on UNESCO
of the Republic of Kazakhstan,
Mr. Tasmagambetov I.N.

About the tentative List of nominations
of the RK's Natural objects for the inclusion
To the List of the World heritage of UNESCO

Dear Imangaly Nurgalievich,

The Ministry of Natural Resources and Environmental Protection of RK is sending the list and materials of natural objects of the Republic of Kazakhstan for to draw up a tentative list for the application to be included to the the List of the World heritage of UNESCO prepared according to the established requirements and form:

- 1) "Steppe and Lakes of Northern Kazakhstan" (Korgalzhyn and Naurzum State Nature Reserves);
- 2) " Northern Tyan-Shan" (Ile-Alatau State National Park).

Furthermore, there are nominations planed for " State national natural park "Altyn-Emel" and " Aksu-Zhabagly state natural reserve". The documents are in preparation and they will be submitted in the near future.

We want to inform You, that in the of Natural Resources and Environmental Protection a working group is coordinating the proposals on natural objects of the Republic of Kazakhstan to the List of Cultural and Natural Heritage. Its structure and membership is already determined. The first session of the working group took place and the list for proposals of nominations of natural objects as World Heritage Site is determined.

Enclosure:

- 1) Nomination "Steppe Kazakhstan - steppe lakes " (Korgalzhyn and Naurzum state natural reserves)-21p. (11p. in russian, 10 p. in english)
- 2) Nomination " Northern Tyan-Shan " (Ile-Alatau state national natural park)- 14 p. (7 p. in russian, 7 p. in english);
- 3) The protocol of the decision of the working group on inclusion of natural objects of the Republic of Kazakhstan in the List of the World cultural and natural heritage from December 25, 2000 №1.

Sincerely Yours,
Vice-Minister of Natural Resources
and Environmental Protection

M. Mussatayev

Document 25.) Letter of KSNR with the request to support granting a status of the World Heritage to the proposed property

Translation

**To the Chairmen
of the Committee
for Forestry, Fishery and
Hunting**

of the Ministry of Natural Resources and Environmental Protection

Mr. Amanbayev A.

I express you sincere gratitude for active assistance in the choice to include Korgalzhyn State Nature Reserve as an applicant for the inscription the World Heritage List of UNESCO.

An official statement for the Korgalzhyn Nature Reserve was given in February, 2001 on a session of the National Commission of the Republic of Kazakhstan on behalf of UNESCO and IUCN. It was decided to include the site as prime object for a nominating, because that would mean a success to the working team of the reserve in doing a good job in conservation of the site.

The administration of Korgalzhyn State Nature Reserve would be happy to be inscribed on the World Heritage List of UNESCO. In this context the employees of reserve will actively participate in preparation of the necessary documents. The administration of Korgalzhyn Nature Reserve expresses gratitude to the experts commission of German Society for Nature Conservation (NABU)for support and professional joint work.

Head of the Korgalzyn Administration

Aytzhanov M.

Document 26.) Letter of NSNR with the request to grant a status of the World Heritage to the proposed property

Translation

**To the Chairmen
of Forestry, Fishery and Hunting
Committee
Mr. Amanbayev A.**

The administration of the Naurzum State Nature Reserve asks you to promote the nomination of the reserve together with the Sarykopa State Wildlife Reserve running also under the reserves' administration to the «World Heritage List of UNESCO» as a nature site.

Head of Naurzum State Nature Reserve

Moldagulov H.

Document 27.) Letter of the UNESCO National Commission of the Republic of Kazakhstan to support granting a status of the World Heritage to the proposed property 16.January 2002

TSV
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File WHIC

25.01.02 #84


16 January 2002

Dear Mr. Jorge Sequeira,

I'm glad to convey the copy of the letters of Mr. Imangali Tasmagambetov, Vice Prime-minister of the Republic of Kazakhstan, Chairman of the National Commission for UNESCO to Mr. Francesco Bandarin, Director of the World Heritage Centre, in regard of the nomination dossiers of the sites "Steppe and lakes of Northern Kazakhstan" and "Khodja Akhmet Yassawi Mausoleum".

Bearing in mind that this dossiers should be present to the World Heritage Centre by 1 of February 2002, we would highly appreciate your assistance in sending it by UNESCO pouch.

Please accept, Sir, the assurance of my highest consideration and respect.


Yerzhan Kazykhanov
Secretary General

Mr. Jorge Sequeira
Head, UNESCO Almaty

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Document 28.) Letter of the Deputy prime Minister of the Republic of Kazakhstan on the forwarding of the nomination dossier 16.January 2002



Қазақстан
Республикасының
ЮНЕСКО істері жөніндегі
Ұлттық Комиссиясы

Republic of Kazakhstan
National Commission
for UNESCO

January 16, 2002

N 01-01/105

Dear Mr. Bandarin,

On behalf of the Republic of Kazakhstan I have the honor to forward the nomination dossier of "Steppe and lakes of Northern Kazakhstan" (comprising Korgalzhyn and Naurzum State Nature Reserves) for inclusion on the World Heritage List.

This site is the first natural property introduced by the Republic of Kazakhstan for inscription on the World Heritage List.

We would appreciate your careful consideration and support of the nomination dossier as well as the assistance of the WHC experts in this regard.

Please accept, Sir, the assurances of my highest consideration.

Imangali Tasmagambetov
Deputy Prime Minister
of the Republic of Kazakhstan
Chairman of the Kazakhstan
National Commission for UNESCO

Mr. Francesco Bandarin
Director
UNESCO World Heritage Centre

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Enclosure

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

SARYARKA - STEPPE AND LAKES OF NORTHERN KAZAKHSTAN (KAZAKHSTAN) ID N° 1102

1. DOCUMENTATION

- i) **UNEP-WCMC Data Sheet:** (4 references)
- ii) **Additional Literature Consulted:** Krever, V. et al, (Eds). 1998. **Biodiversity Conservation in Central Asia: An Analysis of Biodiversity and Current Threats and Initial Investment Portfolio.** WWF; Dugan, P. et al (Eds), 1993. **Wetlands in Danger – A Mitchell Beazley World Conservation Atlas;** Mitchell Beazley & IUCN, London; Kovshar, A. F., (Ed), 2000. **The Key Wetlands of the North Kazakhstan.** Tethys, Almaty, 16pp; Tolvanen, P., Aarvak, T., Bragina, T., 2001. **Conservation work for the wetlands and monitoring the autumn staging of Lesser White-fronted Goose in the Kustanay region, north-west Kazakhstan,** in 2000, pp. 30-3, in WWF Finland Report 13; Aitzhanov, M., 1998. **Creating a Biosphere Reserve: Opportunities for the Tengiz Lakes, Kazakhstan,** pp. 261-4 in S. Dompke and M. Succow (Eds.), “Cultural Landscapes and Nature Conservation in Northern Eurasia”, NABU, Bonn; Yerokhov, S. 2001. **Overview of Undertaken Measures on Migratory Waterfowls Conservation in Kazakhstan; Northeast and East Central Asia - National Biodiversity Strategies Action Plans Newsletter.** Issue 3/4. Biodiversity Planning Support Programme UNEP/UNDP; **Film of wildlife of Korgalzhyn NR** by Prof. Frende. **Proceedings of the Seminar for the Protection and Conservation of of Grasslands in East Asia.** WCPA and IUCN, 2000, pp 11-44; Vlasov, A. **Preserving the steppes of Russia, Ukraine and Kasakhstan,** in Russian Conservation News, Spring 2002, No. 29, pp 20-21.
- iii) **Consultations:** Eight external reviewers; local experts and relevant officials from the Kazakhstan Ministry for Natural Resources and Environment; representatives of the local governments; NABU (Naturschutzbund Deutschland or the German Society for Nature Protection) field experts.
- iv) **Field visit:** L. F. Molloy and R. Hogan, August 2002

2. SUMMARY OF NATURAL VALUES

‘Saryarka’ - The Steppe and Lakes of Northern Kazakhstan (SLNK) comprise three protected areas:

- Naurzum State Nature Reserve (NSNR) [87,700 ha],
- Sarykopa Wildlife Reserve [82,500 ha], and
- Korgalzhyn State Nature Reserve (KSNR) [258,947 ha],

The reserves include three groups of fresh and salt water lakes on the watershed between rivers flowing north to the Arctic and south into the Turgai Depression of the Aral-Irtysh basin. They lie within the broad strip of temperate Eurasian steppe grassland extending from the Black Sea to the Chinese border; a huge area of 13,000 km from west to east and 500-900 km from north to south. The Eurasian Steppe extends over the northern half of Kazakhstan, bounded by coniferous taiga forests to the north and semi-deserts to the south.

Naurzum State Nature Reserve (NSNR) and Sarykopa Wildlife Reserve (Sary-Kopinskiy State Nature Protection Area) are both located in the Turgai Depression, which is of tectonic origin and runs north-south for hundreds of kilometers from the Ob-Irtysh-Tobol basin in western Siberia, to the great inland lakes of the Aral and Caspian Seas. The Turgai Depression in this region is a 25-30km wide valley with intermittent scarp slopes; the floor of the depression consists of former river and lake terraces, now dotted with an intricate chain of winter-flooded lakes. The Sarykopa wetlands lie about 100km south of the Naurzum lakes. The Naurzum Nature Reserve consists of three discrete parcels of land: 30km to the northwest of the main Naurzum wetlands, there is an area of steppe with patches of forest and striking outcrops of red and yellow "clay hills" (the *Tersek* outlier), and about 20km to the west another area of high quality steppe (the *Sypsyn* outlier). The climatic cycles are complex (with both a 12-year and 25-year periodicity) and are not completely understood as yet. In some extreme years many of the lakes dry out, allowing the algae and many of the mineral nutrients to blow away into the surrounding steppe, forcing the whole aquatic ecosystem to re-establish itself again with the commencement of the next wetting phase of the cycle.

Korgalzhyn State Nature Reserve (KSNR) is located 300km to the east of Naurzum, in a former lake bottom depression in the Kazakh Rolling Hills. It consists of the vast Korgalzhyn-Tengiz lake system, an inward-draining complex of marshes, and freshwater and saltwater lakes of fluctuating water level, fed by the permanent Nura and intermittent Kulanuptes rivers. This intricate landscape of colorful lakes enveloping fingers of semi-desert and steppe is hard to appreciate from the ground (because of the limited elevation) but it is a spectacular sight from the air. The total water area in the nature reserve is an estimated 260,000ha. Lake Tengiz is the largest at 159,000ha, but can shrink to 113,000ha after drought. It is saline with a thick silt lake bottom and surrounded by wide mudflats. Most of the freshwater builds up in the Nura River delta which, when flooded, becomes a huge shallow lake -- Lake Korgalzhyn (47,100ha), a labyrinth of myriad channels lined with *Phragmites* reeds. Most of the watercourses and lakes are shallow, saline and seasonal; when their margins dry out they form areas of *solonchak* and *sor soloncha*, as well as deposits of salt and medicinal muds. The groundwater is saline but there are some freshwater springs. The diverse flora and fauna of the wetlands has evolved in phase with these wetting/drying cycles. The dynamic nature of the site is a key factor in its use as a habitat for diverse and large numbers of migratory birds.

The wetlands of SLNK are an important crossroads of central Asian migratory flyways -- between northern Scandinavia and the east, and between Siberia and the south. Waterfowl from as far away as Italy and Finland on the west to Yakutia on the east, and from the Arctic in the north and Australia to the south, rely on wetlands in Kazakhstan for nesting, moulting and feeding habitat during the migration seasons. The Korgalzhyn-Tengiz lakes are capable of feeding 15-16 million birds, among them migratory flocks of 2 - 2.5 million geese. After rains, these lakes support 350,000 nesting waterfowl, and the Naurzum and Sarykopa lakes, 250,000. Resident species come from northern boreal forest, steppe, semi-desert and southern desert habitats. In total, 351 bird species have been recorded (112 breeding and 239 migratory) within the nature reserves. Lake Tengiz is a globally important breeding site for greater flamingo and 6,000 - 10,000 pairs have been counted on islands in the lake in the last 5 years, and at times numbers are reputed to reach 60,000.

Globally endangered species that occur in the SLNK include the Siberian white crane (three birds were observed in 2001), slenderbilled curlew and white-headed duck (which nests in the area), lesser white-fronted goose, red-breasted goose, Pallas's fish eagle, greater spotted eagle and imperial eagle, lesser kestrel, corncrake, great bustard and sociable lapwing. This last species and the black and whitewinged

larks are local endemics. Migrating birds, moulting and resting, pass through in huge numbers: 40,000 widgeon, 20-40,000 mallard, 150,000 pochard, 50,000 redcrested pochard, 100,000 ruff, 40,000 coot, 50-80,000 rednecked phalarope. Naurzum is also one of two places where the Siberian crane stops for long periods when migrating to Iran from Siberia (the other site is the Volga Delta). In 1976, the reserves were designated a Ramsar wetland site and in 2000 they were included in the international network of "Living Lakes".

SLNK also contains significant areas of unploughed steppe, especially in the western part of Naurzum. The proposed area has nearly 770 species of plants, a third of Kazakhstan's plant species and over half of the region's steppe flora. Naurzum is the most botanically diverse part of the nomination, with 687 of the plant species in the reserve. Here the northern *Pinus sylvestris* forest reaches its southernmost point and meets the semi-arid desert flora at its northernmost. Naurzum also contains a variety of steppe types including feather-grass dominated dry steppe, and sandy scrub steppe with almond, cherry, and juniper shrubs. The discontinuous forest/steppe edge is a very important habitat for raptors, many of which nest in the pine trees, close to plentiful prey in the steppe landscape. The site contains 70% of the Falconidae order in Kazakhstan, 28 species in all, with 18 species (including imperial eagle, golden eagle, white-tailed eagle and steppe eagle) nesting within the site; it also contains one of the few stable populations of saker falcon in Kazakhstan.

Many of the 53 mammal species in the proposed areas are steppe rodents such as marmot, ground squirrel and lemmings. Saiga antelope once migrated from the south to all the reserves in summer but this once abundant species is now vulnerable to extinction. Some saiga are still found in Korgalzhyn, an important area for calving females, which now represents the northernmost limit of the antelope's range. The proposed area also contains 10 reptiles and amphibians, 16 fish and over 1,000 invertebrate species have so far been identified.

3. COMPARISON WITH OTHER AREAS

There are as yet no natural World Heritage sites in the vast Eurasian Steppe which extends eastwards from the Ukraine, through much of the five former soviet Central Asian republics, to Mongolia. The proposed area is part of the Pontian Steppe biogeographic province. Although Hortobágy (Hungary) cultural landscape falls within this province, the Danube Delta (Romania) is the only natural World Heritage site in the Pontian Steppe.

The Central European steppes are characterized by sand dunes, forests, and freshwater and sodic lakes and marshes but most have been significantly modified. Hortobágy includes seasonal salt marshes along the flood plains of ancient rivers. However, it is a man-made or secondary steppe and therefore not comparable to the natural steppe and wetlands of SLNK. Steppe remnants in Europe are also much smaller than SLNK and are therefore unlikely to fulfill World Heritage 'Conditions of Integrity'.

The nomination notes (page 9) that "the property presents a large territory of virgin steppe sufficient for the conservation of rare and zonal elements of steppe flora and fauna". However, this statement is not substantiated by the site's boundaries which show that the vast majority of the area within the site corresponds to wetlands ecosystems and only a very limited extension of adjacent steppe is actually included in the nomination. Thus the proposed site only represents a small sample of the steppe areas existing in Central Asia.

Assessing the Outstanding Universal Value of SLNK in the context of existing steppe ecosystems in Central Asia is a difficult task due to the limited scientific information available on this ecosystem. As noted by IUCN in the evaluation of the Uvs Nuur Basin, Mongolia/Russian Federation (IUCN, 1999) "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". This limitation in making an objective comparative assessment also applies to SLNK. In addition it is important to consider that there are 34 protected areas in Russia, Ukraine, Kazakhstan and Mongolia that contain steppe ecosystems. There are also two large steppe grasslands protected areas within China: the Tian Shan Zhongbu Gongnaisi Grassland Nature Reserve (66,667ha) and the Xilinguole Grassland Nature Reserve (1,078,600ha). The

latter also encompasses two salt lake systems – Qagan Nur and Dalai Nur- but it is difficult to obtain comparative data and information on these areas. Thus there is an urgent need to develop a thematic study on the steppe ecosystem in Central Asia to support an objective comparative analysis of SLNK and other sites that could be proposed in future within this region.

In terms of wetland values, the Danube River has the largest delta and best remaining wetlands in central Europe. The Danube Delta World Heritage site (679,222ha, including 103,000ha marine) covers most of the delta, is larger than the proposed area of SLNK (429,147 ha) but is comparable to SLNK in terms of bird diversity (over 300 species recorded). The Danube site is considered a critical site for migration of pygmy cormorant (61% of the global population) and the red-breasted goose and contains important breeding populations of white and Dalmatian pelican. In winter, the Danube delta supports large numbers of waterfowl comparable to the proposed area. However, there have been major reductions in the natural integrity of the Danube site since the beginning of the twentieth century, mainly through conversion to agricultural land, engineering works and pollution. Waterbird numbers are now only a fraction of what they once were.

Other comparable World Heritage wetland sites in Eurasia and Africa include Doñana National Park (Spain), and Lake Turkana National Parks (Kenya) as well as the Rift Valley Lake Reserves (Kenya) (deferred in 2001). Doñana is an important wetland site for migrating waterfowl. However, the site is in another biogeographical province (Mediterranean Sclerophyll) and numbers of wintering birds are much lower (420,000) than SLNK. The World Heritages site with outstanding value for its large populations of lesser and greater flamingoes is the Lake Turkana National Parks in Kenya, while the same value exists in the Rift Valley Lake Reserves, currently a deferred World Heritage nomination. The soda lakes of East Africa's Rift Valley support millions of flamingoes, compared with the tens of thousands of greater flamingoes breeding at Lake Tengiz (reputed to be the northernmost breeding colony in the world). However, Lake Tengiz lies in temperate latitudes (50° N), is strongly continental with low precipitation, and most of its inflow comes from the melting of winter snowfall; the African Rift Valley Lakes are equatorial, snowfree, have much higher precipitation, and are subject to on-going volcanic activity.

Central Asia's wetland and lake ecosystems are important for the survival of many waterfowl species. The lakes provide food and shelter along the migratory routes of more than 150 species of birds (30 of which are globally rare or endangered). The large lakes of Inner Asia, such as the Aral Sea, Balkash, Issyk-Kul, Sasykkol, Alakol, Zaisan, Uvs Nuur and Karakul, possess unique communities of flora and fauna with many endemic species. An important wintering site for many birds that nest in Europe and Siberia is the southeastern coast of Caspian Sea in Turkmenistan (the Khazar Reserve area); however, few birds breed there. The western Caspian coast, with reedbeds stretching from the Volga delta through the Kalmykian coast to the Terek Delta and Kyzylagach Bay in Azerbaijan, is also a very important stopover site.

Uvs Nuur, the largest saline lake in the western Mongolian steppe, has also been proposed for the World Heritage list for its value as a wildlife habitat. Although Uvs is larger (335,000 ha) than Lake Tengiz, it is less important for migrating wildfowl and has a simpler hydrology, lacking the intricate network of transient delta lakes and the extremes of the seasonal flooding/drying in the Korgalzhyn wetland system. On the other hand the 5 Tuvan "cluster reserves" that constitute the "Uvs Nuur Zapovednik" contain important areas of steppe ecosystems that are also representative of the Eurasian Steppe region.

Another key wetland site is the delta of the Volga River, 1500km WSW of Lake Tengiz. Although an area of 650,000 ha of the Volga Delta was designated a Ramsar wetland site in 1976, only 66,816 ha is strictly protected as the Astrakhanshiy zapovednik (of which 90% is under water for the two months of high water). Unlike much of the Danube delta, the Volga delta is largely in a natural state, with no roads or human settlements; it has not been canalized to allow the passage of large ships. The Volga delta is a very important wildlife habitat, supporting 5-7 million birds during the spring and autumn migration. A number of reviewers considered the proposed area as the best example of migratory waterfowl habitat in Kazakhstan and the region; however, the Caspian Ural Delta, which is included in the Tentative List of Kazakhstan, contains significant habitats for migratory birds that, according to estimations, can support 25 million migratory birds.

4. INTEGRITY

4.1 Boundary issues and legal status

As noted above, a valid criticism of the current proposed boundaries for the proposed site is the exclusion of extensive areas of steppe grasslands which surround the wetlands. This is particularly true of the Naurzum Nature Reserve, where the outlying Tersek and Sypsyn forest and steppe protected area units could be easily linked to the main Naurzum wetlands by the inclusion of the intervening steppe within the nomination. The nomination document states that 103,000 ha of steppe and scattered forest are already proposed for addition to Naurzum NSNR. This proposal was discussed with officials during the evaluation inspection, along with the possibility of a further extension to include the intervening steppe but excluding the wheatfields near Tersek. By letter from the Permanent Delegation of the Republic of Kazakhstan to IUCN dated 20 February 2003, it was noted as a response to IUCN's queries on this issue from the Minister of the Environment of Kazakhstan that the process of adding the sectors of Tersek and Sypsun to the Naurzum NSNR "will start very soon because the necessary financial resources will be made available at the end of February 2003".

The lack of full protected area status for the Sarykopa wetlands is an integrity issue which needs to be addressed. It is currently treated as part of the Naurzum zapovednik for management purposes, and its international significance is recognized through its inclusion in the Ramsar wetland site. With the impending privatization of former State lands in Kazakhstan, it is important for a zapovednik to be developed around the Sarykopa wetlands in the near future if this unit is to meet the conditions of integrity. In the same letter mentioned above from the Permanent Delegation of the Republic of Kazakhstan to IUCN dated 20 February 2003, it was noted that "the Sarykopa Reserve already has the status of a special protected area and additional financial resources are programmed to improve its protection. But the decision of its conversion to a Nature Reserve ... will require scientific studies and appropriate techniques which can be envisaged".

Planning is also under way to enlarge the buffer around Korgalzhyn Nature Reserve by 211,700 ha, as a basis for establishing a UNESCO Biosphere Reserve. In addition, there is interest in gaining protected area status for a further one million hectares of what the Kazakhs term "hunger steppe" - semi-desert steppe to the southwest of Lake Tengiz (around Lakes Kipshak and Kirey) in Karagandinski oblast, an area which historically has been a significant saiga habitat. This possible extension of the site is particularly important as key threatened species, such as the Great Bustard and the Saiga Antelope, require larger areas of steppe to maintain viable populations.

4.2 Maintenance of water flows and quality in the Nura River

The continued viability of the Lake Tengiz ecosystem depends upon the maintenance of the hydrological regime, primarily the size and periodicity of the inflows from the Nura River. A canal was built in 1974 to divert water from the Nura to the Ishim River (which flows through the present capital, Astana). This was closed in 1977 because of fears of mercury pollution from discharges into the Nura from chemical plants at Temirtau. Today, no water for industrial or metropolitan water supply purposes is drawn from this section of the Nura and the source of the mercury pollution is said to be contained. Again, in the letter from the Permanent Delegation to IUCN dated 20 February 2003, it was noted that "the existing natural water flow of the River Nura will be maintained". It is also important that the Kazakhstan Government assures that the deposits of mercury pollution in the river will be contained.

4.3 Management

A key issue of concern relates to the overall ecological integrity of the individual areas that form this cluster in the context of the larger steppe ecosystem. There are a number of references in the nomination document to the high levels of alteration of the areas surrounding the proposed site, and given the large distances between the clusters components, there appear to be little potential for connectivity and the maintenance of ecosystems functions and processes. Thus the cluster components may remain to be ecological islands.

The staffing levels at Korgalzhyn and Naurzum are considered to be adequate and the sites benefit from the support of NABU and WWF respectively. However, there is no permanent staff based in Sarykopa which is managed by the Naurzum reserve staff. Permanent staff will be essential for the protection of this part of the site.

An integrated management plan for the entire proposed area has been developed and submitted to the government for adoption. However, it is not clear whether resources would be available after its adoption for ensuring its effective implementation.

4.4 Alien Species

Only a very limited number of alien species have become established in SLNK. Muskrat became acclimatised in 1944 but they are not considered to be a threat to the ecology of the wetlands. Common carp, carp-bream and pike-perch have also been introduced to the lakes but they have not had a significant adverse effect on the native fish species.

4.5 Human Activities

Visitation to the proposed site is very low (circa. 1,500 in 1999) but tourism is likely to increase in the future. Small-scale accommodation facilities are being developed within Korgalzhyn but there are no facilities in Naurzum or Sarykopa. A tourism management plan should be incorporated into the management plan for the proposed area.

The transition to a market economy over the last decade has had a huge impact on agriculture in Kazakhstan as a whole. The Naurzum region was previously a large producer of grain and livestock but the area under wheat is now less than 50% of that a decade ago and livestock numbers are less than 10% of former levels. The area is one of the poorest in Kazakhstan, with high unemployment. There are currently no plans for the economic development of the region and depopulation is likely to increase. The privatisation of land in the future may lead to large-scale private farms; should this situation arise, efforts will have to be made to ensure that any irrigation or use of chemicals do not effect the proposed area.

Hay-making and grazing of livestock is allowed in the existing (and projected) buffer zones of the proposed area, except during nesting season when these activities are prohibited. However, low wages for park staff mean that rangers have had to become increasingly self-sufficient in food production. This has led to a localized increase in grazing and haymaking within the protected areas and more time spent by ranger staff in tending their animals.

5. ADDITIONAL COMMENTS

5.1 Saiga

The collapse during the 1980s of the saiga herds which once roamed the steppes around Korgalzhyn and Sarykopa is puzzling. While loss of habitat is not considered to be the reason, poaching and other human interventions may be the cause of their catastrophic decline, from hundreds of thousands to only hundreds today. The reduction in numbers of saiga is probably the most serious alternation of natural processes within the proposed area. As the top herbivore, saiga once played a key role in the maintenance of the sward of steppe grasses and herbs through grazing. Although a small number of saiga were seen on the shores of Lake Tengiz and in Sarykopa during the field inspection, numbers are only a fraction of previous levels and the antelope no longer ventures as far north as Naurzum, which used to be frequented in years of high saiga population density. Some grazing pressure is currently maintained in buffer areas by domestic stock and the cutting of hay -- but this is not an ideal situation and the restoration of saiga herds throughout their previous range is preferable. International efforts are underway to achieve this and a new protected area has been proposed in southern Kazakhstan to conserve the winter range of the saiga. In the meantime, however, it is of crucial importance for the government of Kazakhstan to make every effort to eliminate the pressure of poaching during the annual migration of the saiga.

5.2 Justification for Serial Approach

When IUCN evaluates a serial (or cluster) nomination it asks the following questions:

- a) **What is the justification for the serial approach?** The reserves are complementary, in that they are important resting areas along major Central Asian flyways and contain significant wetlands within the Eurasian region. Therefore, all the reserves represent a similar natural theme. While the ecosystem linkages between Korgalzhyn and the other two reserves are limited because of the distance between them, the serial approach in the nomination is justified on a thematic basis.
- b) **Are the separate elements of the site functionally linked?** The functional linkages between Naurzum and Sarykopa are very strong as both sites lie in the Turgai depression and within the same flyway. Korgalzhyn is further east and although some birds migrate between Lake Tengiz and the Turgai reserves, functional linkages are not as strong.
- c) **Is there an overall management framework for all the units?** An Integrated Management Plan for the entire proposed area has been developed and submitted to the Ministry of Natural Resources and Environmental Protection for adoption. However, the government will need to commit resources for its effective implementation.

6. APPLICATION OF WORLD HERITAGE CRITERIA

SLNK has been proposed for inscription in the World Heritage List on the basis of all four natural criteria.

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

The site is claimed to be the best remaining example of 'humus-building gramineous steppe' between the Black Sea and the Altai Mountains. While the high level of naturalness within the site is accepted, no convincing evidence has been presented to establish the global significance of the site because of its geological setting or present-day landforms. IUCN does not consider that the site meets this criterion.

Criterion (ii): Ecological processes

The seasonal dynamics of the hydrology, chemistry and biology of the lakes are considered to be of considerable scientific interest and may be of outstanding universal value. The diverse flora and fauna of the wetlands has evolved through complex wetting/drying cycles. However, as noted in Section 3, there is a need to develop a more comprehensive thematic study for Central Asia to objectively assess how SLNK compare to other important areas within this region in relation to this criterion.

Criterion (iii): Superlative natural phenomena or natural beauty and aesthetic importance

The steppe and lakes landscape is difficult to appreciate from ground level because of the flatness of the topography and the impenetrable nature of the wetlands. However, the wetlands are a most impressive, colourful sight from the air. However, the only geological feature or landmark which stands out is the series of low 'clay hills' in the Tersek unit. IUCN does not consider that the site meets this criterion.

Criterion (iv): Biodiversity and threatened species

The wetlands of northern and western Kazakhstan are of international importance and may be of outstanding universal value for the conservation of migratory waterfowl as they stopover on their way from Africa, India and southern Europe to their breeding places in Western and Eastern Siberia. However, as noted in Section 3, there is a need to develop a more comprehensive thematic study for Central Asia to objectively assess how SLNK compare to other important areas within this region in relation to this criterion.

As noted in Section 4 there are integrity concerns that need to be addressed by the State Party in relation to the boundaries of the site, the legal status of some important areas, the need to maintain the water flow of the lower Nura River, and the lack of capacity to protect and manage the site. Thus IUCN considers that, at present, the site does not meet the conditions of integrity.

7. RECOMMENDATIONS


IUCN recommends that the Committee **defer** the inscription of Saryarka - Steppe and Lakes of Northern Kazakhstan. This recommendation is based on:

1. The need for the State Party to fulfill its commitments noted in the letter from the Permanent Delegation of the Republic of Kazakhstan to IUCN dated 20 February 2003, addressing a number of integrity issues. It is suggested that the Committee recommend that the State Party prepare and make available a detailed action plan, supported by an implementation programme, to realize these commitments, in particular in relation to:
 - (a) maintaining the existing natural flows in the Nura River and containing deposits of mercury pollution;
 - (b) upgrading the Sarykopa Wildlife Reserve to Nature Reserve protected status; and
 - (c) linking the Tersek and Sypsyn outliers to an extended main Naurzum Nature Reserve by protecting the intervening corridors of unmodified steppe.
2. The need to prepare a comprehensive thematic study for Central Asia so as to provide the context for an objective assessment of the outstanding universal values of this site, particularly in relation to criteria (ii) and (iv). IUCN, through its WCPA Network on Grasslands Ecosystems and supported by UNEP-WCMC, is committed to prepare this assessment to be made available to the 28th Session of the World Heritage Committee in June 2004.


7c. Maps and Charts


Легенда к геоморфологической карте Legend of geomorphological map


Горы и мелкосопочники Mountains and small hills (melkosopochnik)

 1 Низкогорья и холмогорья
Low mountains and hills

Эрозионно- денудационные мелкосопочники Small hills formed by processes of erosion and denudation


 2 Холмисто-грядовые, водораздельные мелкосопочники
Small Hills on a watershed (hills and ridges)


 4 Пологохолмистые мелкосопочники
Hills with gently inclined slopes


 3 Холмистые, грядовые, местами скалистые, водораздельные мелкосопочники; Small hills (Melkosopochnik) on a watershed (hills and ridges in rocky places)

 5 Холмисто-увалистые приречные мелкосопочники
Small hills along riversides (hills with steep slope)


Денудационные равнины Plains of denudation


 6 Волнистые и увалистые возвышенные равнины
Plains (rolling hills with steep slopes)


 11 Плоские плато, бронированные песчаниками и гравелитами
Plateau armoured with sandstones and gravelstones


 7 Увалисто-холмистые возвышенные равнины
Plains with steep sloped hills


 12 Волнистые и холмисто-котловинные равнины с аридно-денудационной обработкой; Rolling hills and arid, hilly plains

 8 Пологоволнистые равнины
Gently sloped and hilly plains

 13 Расчлененные плато, склоны плато и равнин
Eroded (dissected) plateau with, slopes of plateaus and plains


 9 Увалистые равнины с мощным делювиально-пролювиальным покровом; Plains with thick deluvion-proluvian deposits


 10 Столовые плато
Tableland (Plateau)


 14a, 14b Педименты столовых плато
Pediments of plateau


Аккумулятивные равнины Plains of accumulation

Озерные равнины Plains with lakes


 15 Слабоволнистые аллювиально-озёрные равнины древних долин, врезанные в палеозойский цоколь; Hilly alluvial plains with lakes of ancient valleys cut in paleozoic fundament


 17 Эрозионно-делювиальные склоны древнеозёрных и аллювиально-озёрных равнин; Eroded deluvial slopes of ancient lakes and alluvial plains with lakes


 16 Пологуювальные пролювиально-озёрные и аллювиально-озёрные равнины; Hilly, proluvial- and alluvial plains with lakes


 18 Плоские террасы и днища озерных котловин и впадин
Flat lake terraces and bottom, as well as depressions

Аллювиальные (речные) Alluvial sediment along rivers


 19 Плоские аллювиальные речные равнины
Flat alluvial river plains

 22 Низкие озёрно-аллювиальные террасы и днища отмерших долин; Lower alluvial lake terrace and bottoms of ancient valleys


 20 Высокие надпойменные террасы
Fluvial terrace above flood-plain


 23 Пойменные террасы
Flood plain


 21 Комплексы низких (первых и вторых) надпойменных террас
Complex of low terraces (first and second)

 24 Пойма и комплекс надпойменных террас узких долин в районах мелкосопочника; Flood plains and narrow terraces in complex in the small hills region (melkosopochnik)


Эоловые Eolian plains


 25 Гривистые древнеэоловые равнины
Sand-ridge on ancient eolian plains


 27 Дюнно-бугристые закреплённые пески
Fixed dunes and sands

 26 Дюнно-грядовые древнеэоловые равнины
Sand-dune and sand-ridge on ancient eolian plains

Дополнительные обозначения Additional conventional signs

 Равнины перекрытые плашомлессовидных отложений
Plains covered by loess deposits

 Современные долины, освоившие олигоцен-неогеновые погребенные долины; Valley situated in an ancient valley out of oligocen-neogen times

 Равнины испытавшие слабое поверхностное перевывание;
Plains with few eolian deposits

Примечания

1. Возраст рельефа

Remarks

1. Age of relief

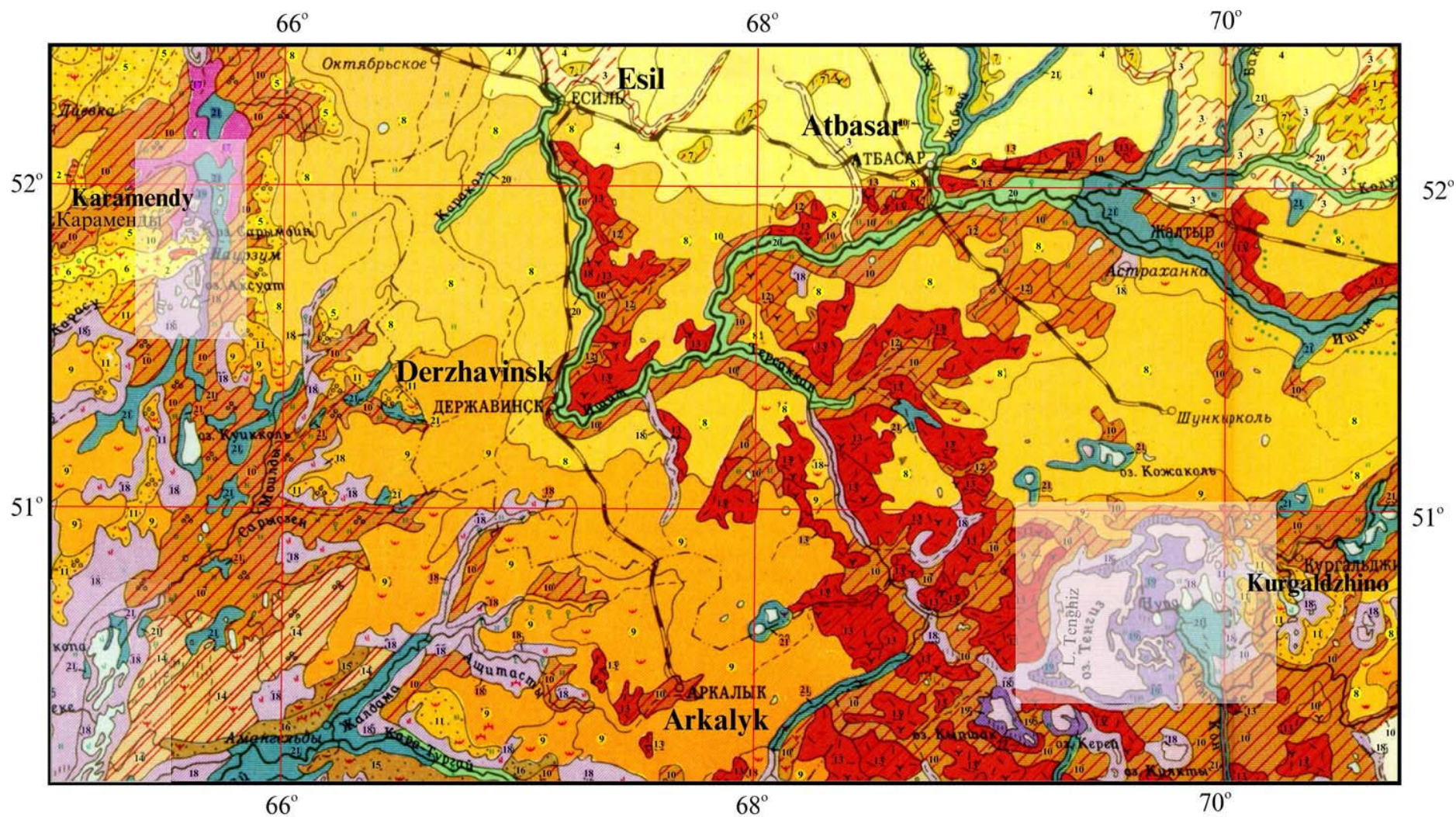
2. Н-абсолютные высоты рельефа; h-колебания относительных высот;

2. N-absolute elevation of the relief; h- Fluctuations on relative altitude

Map 7.) Legend Geomorphologic map of northern Kazakhstan with the property boundaries



Map 8.) Hydrography map of northern Kazakhstan (Source Atlas Kazakhskoi SSR)





Карта растительности
Vegetation map

Map 9.) Geobotanical map of northern Kazakhstan with the property boundaries (Source Atlas Kazakhskoi SSR)

Легенда к карте растительности Legend of vegetation map Леса






Forests

-  1. Сосновые, сосново-березовые (*Pinus sylvestris*, *Betula verrucosa*, *Cladonia alpestris*, *Ramischia secunda*) леса на гранитах
Pine forests, pine-birch forests on granite rocks (*Pinus sylvestris*, *Betula verrucosa*, *Cladonia alpestris*, *Ramischia secunda*)
-  2. Сосновые, сосново-березовые (*Pinus sylvestris*, *Betula verrucosa*, *Festuca beckeri*, *Koeleria glauca*, *Dianthus acicularis*) на песках
Pine forest, pine-birch forests on sandy soils (*Pinus sylvestris*, *Betula verrucosa*, *Festuca beckeri*, *Koeleria glauca*, *Dianthus acicularis*)







Степи

Steppes




Разнотравно-дерновиннозлаковые на черноземах и супесчаных темнокаштановых почвах Herb-bunchgrass steppe on chernozems and loamy sandy chesnut soil

-  3. Сельскохозяйственные земли на месте разнотравно-красноковыльных (*Stipa zalesskii*, *Festuca valesiaca*, *Salvia stepposa*, *Phlomis tuberosa*) степей;
Agricultural lands on place of herb-feather grass steppes (*Stipa zalesskii*, *Festuca valesiaca*, *Salvia stepposa*, *Phlomis tuberosa*, *Seseli ledebourii*)
-  4. Сельскохозяйственные земли на месте разнотравно-красноковыльно-ковыльковых степей (*Stipa lessingiana*, *S. zalesskii*, *Festuca valesiaca*, *Salvia stepposa*, *Seseli ledebourii*) местами с ковылем Коржинского (*Stipa korshinskyi*); **Agricultural lands on place of herb-feather grass steppes (*Stipa lessingiana*, *S. zalesskii*, *Festuca valesiaca*, *Salvia stepposa*, *Seseli ledebourii*) in places with Korshinskyi feather grass (*Stipa korshinskyi*)**
-  5. Песчаноразнотравно-ковыльные степи (*Stipa zalesskii*, *S. capillata*, *S. pennata*, *Helichryzum arenarium*, *Artemisia marschalliana*)
Psammophytic herb-feather grass steppes (*Stipa zalesskii*, *S. capillata*, *S. pennata*, *Helichryzum arenarium*, *Artemisia marschalliana*)
-  6. Песчаноразнотравно-песчаноковыльные (*Stipa pennata*, *Silene parviflora*, *Centaurea marschalliana*) степи
Psammophytic herb - psammophytic feather grass steppes (*Stipa pennata*, *Silene parviflora*, *Centaurea marschalliana*)
-  7. Петрофитноразнотравно-овсецово-ковыльные (*Stipa zalesskii*, *S. capillata*, *Helictotrichon desertorum*, *Festuca valesiaca*, *Scabiosa isetensis*, *Artemisia frigida*, *A. marschalliana*, *Orostachys spinosa*) степи; **Petrophytic herb - feather grass steppes (*Stipa zalesskii*, *S. capillata*, *Helictotrichon desertorum*, *Festuca valesiaca*, *Scabiosa isetensis*, *Artemisia frigida*, *A. marschalliana*, *Orostachys spinosa*)**




Дерновиннозлаковые на темнокаштановых и каштановых почвах Bunch grass steppes on dark chesnut and chesnut soils

-  8. Сельскохозяйственные земли на месте типчаково-ковыльных (*Stipa lessingiana*, *S. zalesskii*) с участием мезоксерофильного разнотравья (*Salvia stepposa*, *Galium ruthenicum*, *Phlomis agraria*); **Agricultural lands on places of feather grass steppes (*Stipa lessingiana*, *S. zalesskii*) with mesoxerophytic herbs (*Salvia stepposa*, *Galium ruthenicum*, *Phlomis agraria*)**
-  9. Сельскохозяйственные земли на месте ксерофильноразнотравно-типчаково-ковыльных (*Stipa lessingiana*, *S. sareptana*, *Festuca valesiaca*, *Galatella tatarica*, *Tanacetum achilleifolium*) степей; **Agricultural lands on places of Fescue-feather grass steppes with xerophytic herbs (*Stipa lessingiana*, *S. sareptana*, *Galatella tatarica*, *Tanacetum achilleifolium*)**
-  10. Типчаково-ковыльные (*Stipa lessingiana*, *S. capillata*, *Festuca valesiaca*)
Fescue-feather grass steppes (*Stipa lessingiana*, *S. capillata*, *Festuca valesiaca*)
-  11. Типчаково-ковыльно-тырсовые (*Stipa capillata*, *S. zalesskii*, *Festuca valesiaca*, *Artemisia marschalliana*, *Potentilla acaulis*)
Fescue-feather grass steppes (*Stipa capillata*, *S. zalesskii*, *Festuca valesiaca*, *Artemisia marschalliana*, *Potentilla acaulis*)
-  12. Типчаково-овсецово-ковыльные (*Stipa capillata*, *S. zalesskii*, *Helictotrichon desertorum*, *Festuca valesiaca*, *Centaurea sibirica*, *Ephedra distachya*)
Fescue-feather grass steppes (*Stipa capillata*, *S. zalesskii*, *Helictotrichon desertorum*, *Festuca valesiaca*, *Centaurea sibirica*, *Ephedra distachya*)
-  13. Ковыльно-типчаковые (*Festuca valesiaca*, *Stipa zalesskii*, *S. capillata*) с кустарниками (*Spiraea hypericifolia*, *S. crenata*) степи
Fescue-feather grass steppes (*Festuca valesiaca*, *Stipa zalesskii*, *S. capillata*) with shrubs (*Spiraea hypericifolia*, *S. crenata*)

Пустынные степи на светлокаштановых почвах Desert steppes on light chesnut soils

-  14. Полынно-ковыльно-типчаковые (*Festuca valesiaca*, *Stipa sareptana*, *Artemisia sublessingiana*)
Sagebrush-fescue grass desert steppe (*Festuca valesiaca*, *Stipa sareptana*, *Artemisia sublessingiana*)
-  15. Полынно-тырсовые (*Stipa sareptana*, *Artemisia sublessingiana*, *A. gracilescens*) степи
Sagebrush - feather grass desert steppe (*Stipa sareptana*, *Artemisia sublessingiana*, *A. gracilescens*)
-  16. Полынно-тырсово-житняковые (*Agropyron fragile*, *Stipa capillata*, *Artemisia arenaria*, *A. marschalliana*)
Sagebrush - feather and quack grass desert steppe (*Agropyron fragile*, *Stipa capillata*, *Artemisia arenaria*, *A. marschalliana*)



Галофитные сообщества на солонцах и солончаках Halophytic plant communities on solonetz and solonchaks

-  17. Комплекс типчаково-грудницевых, типчаково-полынных, полынных, камфоросмовых (*Artemisia schrenkiana*, *A. nitrosa*, *A. pauciflora*, *Galatella villosa*, *Festuca valesiaca*, *Camphorosma monspeliacum*); **Halophytic vegetation complexes: fescue grass, wormwood and saltwort halophytic plant communities (*Artemisia schrenkiana*, *A. nitrosa*, *A. pauciflora*, *Galatella villosa*, *Festuca valesiaca*, *Camphorosma monspeliacum*)**
-  18. Полынные, полынно-солянковые (*Artemisia schrenkiana*, *A. nitrosa*, *A. pauciflora*, *Atriplex cana*, *Anabasis salsa*)
Wormwood, wormwood-saltwort halophytic plant communities (*Artemisia schrenkiana*, *A. nitrosa*, *A. pauciflora*, *Atriplex cana*, *Anabasis salsa*)
-  19. Сочносолянковые (*Halocnemum strobilaceum*, *Salicornia europaea*, *Suaeda corniculata*)
Hyperhalophytic plant communities (*Halocnemum strobilaceum*, *Salicornia europaea*, *Suaeda corniculata*)



Луга

Meadows

На луговых почвах речных пойм и понижений On meadows soils on flood plains (river valley) and depressions

-  20. Злаковые, разнотравные, разнотравно-злаковые (*Agropyron repens*, *Bromus inermis*, *Aneurolepidium ramosum*, *Inula britannica*, *Lythrum virgatum*) луга
Meadows with dominance of mesophytic grasses and herbs (*Agropyron repens*, *Bromus inermis*, *Aneurolepidium ramosum*, *Inula britannica*, *Lythrum virgatum*)
-  21. Пырейные, костровые, вострцовые, веиниковые с разнотравьем (*Agropyron repens*, *Bromus inermis*, *Aneurolepidium ramosum*, *Calamagrostis epigeios*, *Puccinellia tenuissima*, *Limonium gmelinii*, *Sanguisorba officinalis*), местами галофитные луга с участием селитряковых и однолетнесоляковых группировок
Meadows with dominance of different grasses (*Agropyron repens*, *Bromus inermis*, *Aneurolepidium ramosum*, *Calamagrostis epigeios*), halophytic meadows combined with halophytic wormwood and annual saltwort communities (*Puccinellia tenuissima*, *Limonium gmelinii*)

Эдафические варианты Edaphic variants

-  Псаммофитные на супесчаных и песчаных почвах
Psammophytic plant communities on loamy - sandy and sandy soils
-  Петрофитные на каменистых почвах
Petrophytic plant communities on stony soils

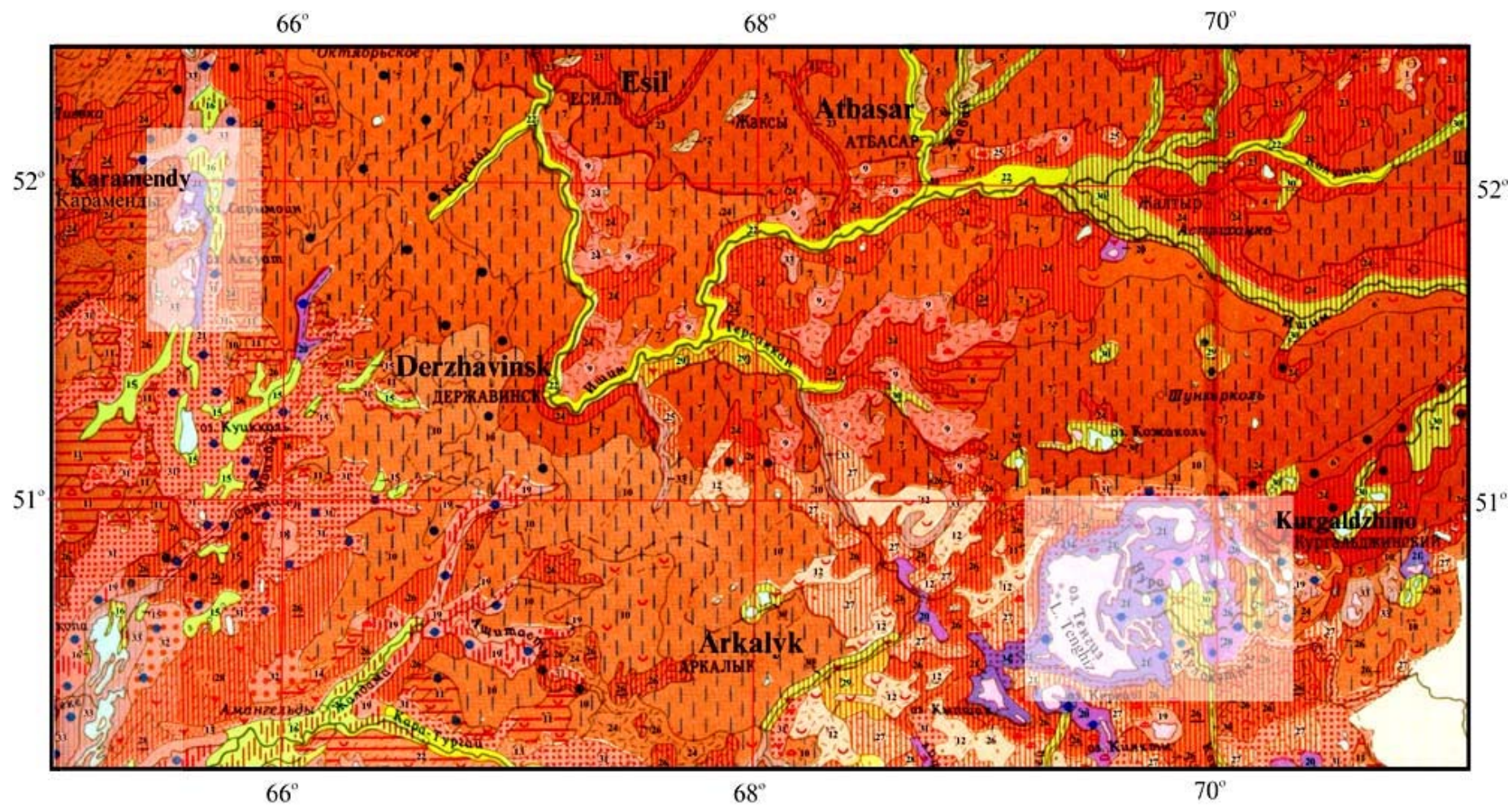
Примечания

Сочетанием цветного фона, соответствующего зональной растительности, и штриховок красного цвета показаны комплексы зональной растительности с галофитными группировками, занимающими 25-50% площади контура.

Remarks

The different colored patterns are corresponding to the zonal vegetation and red colored lines show a complex of zonal vegetation with halophytic plant communities covering 25-50% of the area.

Map 10.) Legend Geobotanical map of northern Kazakhstan with the property boundaries



Почвенная карта
Soil map

Map 11.) Soil map of northern Kazakhstan with the property boundaries (Source Atlas Kazakhskoi SSR)

Легенда к почвенной карте Legend of soil map








Почвы равнинных областей Soils of plains regions

<p>1 Дерново слабоподзолистые, дерново-боровые Soddy weak-podzol, soddy - pine(coniferous)-forest soil.</p> <p>2 Чернозёмы южные Southern chernozems</p> <p>3 Чернозёмы южные карбонатные Southern calcareous chernozems</p> <p>4 Чернозёмы южные солонцеватые Southern solonetzic chernozems</p> <p>5 Чернозёмы малоразвитые Southern weakly developed stony chernozems</p> <p>6 Темнокаштановые Dark chesnut soils</p> <p>7 Темнокаштановые карбонатные Dark chesnut calcareous soils</p> <p>8 Темнокаштановые солонцеватые Dark chesnut solonetzic soils</p> <p>9 Темнокаштановые малоразвитые Dark chesnut weakly developed stony soils</p> <p>10 Каштановые карбонатные Chesnut calcareous soils</p> <p>11 Каштановые солонцеватые Chesnut solonetzic soils</p>	<p>12 Каштановые малоразвитые Chesnut weakly developed soils</p> <p>13 Светлокаштановые Light chesnut soils</p> <p>14 Светлокаштановые солонцеватые Light chesnut solonetzic soils</p> <p>15 Луговые Meadow soils</p> <p>16 Луговые солонцеватые и солончаковатые Meadow solonetzic and deeply solonchakous soils</p> <p>17 Солоди Solods</p> <p>18 Солонцы степные Steppic solonetz</p> <p>19 Солонцы лугово-степные Semi-hydromorphic solonetz</p> <p>20 Солонцы гидроморфные Hydromorphic solonetz</p> <p>21 Солончаки Solonchaks</p> <p>22 пойменные луговые Meadow soils of the flood plains</p>
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Комплексы почв Complex of different soils

<p>23 Чернозёмы южные солонцеватые с солонцами степными Southern solonetzic chernozems with steppe solonetz</p> <p>24 Темнокаштановые солонцеватые с солонцами степными Dark chesnut solonetzic soils with steppe solonetz</p> <p>25 Темнокаштановые малоразвитые с солонцами степными Dark chesnut weakly developed stony soils with steppe solonetz</p> <p>26 Каштановые солонцеватые с солонцами степными Chesnut solonetzic soils with steppe solonetz</p> <p>27 Каштановые малоразвитые с солонцами степными Chesnut weakly developed soils with steppe solonetz</p> <p>28 Светлокаштановые солонцеватые с солонцами степными Chesnut solonetzic soils with steppe solonetz</p> <p>29 Лугово-каштановые с солонцами лугово-степными Meadow-chesnut with meadow-steppe solonetz</p>	<p>30 Луговые солонцеватые с солонцами луговыми Meadow solonetzic with meadow solonetz</p> <p>31 Солонцы степные с каштановыми солонцеватыми Steppe solonetz with chesnut solonetzic soils</p> <p>32 Солонцы степные со светлокаштановыми солонцеватыми Steppe solonetz with light-chesnut solonetzic soils</p> <p>33 Солонцы солончаковые с солончаками Solonchakous-solonetz with solonchaks</p> <p>34 Солонцы с солонцами солончаковатыми Solonetz with solonetz deeply solonchakous</p> <p>35 Солонцы степные с черноземами южными солонцеватыми Steppe solonetz with southern solonetzic chernozems</p>
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Механический состав почв Mechanical structure of soils

<p> Глинистые, тяжело и среднесуглинистые Clayey, heavy and loamy</p> <p> Суглинистые, каменные Loamy, stony</p> <p> Легкосуглинистые Sandy loamy</p> <p> Супесчаные Loamy sandy</p>	<p> Песчаные Sandy</p> <p> Щебнистые и каменные Gravel and stony</p> <p> Выходы пород Rocky outcrops</p>
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Примечания.

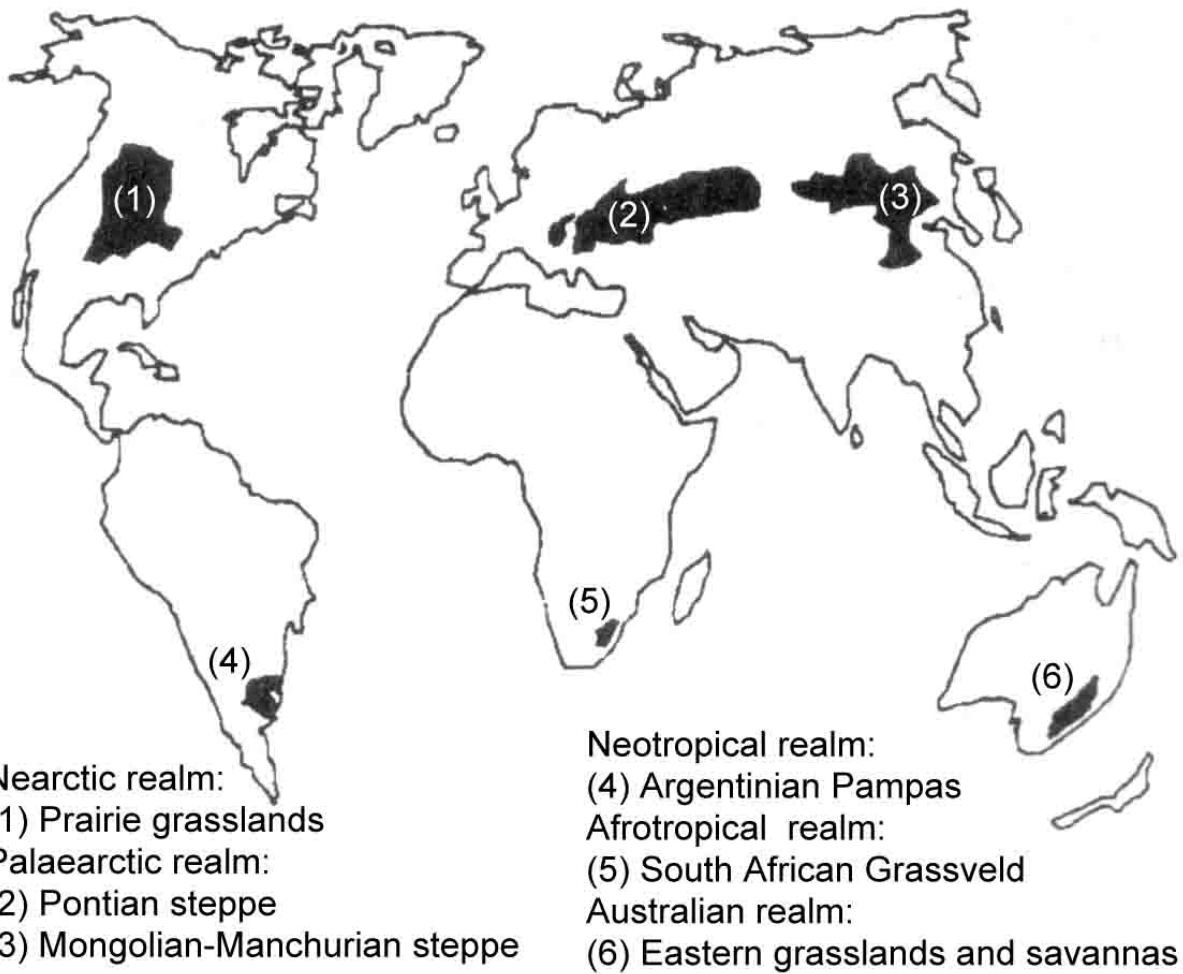
Почвы, образующие сочетания или занимающие в комплексах менее 20% контура показаны значками Почвы, указанные в комплексах на втором месте, занимают по площади контура 20-30% или 30-50%, в последнем случае числовой индекс подчеркнут-41, 44 и др

Remarks

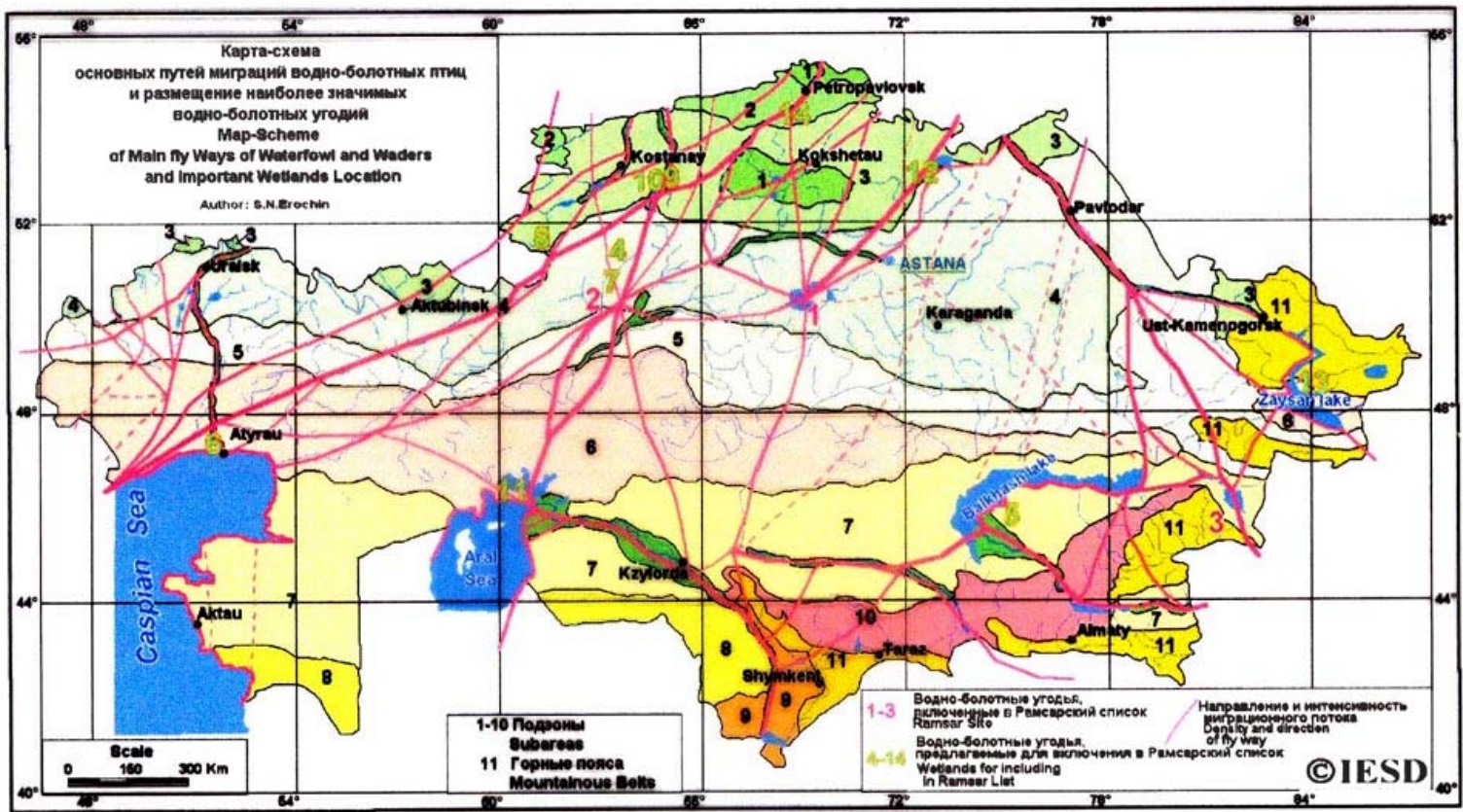
Soils forming combinations or occupying in the soil complexes less 20 percents of contour are showed by symbols. Soils showed in the soil complexes on the second place occupy 20-30% (or 30-50 percents) of contour's square. If the soil has 30-50 % of square numerical index is underlined 41, 44 etc.

Map 12.) Legend Soil map of northern Kazakhstan with the property boundaries

Temperate Latitude Grasslands



Map 13.) Distribution of Temperate Latitude Grasslands in the World, showing the Pontian Steppe (combined after Udvardy, 1975 and Henwood, 1998).



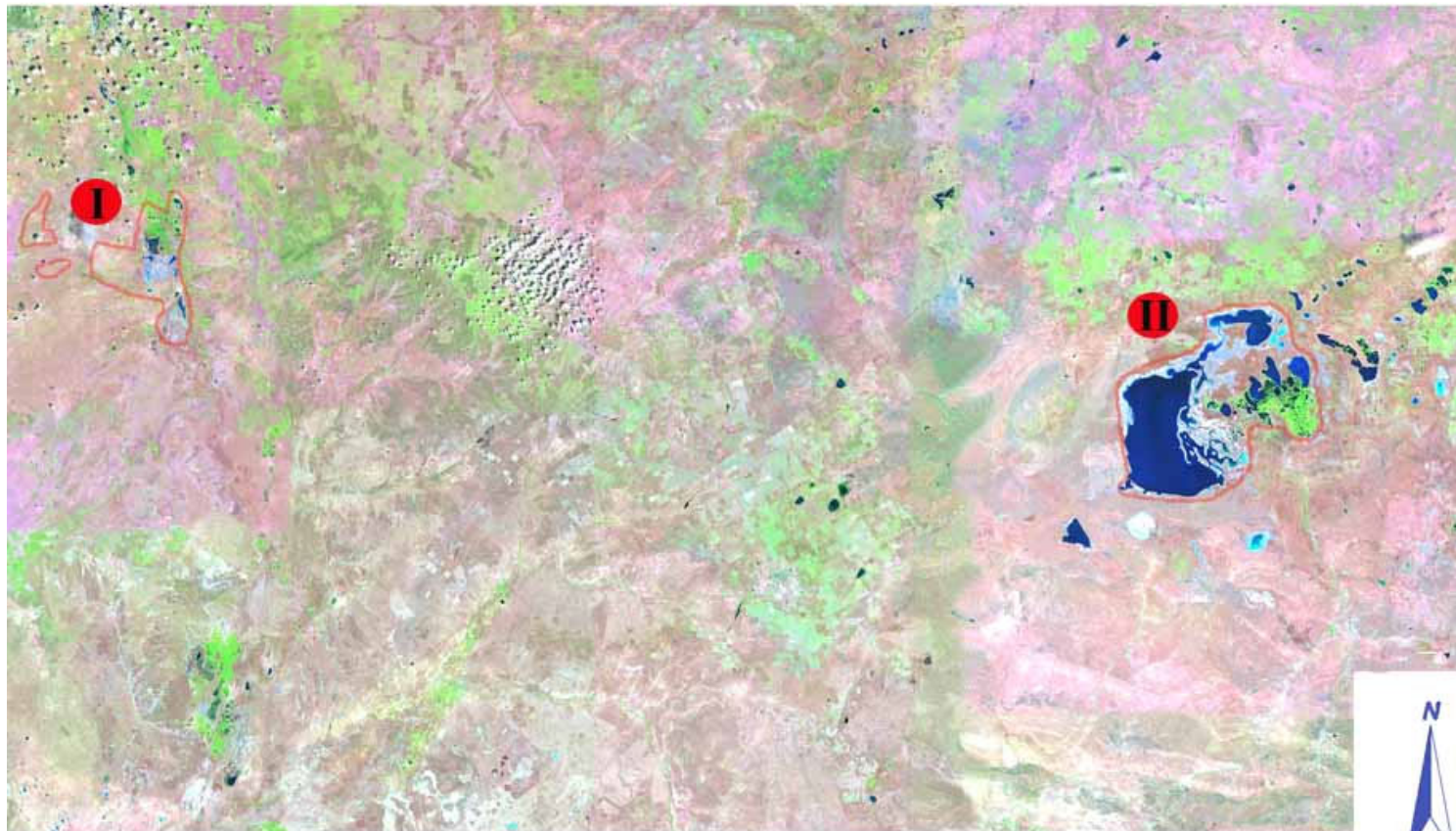
Map 14.) Map-Scheme of the main flyways of waterfowl and waders & important wetlands location in Kazakhstan

- | | |
|--|---|
| 1 Тенгиз-Кургальджинская система озер
Tengiz-Kurgaldzhin lakes system | 8 Озеро Кулыкколь
Kulykol lake |
| 2 Система озер междуречья Иртыш-Тургай
Irtys-Turgai watershed lake system | 9 Озеро Тонтегир-Жаншюра
Tontegir-Zhanshura lake |
| 3 Наурузские озера
Nauryz lakes | 10 Озеро Койбагар
Kolbagar lake |
| 4 Алакольские озера
Alakol lakes | 11 Дельта реки Сырдарья и прилегающая акватория Аральского моря
Syrdaria river delta and Aral Seashore |
| 5 Дельта реки Или
Ili river delta | 12 Озеро Сипеты-Тенгиз
Siletu-Tengiz lake |
| 6 Дельта реки Урал и северное побережье Каспия
Ural river delta and northern Caspian seashore | 13 Дельта реки Черный Иртыш и прилегающая акватория озера Зайсан
Black Irtys river delta and Zaisan lake |
| 7 Система озер Сары-Копя
Sarykopa lakes system | 14 Озеро Шагаль-Тенгиз
Shagaly-Tengiz lake |

**Proposed World Heritage Site:
"Steppe and Lakes of
Northern Kazakhstan"**

**Предлагаемые территории для
Всемирного Наследия:
"Степи и Озёра Северного Казахстана"**

Map 15.) Satellite image of north Kazakhstan with the property boundaries (Autor T. Dieterich, Source Lansat TM)

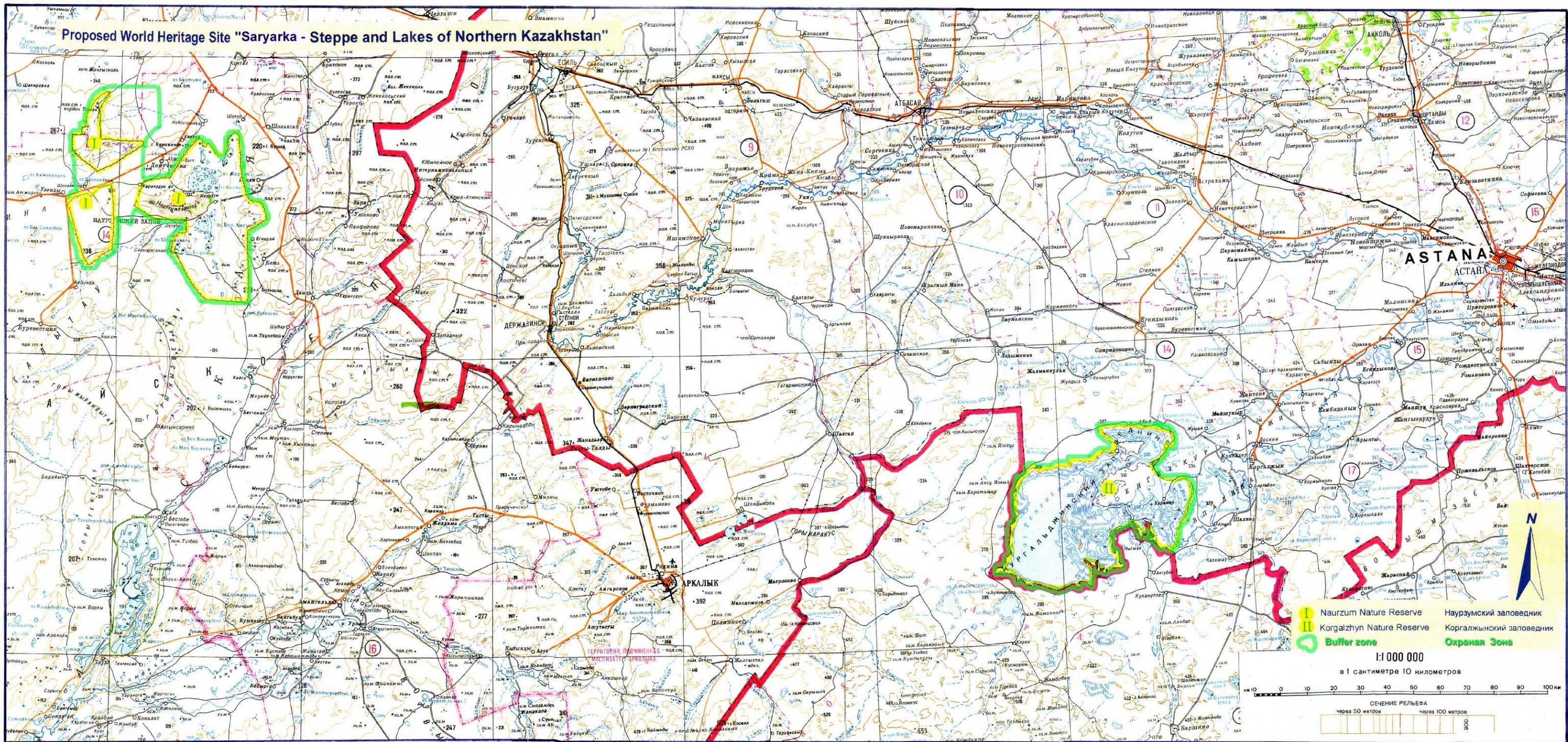


Clusters of the World Heritage Site:

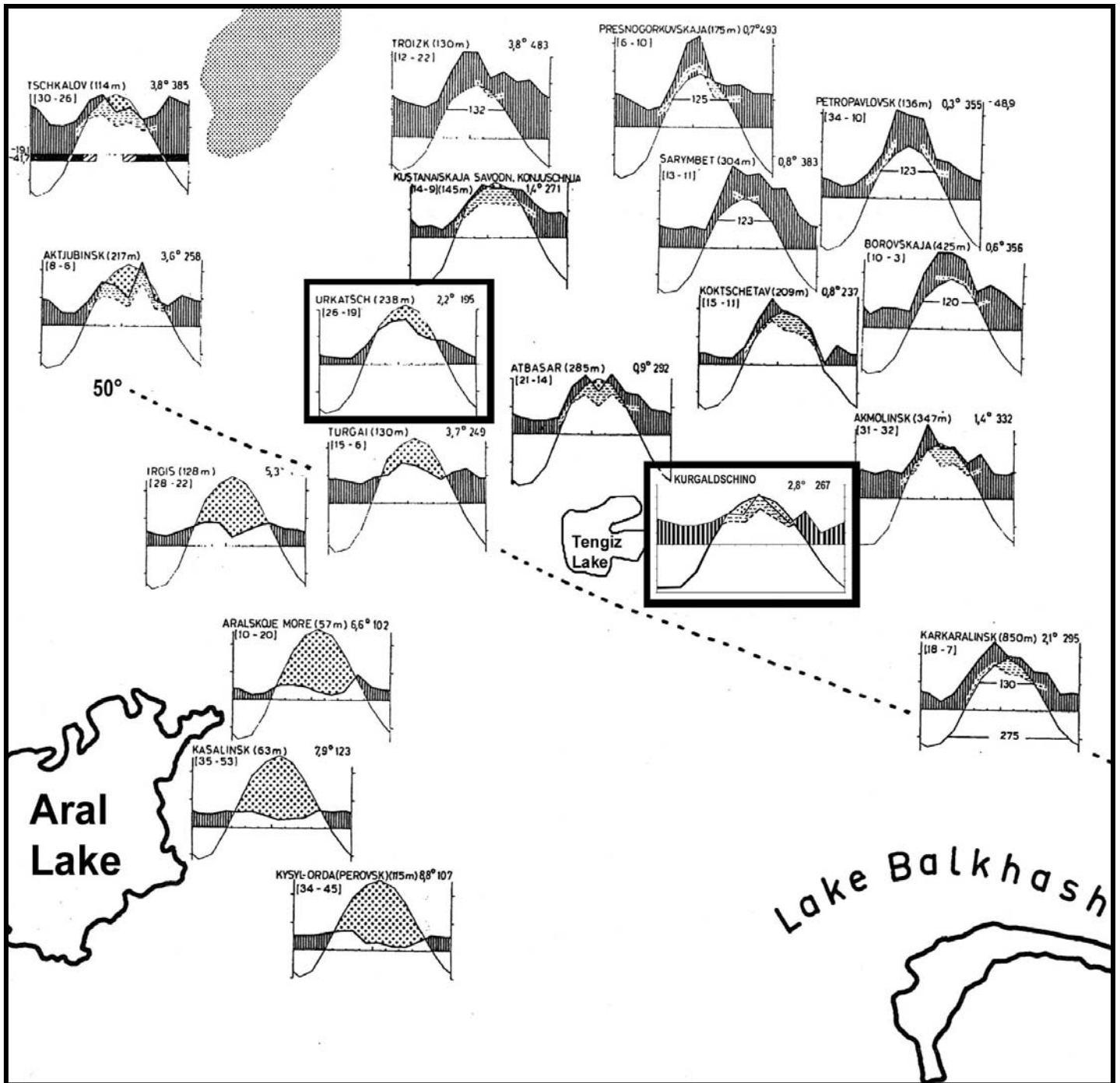
- I** Narzum Nature Reserve Наурзумский Заповедник
- II** Korgalzhyn Nature Reserve Коргалжиний Заповедник



Source Lansat Satellite Images Summer 1999 - 2001
Changed, false Colors, Layer 4/5/6)



Map 16.) Overview Map on the clusters Scale 1: 1000.000. (Compiled by Martin Lenk)

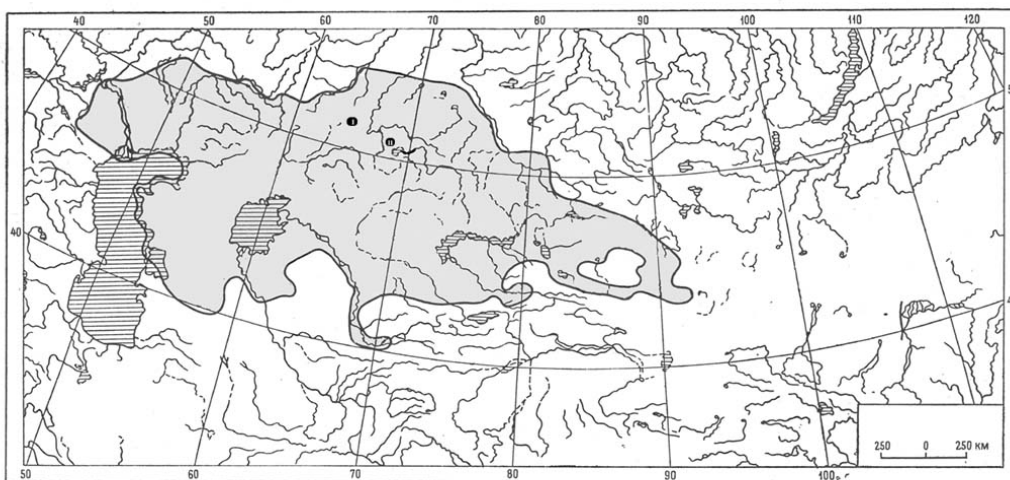


Map 17.) Map with Diagrams on the climate on the World Heritage Site (after Walter et. al. 1975)

The small diagrams on the map show the average temperature in °C and precipitation over one year. The data is based on measurements over several years. In black frames the two nearest stations to the Korgalzhynski Zapovednik (Diagramm Kurgaldschino), Narzum Zapovednik and Sarykopa Wildlife Reserve (both Diagramm Urkatsch).



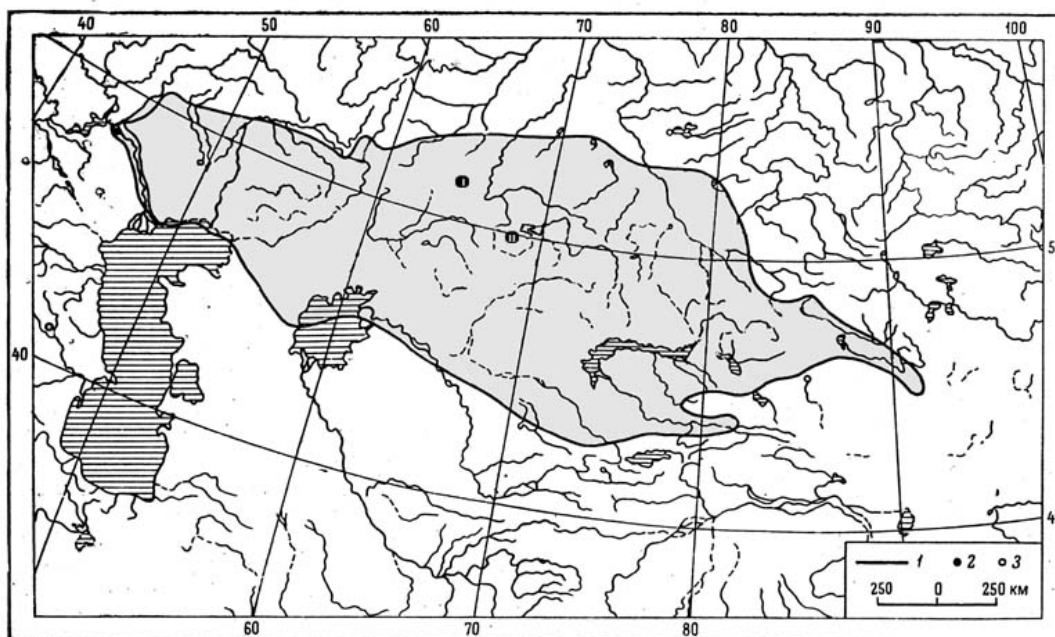
Map 18.) Map showing to what extent the Kazakh Steppes have been plowed till the New Land Programme started in 1953 and since the programme had been launched in 1954 (Source Dircke Weltatlas)



Distribution/ Ареал:
Anabasis salsa (C.A.M.) Benth.

- Narzum Nature Reserve Наурзумский Заповедник
- Ⓜ Korgalzhyn Nature Reserve Коргалжиний Заповедник

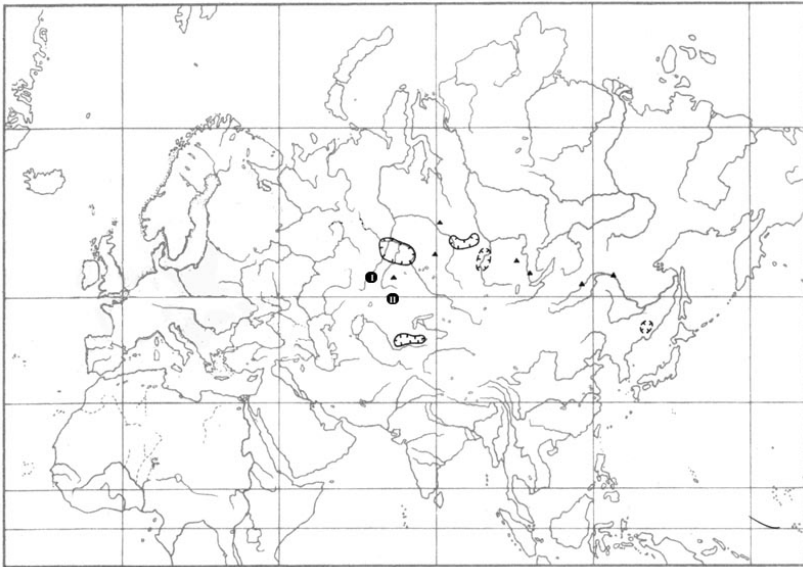
Map 19.) Map of areal of *Anabasis salsa* (C.A.M.) Benth.



Distribution/ Ареал:
Atriplex cana C. A. M.

- Narzum Nature Reserve Наурзумский Заповедник
- Ⓜ Korgalzhyn Nature Reserve Коргалжиний Заповедник

Map 20.) Map of areal of grey orache (*Atriplex cana* C.A.M.)



Distribution/ Ареал:

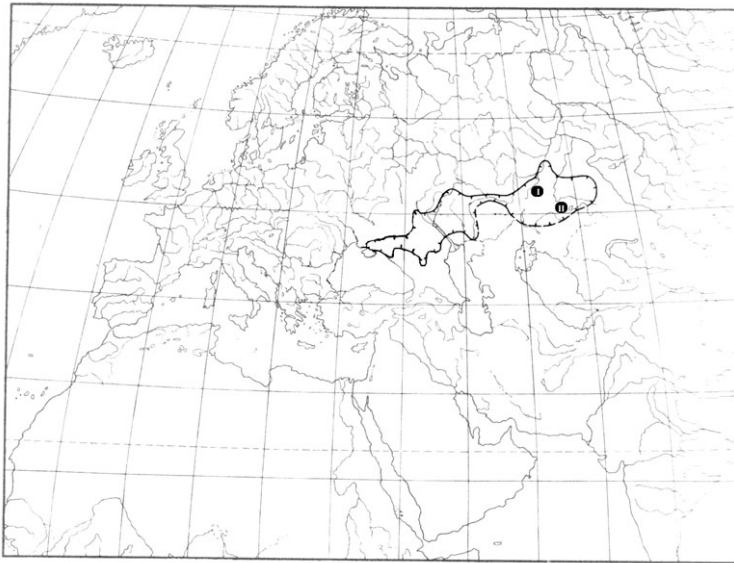
▲ *Carex omskiana* MEINSH.

I Narzum Nature Reserve
Наурзумский Заповедник

II Korgalzhyn Nature Reserve
Коргалжиний Заповедник

Meusel, H., Jäger, E., and Weinert, E. (1965 bis 1992)

Map 21.) Map of areal of Omsk sedge (*Carex omskiana* MEINSH.) (Meusel et al. 1965)

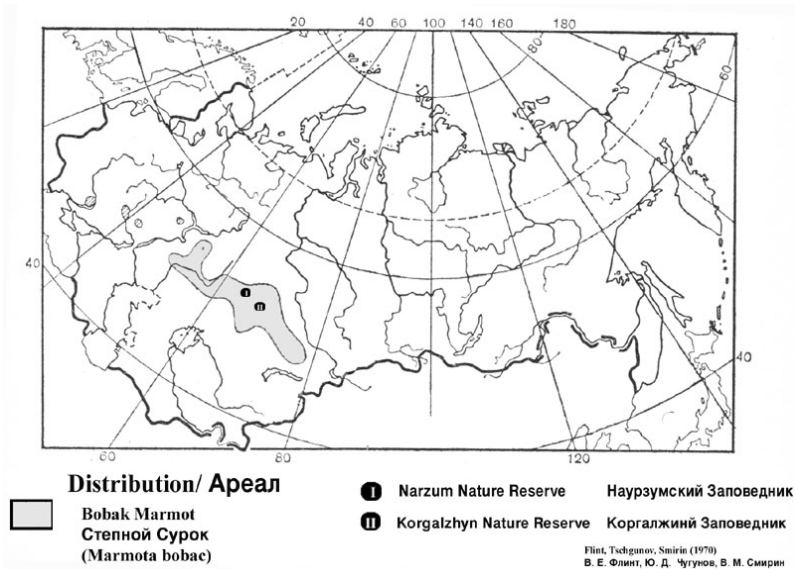


Distribution/ Ареал:
▲ *Limonium sareptanum* (BECKER) GAMS in HEGI

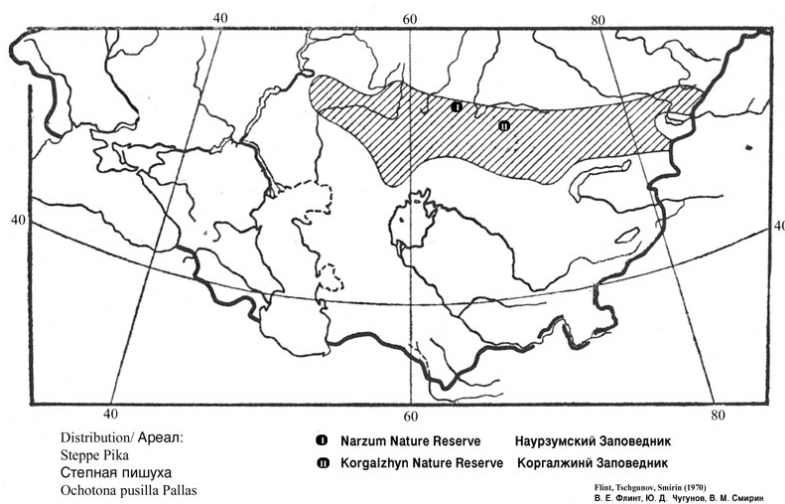
Meusel, H., Jäger, E., and Weinert, E. (1965 bis 1992)

I Narzum Nature Reserve Наурзумский Заповедник
II Korgalzhyn Nature Reserve Коргалжиний Заповедник

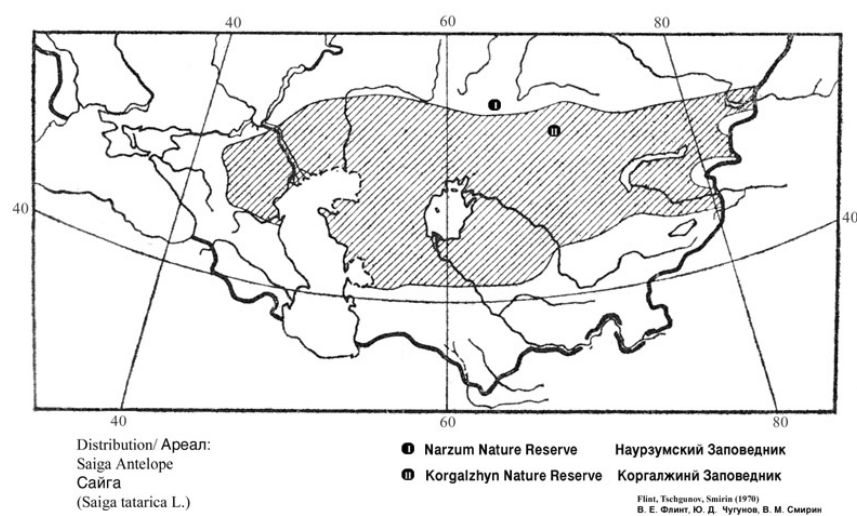
Map 22.) Map of areal of Sareptsk sea-lavender (*Limonium sareptanum* (BECKER) GAMS in HEGI) (Meusel et al. 1965)



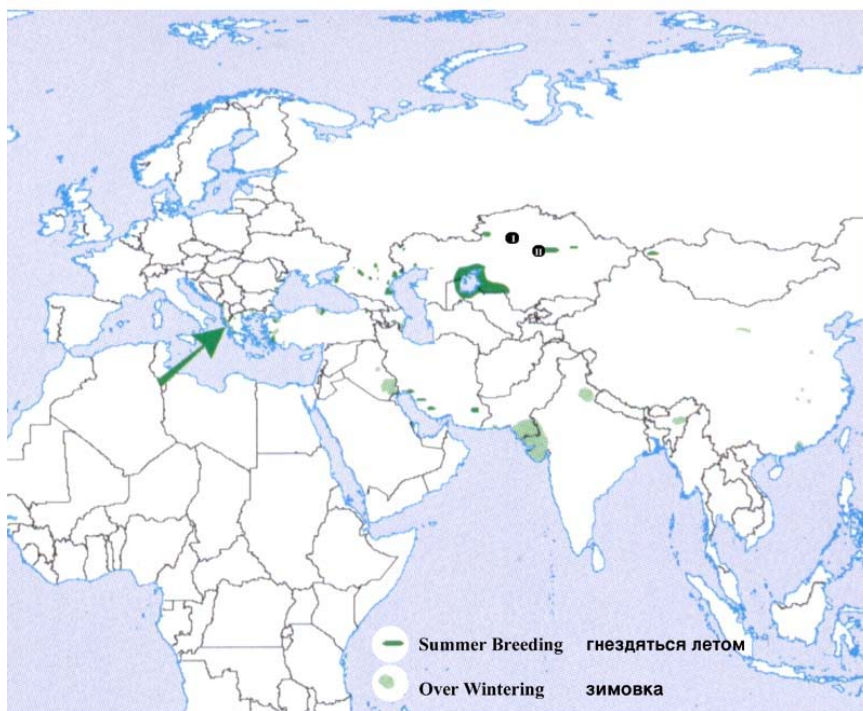
Map 23.) Map of areal of the Bobak (*Marmota bobac*)



Map 24.) Map of areal of the Steppe Pika (*Ochotona pusilla Pallas*)



Map 25.) Map of areal of Saiga Antelope (*Saiga tatarica L.*)

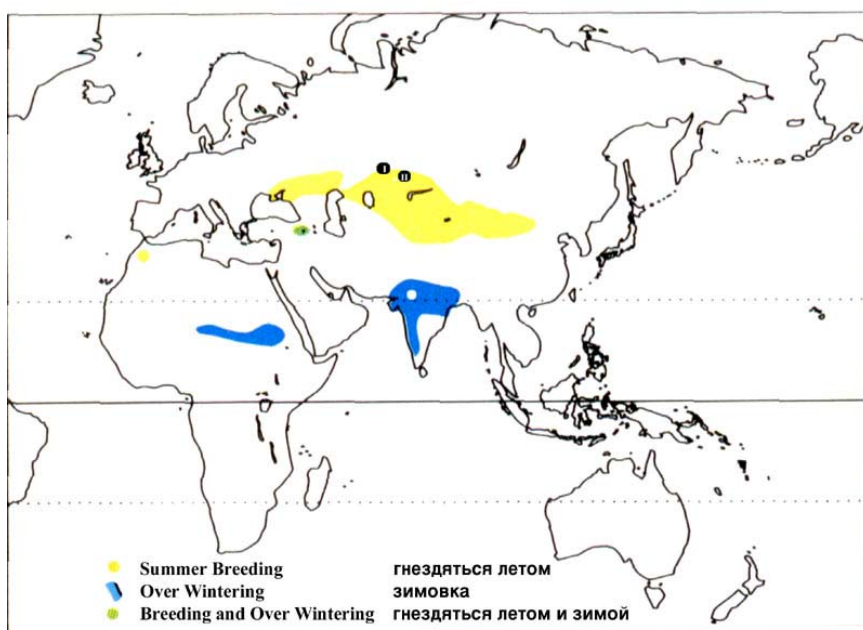


Distribution/ Ареал:
 Dalmatian Pelican
 Кудрявый Пеликан
 (*Pelecanus crispus* Bruch.)

- ❶ Narzum Nature Reserve
Наурзумский Заповедник
- ❷ Korgalzhyn Nature Reserve
Коргалжиний Заповедник

IUCN 2000

Map 26.) Map of areal of Dalmatian Pelican (*Pelecanus crispus* Bruch.)

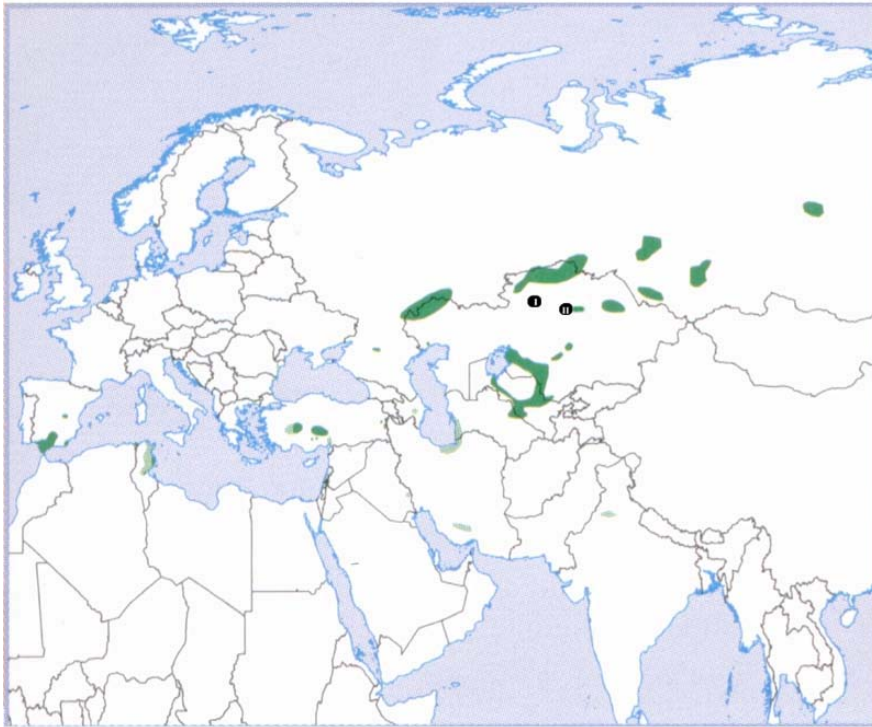


Distribution/ Ареал:
 Demoiselle Crane
 Красавка
 (*Anthropoides virgo* L.)

- ❶ Narzum Nature Reserve
Наурзумский Заповедник
- ❷ Korgalzhyn Nature Reserve
Коргалжиний Заповедник

Handbook of the Birds of the World,
 del Hoyo, J., Elliott, H., Sargatal, J., 1992

Map 27.) Map of areal of Demoiselle Crane (*Anthropoides virgo* L.)



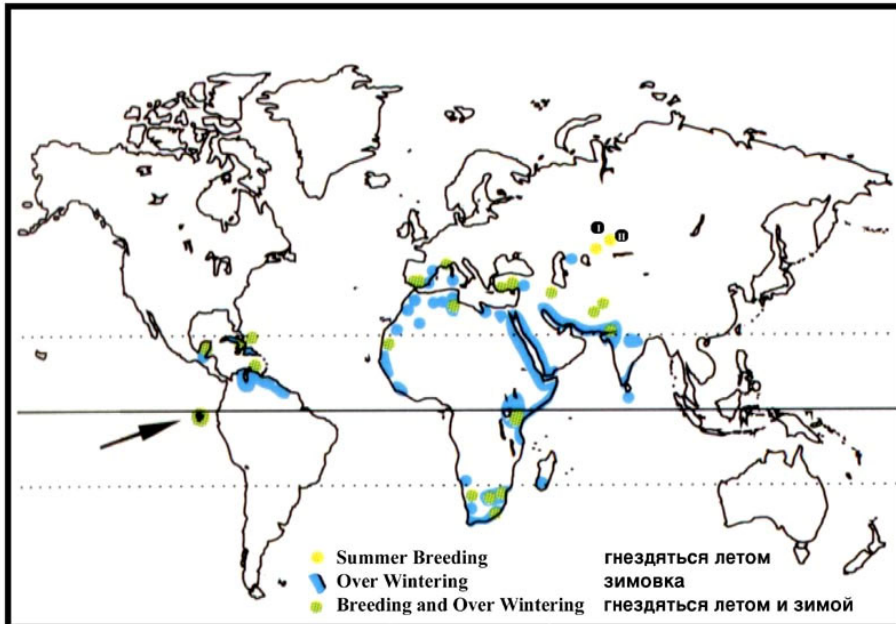
■ Summer Breeding гнездятся летом
■ Over Wintering зимовка

Distribution/ Ареал:
 White-headed Duck
 Савка
 (*Oxyura leucocephala* Scop.)

- I** Narzum Nature Reserve
Наурзумский Заповедник
- II** Korgalzhyn Nature Reserve
Коргалжиний Заповедник

with changes after IUCN 2000

Map 28.) Map of areal of White-headed Duck (*Oxyura leucocephala* Scop.)



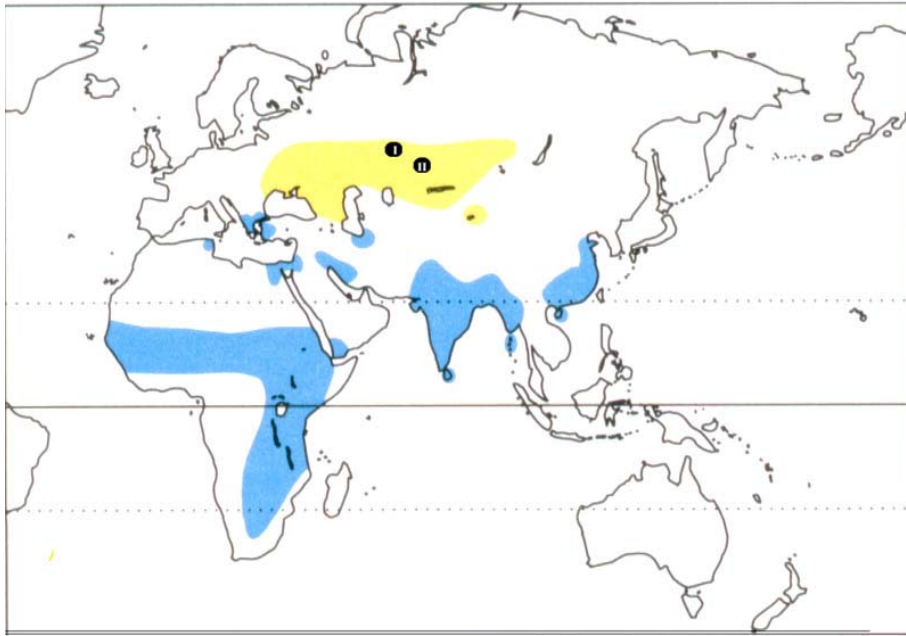
● Summer Breeding гнездятся летом
● Over Wintering зимовка
● Breeding and Over Wintering гнездятся летом и зимой

Distribution/ Ареал:
 Greater Flamingo
 Фламинго
 (*Phoenicopterus ruber* L.)

- I** Narzum Nature Reserve
Наурзумский Заповедник
- II** Korgalzhyn Nature Reserve
Коргалжиний Заповедник

Handbook of the Birds of the World; del Hoyo, J.; Elliott, H.; Sargatal, J.; 1992

Map 29.) Map of areal of Greater Flamingo (*Phoenicopterus ruber* L.)



■ Summer Breeding гнездятся летом
■ Over Wintering зимовка

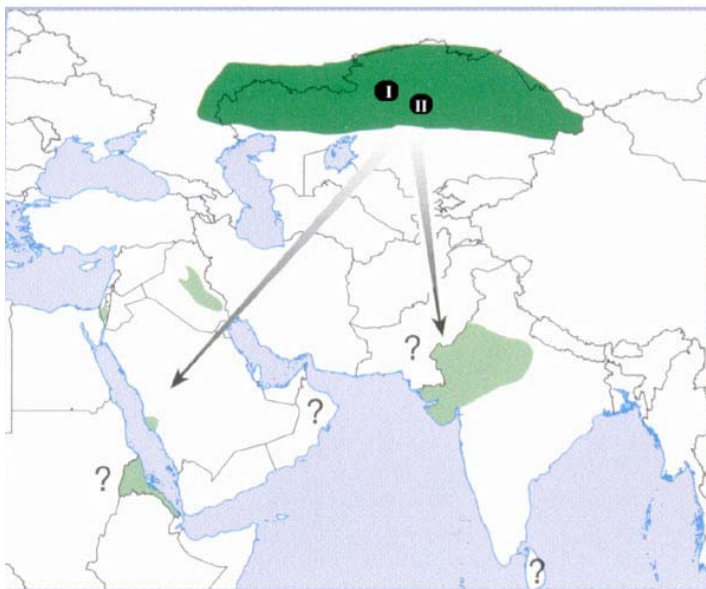
Distribution/ Ареал:
 Pallid Harrier
 Степной Лунь
 (*Circus macrourus* Gm.)

I Narzum Nature Reserve
 Наурзумский Заповедник

II Korgalzhyn Nature Reserve
 Коргалжиний Заповедник

Handbook of the Birds of the World;
 del Hoyo, J.; Elliott, H.; Sargatal, J.; 1992

Map 30.) Map of areal of Pallid Harrier (*Circus macrourus* Gm.)



■ Summer Breeding гнездятся летом
■ Over Wintering зимовка

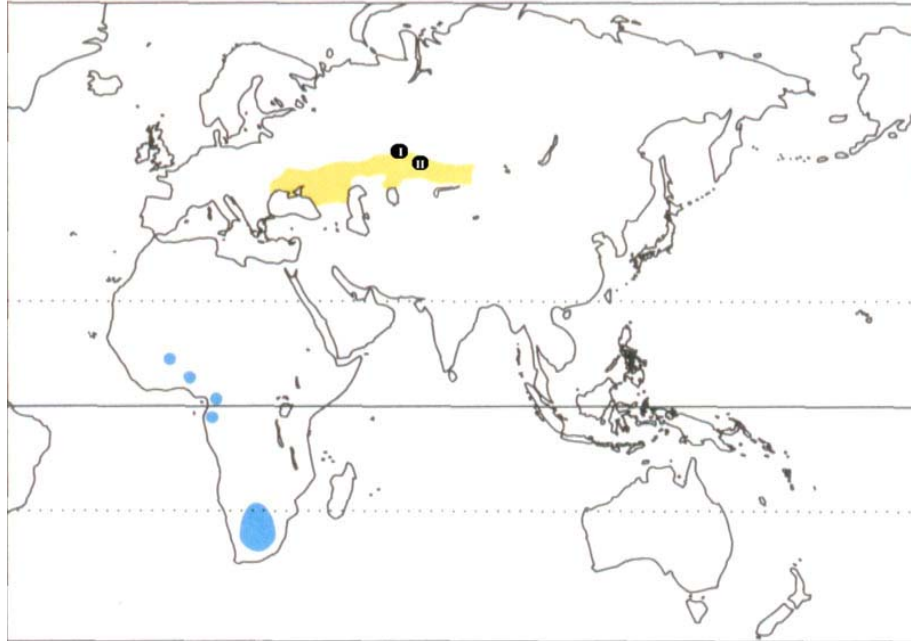
Distribution/ Ареал:
 Sociable Lapwing
 Кречетка
 (*Vanellus gregarius*)

I Narzum Nature Reserve
 Наурзумский Заповедник

II Korgalzhyn Nature Reserve
 Коргалжиний Заповедник

IUCN 2000

Map 31.) Map of areal of Sociable Plover (*Vanellus gregarius*)



■ Summer Breeding гнездятся летом
■ Over Wintering зимовка

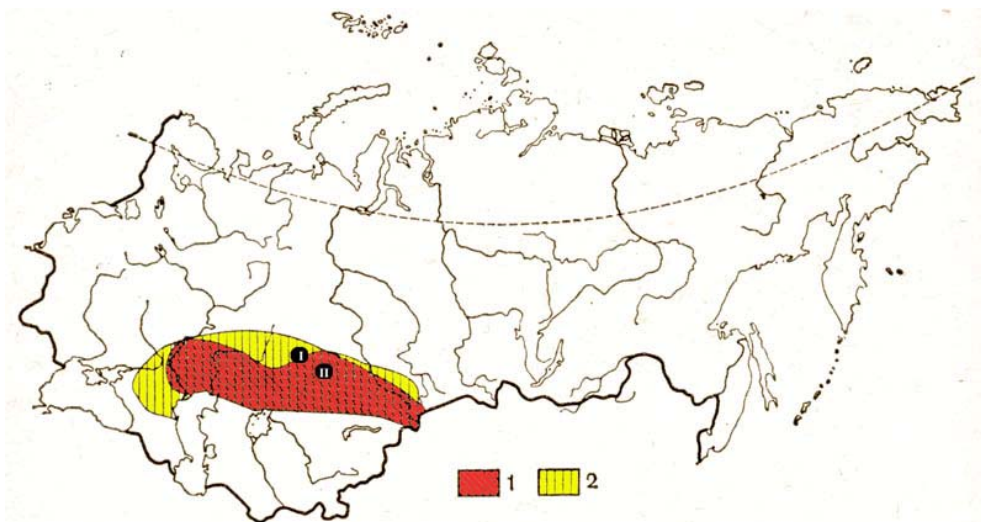
Distribution/ Ареал:
 Black-winged Pratincole
 Степная Тиркушка
 (*Glareola nordmanni* Nordm.)

I Narzum Nature Reserve
 Наурзумский Заповедник

II Korgalzhyn Nature Reserve
 Коргалжиний Заповедник

Handbook of the Birds of the World;
 del Hoyo, J.; Elliott, H.; Sargatal, J.; 1992

Map 32.) Map of areal of Black-winged Pratincole (*Glareola nordmanni* Nordm.)



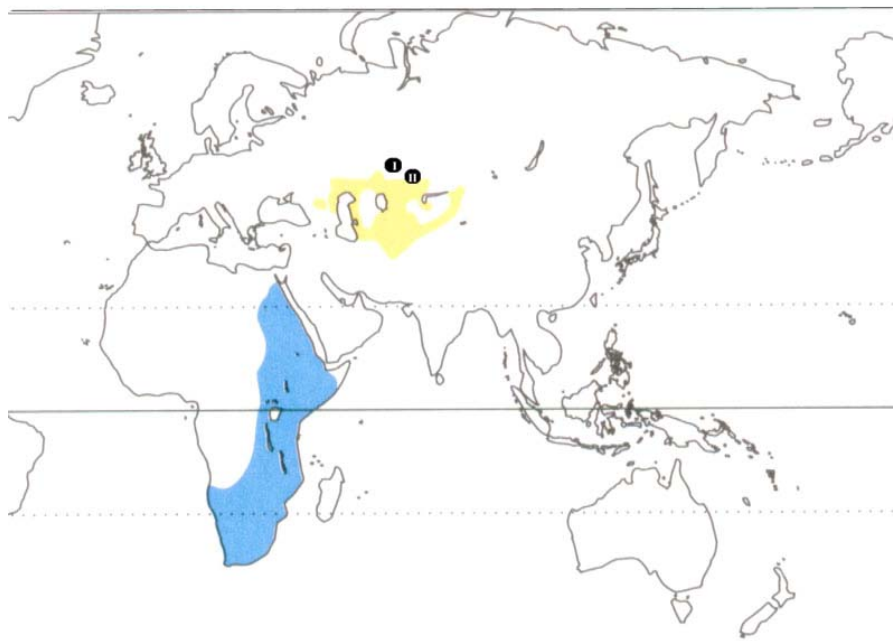
Distribution/ Ареал:
 1: Black Lark / Черный Жаборонок
 (*Melanocorypha yeltoniensis*)
 2: White-winged Lark / Белокрылый Жаборонок
 (*Melanocorypha leucoptera*)

I Narzum Nature Reserve
 Наурзумский Заповедник

II Korgalzhyn Nature Reserve
 Коргалжиний Заповедник

Flint, Tschgunov, Smirin (1970)
 В. Е. Флинт, Ю. Д. Чугунов, В. М. Смирин

Map 33.) Map of areal of Black Lark (*Melanocorypha yeltoniensis*) and White-winged Lark (*Melanocorypha leucoptera*)



■ Summer Breeding гнездятся летом
■ Over Wintering зимовка

Distribution/ Ареал:
 Caspian Plover
 Каспийский Зуек
 (*Charadrius asiaticus* Pall.)

I Narzum Nature Reserve
Наурзумский Заповедник

II Korgalzhyn Nature Reserve
Коргалжиний Заповедник

Handbook of the Birds of the World;
 del Hoyo, J.; Elliott, H.; Sargatal, J.; 1992

Map 34.) Map of area of Caspian plover (*Charadrius asiaticus* Pall.)

Official Map of Naurzum State Nature Reserve 2005

ЖОБА СЫЗБАСЫ

Костанай облысы, Наурызам және Аулиеколь аудандарының аяқтарында "Наурызам мемлекеттік қорығы" ММ қорғау зонасының шекарасын белгілеу жобасының сызбасы

Талқыланған және келісілген:
"Костанай облысының жер қатынастарының басқармасы" ММ басшысы



Мадиев А.Ж.

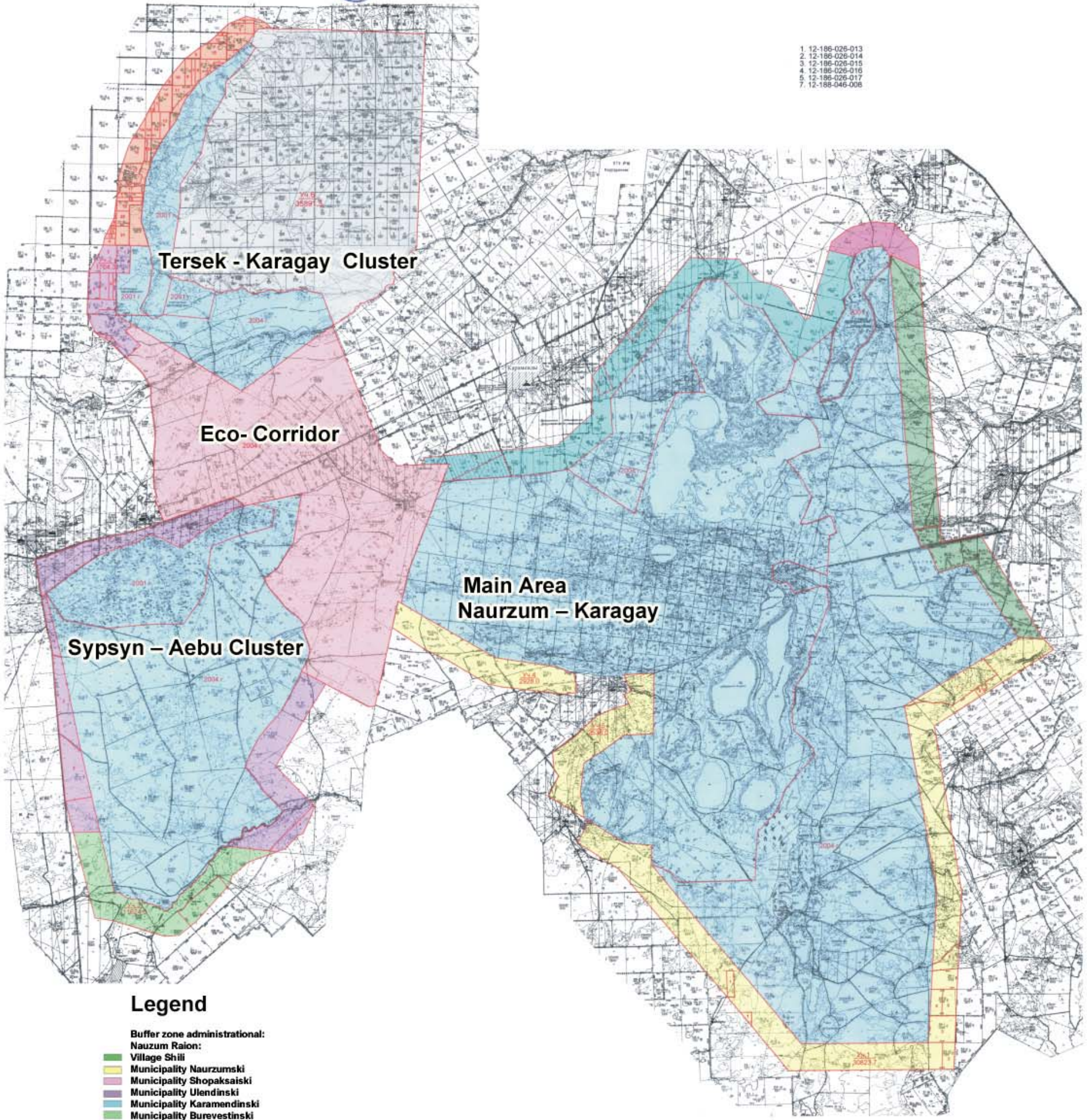
ЧЕРТЕЖ ПРОЕКТА

установка границ охранной зоны
ГУ «Наурызамский государственный заповедник»
на землях Наурызамского и Аулиекольского районов
Костанайской области

Рассмотрен и согласован:
Начальник ГУ "Управление земельных
отношений Костанайской области"

2005ж. (г.)

- 1 12-186-026-013
- 2 12-186-026-014
- 3 12-186-026-015
- 4 12-186-026-016
- 5 12-186-026-017
- 7 12-186-046-006



Legend

- Buffer zone administrative:**
- Naurzum Raion:
 - Village Shili
 - Municipality Naurzumski
 - Municipality Shopaksaiki
 - Municipality Ulendinski
 - Municipality Karamendinski
 - Municipality Burevestinski
 - Auliekolsk Raion:
 - Municipality Diebski
 - Municipality Sulykolski
 - Naurzum State Nature Reserve
 - Eco-Corridor of Nature Reserve

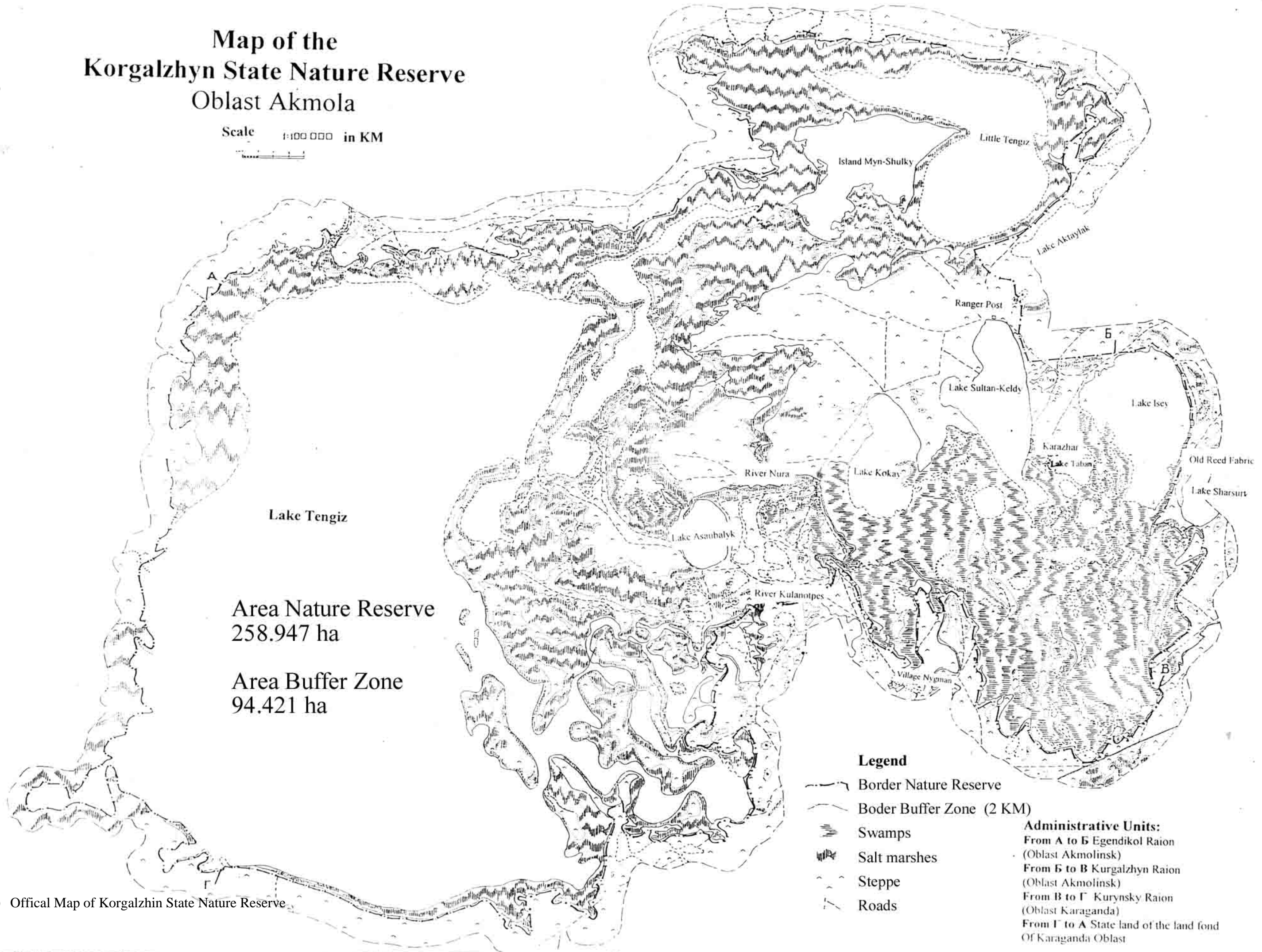
№	И.И. Сидоров	И.И. Сидоров	И.И. Сидоров
№	И.А. Сидоров	И.А. Сидоров	И.А. Сидоров
№	И.К. Сидоров	И.К. Сидоров	И.К. Сидоров
№	И.Л. Сидоров	И.Л. Сидоров	И.Л. Сидоров
№	И.М. Сидоров	И.М. Сидоров	И.М. Сидоров
№	И.Н. Сидоров	И.Н. Сидоров	И.Н. Сидоров
№	И.О. Сидоров	И.О. Сидоров	И.О. Сидоров
№	И.П. Сидоров	И.П. Сидоров	И.П. Сидоров
№	И.Р. Сидоров	И.Р. Сидоров	И.Р. Сидоров
№	И.С. Сидоров	И.С. Сидоров	И.С. Сидоров
№	И.Т. Сидоров	И.Т. Сидоров	И.Т. Сидоров
№	И.У. Сидоров	И.У. Сидоров	И.У. Сидоров
№	И.Ф. Сидоров	И.Ф. Сидоров	И.Ф. Сидоров
№	И.Х. Сидоров	И.Х. Сидоров	И.Х. Сидоров
№	И.Ц. Сидоров	И.Ц. Сидоров	И.Ц. Сидоров
№	И.Ч. Сидоров	И.Ч. Сидоров	И.Ч. Сидоров
№	И.Ш. Сидоров	И.Ш. Сидоров	И.Ш. Сидоров
№	И.Щ. Сидоров	И.Щ. Сидоров	И.Щ. Сидоров
№	И.Ъ. Сидоров	И.Ъ. Сидоров	И.Ъ. Сидоров
№	И.Ы. Сидоров	И.Ы. Сидоров	И.Ы. Сидоров
№	И.Э. Сидоров	И.Э. Сидоров	И.Э. Сидоров
№	И.Ю. Сидоров	И.Ю. Сидоров	И.Ю. Сидоров
№	И.Я. Сидоров	И.Я. Сидоров	И.Я. Сидоров

Map 35.) Official Map Naurzum State Nature Reserve in 2005.

Map 36.)

Map of the Korgalzhyn State Nature Reserve Oblast Akmola

Scale 1:100 000 in KM



Area Nature Reserve
258.947 ha

Area Buffer Zone
94.421 ha

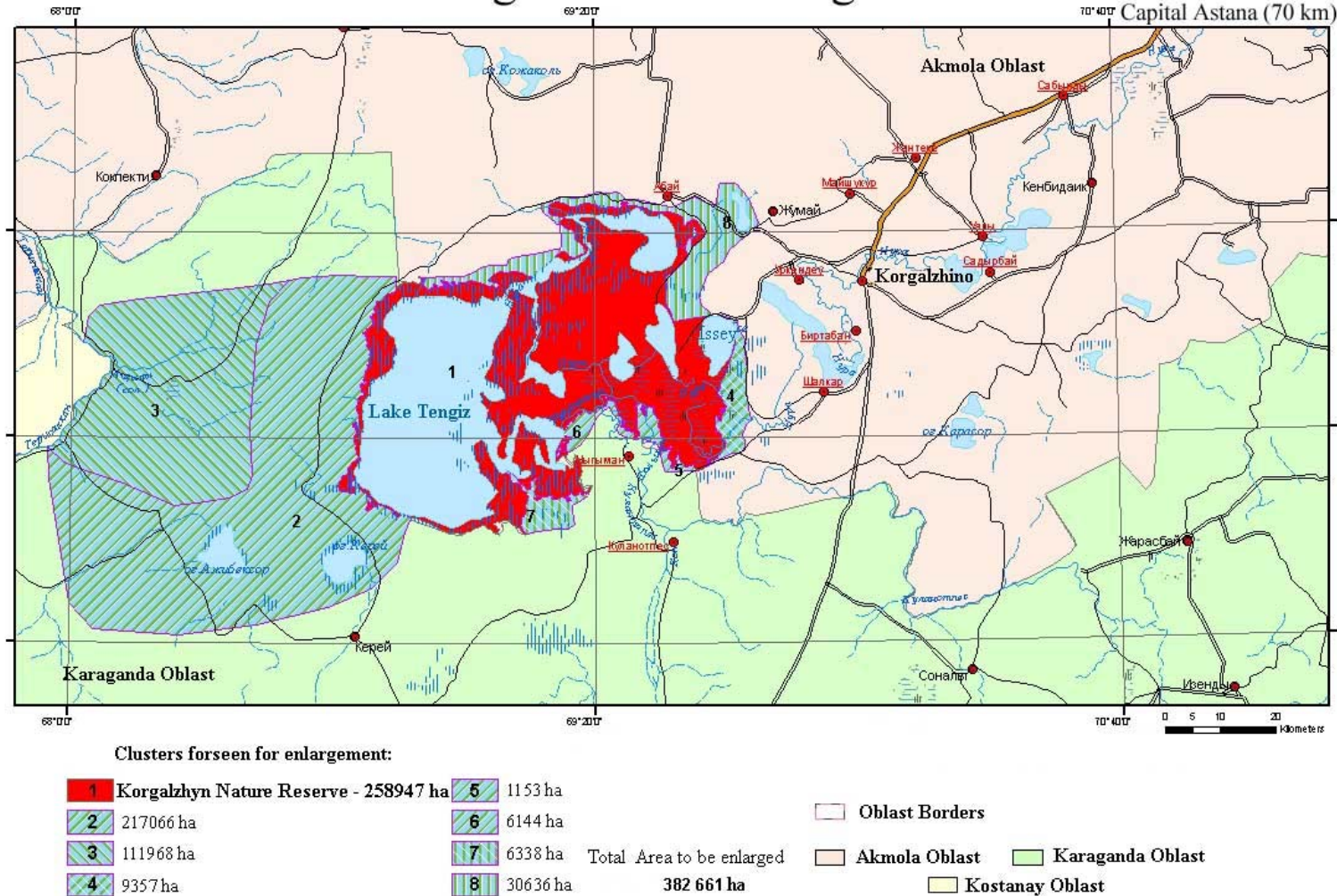
Legend

- Border Nature Reserve
- Boder Buffer Zone (2 KM)
- Swamps
- Salt marshes
- Steppe
- Roads

Administrative Units:
 From A to Б Egendikol Raion (Oblast Akmolinsk)
 From Б to В Kurgalzhyn Raion (Oblast Akmolinsk)
 From В to Г Kurynsky Raion (Oblast Karaganda)
 From Г to А State land of the land fond Of Karaganda Oblast

Map 37.) Official Map of Korgalzhyn State Nature Reserve

Planned Enlargement of the Korgalzhin Reserve



Map 38.) Schematically Map of the planned enlarged territory of the Korgalzhyn State Nature Reserve, as basis for the establishment of a UNESCO Biosphere Reserve (Author Zhanar Kuragulova, UNDP Wetlands Project).

Kostanay Oblast (Cluster Naurzum Nature Reserve)

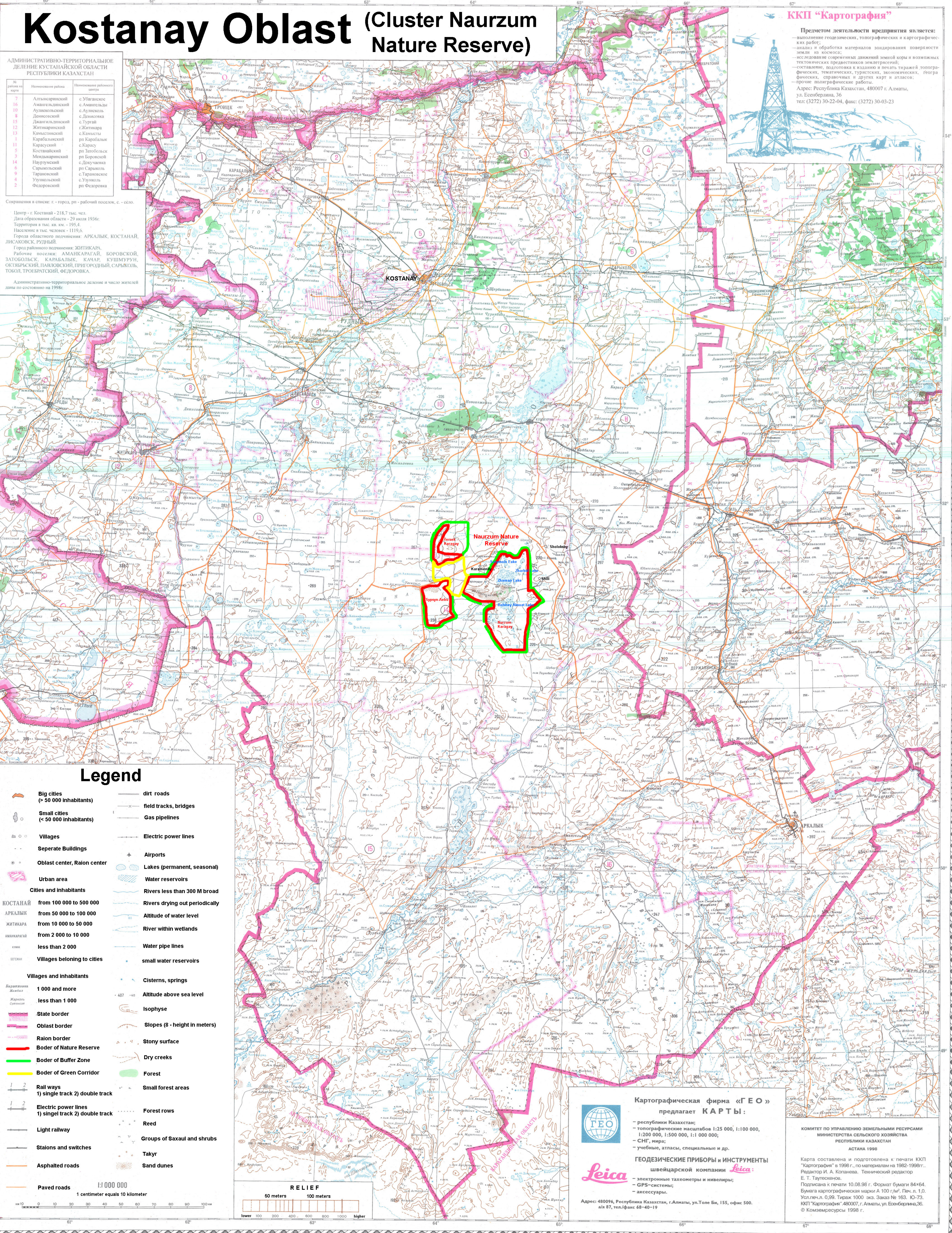
ККП "Картография"

Предметом деятельности предприятия является:
 — выполнение геодезических, топографических и картографических работ;
 — анализ и обработка материалов зондирования поверхности земли из космоса;
 — исследование современных движений земной коры и возможных тектонических предвестников землетрясений;
 — составление, подготовка к изданию и печать тиражей топографических, тематических, туристских, экономических, географических, справочных и других карт и атласов;
 — прочие полиграфические работы.
 Адрес: Республика Казахстан, 480007 г. Алматы,
 ул. Есенбердина, 36
 тел: (3272) 30-22-04, факс: (3272) 30-03-23

АДМИНИСТРАТИВНО-ТЕРРИТОРИАЛЬНОЕ ДЕЛЕНИЕ КОСТАНАЙСКОЙ ОБЛАСТИ РЕСПУБЛИКИ КАЗАХСТАН

№ района по карте	Наименование района	Наименование районного центра
7	Алтынсаринский	с. Убагалино
16	Амангельдинский	с. Амангельды
10	Аулиекольский	с. Аулиеколь
12	Денисовский	с. Денисовка
8	Даванбайский	с. Тургай
13	Житикарский	с. Житикара
11	Камыстинский	с. Камысты
13	Карабалыкский	рп. Карабалык
3	Карасульский	с. Карасу
11	Костанайский	рп. Боровской
3	Мензлябинский	рп. Боровской
14	Нурзумский	с. Дюгульчака
6	Сарыкольский	рп. Сарыколь
4	Тарановский	с. Тарановское
9	Урзумский	с. Урзум
2	Федоровский	рп. Федоровка

Сокращения в списке: г. - город, рп - рабочий поселок, с. - село.
 Центр - г. Костанай - 218,7 тыс. чел.
 Дата образования области - 29 июля 1936г.
 Территория в тыс. кв. км - 195,4
 Население в тыс. человек - 1119,4
 Города областного подчинения: АРКАЛЫК, КОСТАНАЙ, ЛИСАКОВСК, РУДНЫЙ.
 Города районного подчинения: ЖИТИКАРА, Рабочие поселки: АМАНКАРАГАЙ, БОРОВСКОЙ, ЗАТОВОДСК, КАРАБАЛЫК, КУШМУРУН, ОКТАЙСКИЙ, ПАВЛОВСКИЙ, ПИРО ОРОДЫН, САРЫКОЛЬ, ТОБОЛ, ТРОЕБРАТСКИЙ, ФЕДОРОВКА.
 Административно-территориальное деление и число жителей даны по состоянию на 1998г.



Legend

- Big cities (> 50 000 inhabitants)
- Small cities (< 50 000 inhabitants)
- Villages
- Separate Buildings
- Oblast center, Raion center
- Urban area
- Cities and inhabitants**
- КОСТАНАЙ** from 100 000 to 500 000
- АРКАЛЫК** from 50 000 to 100 000
- ЖИТИКАРА** from 10 000 to 50 000
- АМАНКАРАГАЙ** from 2 000 to 10 000
- КУМА** less than 2 000
- БЕТПАК** Villages belonging to cities
- Villages and inhabitants**
- 1 000 and more**
- Жарык** less than 1 000
- State border**
- Oblast border**
- Raion border**
- Boder of Nature Reserve**
- Boder of Buffer Zone**
- Boder of Green Corridor**
- Rail ways**
1) single track 2) double track
- Electric power lines**
1) single track 2) double track
- Light railway**
- Stations and switches**
- Asphalted roads**
- Paved roads**
- dirt roads
- field tracks, bridges
- Gas pipelines
- Electric power lines
- Airports
- Lakes (permanent, seasonal)
- Water reservoirs
- Rivers less than 300 M broad
- Rivers drying out periodically
- Altitude of water level
- River within wetlands
- Water pipe lines
- small water reservoirs
- Cisterns, springs
- Altitude above sea level
- Isophyse
- Slopes (8 - height in meters)
- Stony surface
- Dry creeks
- Forest
- Small forest areas
- Forest rows
- Reed
- Groups of Saxaul and shrubs
- Takyr
- Sand dunes

Картографическая фирма «ГЕО» предлагает КАРТЫ:

- республики Казахстан;
- топографические масштабов 1:25 000, 1:100 000, 1:200 000, 1:500 000, 1:1 000 000;
- СНГ, мира;
- учебные, атласы, специальные и др.

ГЕОДЕЗИЧЕСКИЕ ПРИБОРЫ И ИНСТРУМЕНТЫ швейцарской компании **Leica**:

- электронные тахеометры и нивелиры;
- GPS-системы;
- аксессуары.

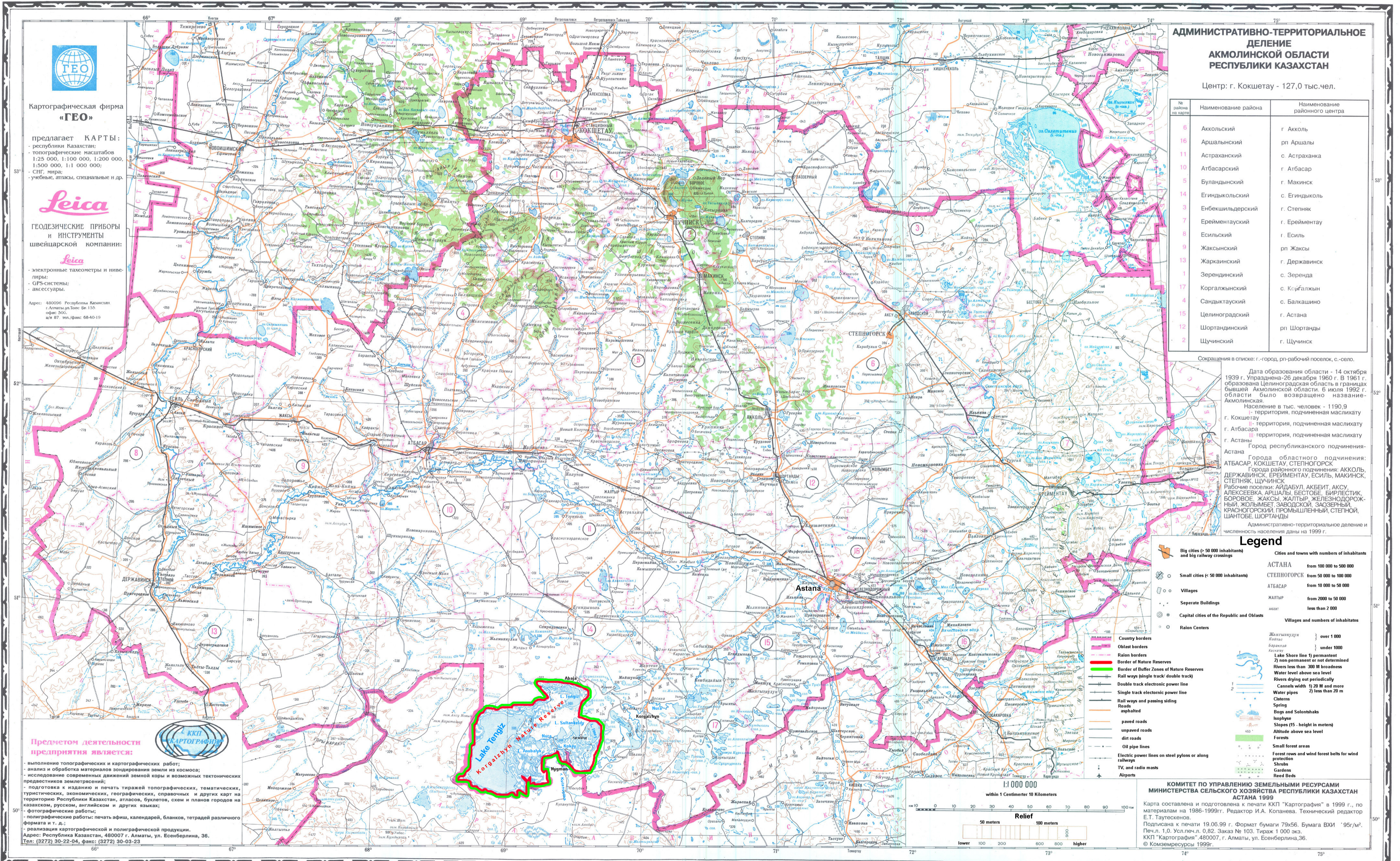
Адрес: 480094, Республика Казахстан, г. Алматы, ул. Топе Би, 155, офис 500.
 ял 87, тел./факс 68-40-19

КОМИТЕТ ПО УПРАВЛЕНИЮ ЗЕМЕЛЬНЫМИ РЕСУРСАМИ
 МИНИСТЕРСТВА СЕЛЬСКОГО ХОЗЯЙСТВА
 РЕСПУБЛИКИ КАЗАХСТАН
 АСТАНА 1998

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 ККП "Картография" 480007, г. Алматы, ул. Есенбердина, 36.
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Map 38.) Map 1:1,000,000 Kostanay Oblast with Narzum Nature Reserve clusture indicated

Akmola Oblast (Cluster Korgazhyn Nature Reserve)



АДМИНИСТРАТИВНО-ТЕРРИТОРИАЛЬНОЕ ДЕЛЕНИЕ АКМОЛИНСКОЙ ОБЛАСТИ РЕСПУБЛИКИ КАЗАХСТАН

Центр: г. Кокшетау - 127,0 тыс. чел.

№ района на карте	Наименование района	Наименование районного центра
6	Аккольский	г Акколь
16	Аршалынский	рп Аршалы
11	Астраханский	с Астраханка
10	Атбасарский	г Атбасар
5	Буландынский	г Макинск
14	Егиндыкольский	с Егиндыколь
3	Енбекшильдерский	г Степняк
7	Ереиментауский	г Ереиментау
8	Есильский	г Есиль
9	Жакынский	рп Жаксы
13	Жаркаинский	г Державинск
1	Зерендинский	с Зеренда
17	Коргалжынский	с. Коргалжын
4	Сандыктауский	с. Балкашино
15	Целиноградский	г Астана
12	Шортандинский	рп Шортанды
2	Щучинский	г Щучинск

Сокращения в списке: г - город, рп - рабочий поселок, с - село.

Дата образования области - 14 октября 1939 г. Упразднена 26 декабря 1960 г. В 1961 г. образована Целиноградская область в границах бывшей Акмолинской области. 6 июля 1992 г. области было возвращено название Акмолинская.

Население в тыс. человек - 1190,9

- г. Кокшетау - территория, подчиненная маслихату
- г. Атбасара - территория, подчиненная маслихату
- г. Астана - Город республиканского подчинения
- Астана - Города областного подчинения: АТБАСАР, КОКШЕТАУ, СТЕПНОГОРСК
- Города районного подчинения: АККОЛЬ, ДЕРЖАВИНСК, ЕРЕИМЕНТАУ, ЕСИЛЬ, МАКИНСК, СТЕПНЯК, ЩУЧИНСК
- Рабочие поселки: АЙДАУЛ, АКБЕИТ, АКСУ, АЛЕКСЕЕВКА, АРШАЛЫ, БЕСТОБЕ, БИРЛЕСТИК, БОРОВОЕ, ЖАКСЫ, ЖАЛТЫР, ЖЕЛЕЗНОДОРОЖНЫЙ, ЖОЛЫМБЕТ ЗАВОДСКИЙ, ЗАОЗЕРНЫЙ, КРАСНОГОРСКИЙ, ПРОМЫШЛЕННЫЙ, СТЕПНОЙ, ШАНТОБЕ, ШОРТАНДЫ

Административно-территориальное деление и численность населения даны на 1999 г.

Legend

- Big cities (> 50 000 inhabitants) and big railway crossings
- Small cities (< 50 000 inhabitants)
- Villages
- Separate Buildings
- Capital cities of the Republic and Oblasts
- Ration Centers
- Cities and towns with numbers of inhabitants
- АСТАНА from 100 000 to 500 000
- СТЕПНОГОРСК from 50 000 to 100 000
- АТБАСАР from 10 000 to 50 000
- ЖАЛТЫР from 2 000 to 50 000
- ИМЕНТ less than 2 000
- Villages and numbers of inhabitants
- Жангыркудук over 1 000
- Койтас under 1000
- Балкашино
- Каскату
- Lake Shore line 1) permanent 2) non permanent or not determined
- Rivers less than 300 M broadness
- River level above sea level
- Rivers drying out periodically
- Canals width 1) 20 M and more 2) less than 20 m
- Water pipes
- Cleane
- Spring
- Bogs and Solonchaks
- Isophyse
- Slopes (15 - height in meters)
- Altitude above sea level
- Forests
- Small forest areas
- Forest power lines and wind forest belts for wind protection
- Shrubs
- Gardens
- Reed Beds

Картографическая фирма «ГЕО» предлагает КАРТЫ: республики Казахстан; топографические масштабы: 1:25 000, 1:100 000, 1:200 000, 1:500 000, 1:1 000 000; СНГ, мира; учебные, атласы, специальные и др.

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ГЕОДЕЗИЧЕСКИЕ ПРИБОРЫ И ИНСТРУМЕНТЫ швейцарской компании: Leica

электронные тахеометры и нивелиры; GPS-системы; аксесуары.

Адрес: 480096 Республика Казахстан, г. Алматы, ул. Топе № 155, офис 200, м/п № 87, тел./факс 68-40-19

Предметом деятельности предприятия является:

- выполнение топографических и картографических работ;
- анализ и обработка материалов зондирования земли из космоса;
- исследование современных движений земной коры и возможных тектонических предвестников землетрясений;
- подготовка к изданию и печать тиражей топографических, тематических, туристических, экономических, географических, справочных и других карт на территории Республики Казахстан, атласов, буклетов, схем и планов городов на казахском, русском, английском и других языках;
- фотографические работы;
- полиграфические работы: печать афиш, календарей, бланков, тетрадей различного формата и т. д.;
- реализация картографической и полиграфической продукции.

Адрес: Республика Казахстан, 480007 г. Алматы, ул. Есенберлина, 36. Тел: (3272) 30-22-04, факс: (3272) 30-03-23

КОМИТЕТ ПО УПРАВЛЕНИЮ ЗЕМЕЛЬНЫМИ РЕСУРСАМИ МИНИСТЕРСТВА СЕЛЬСКОГО ХОЗЯЙСТВА РЕСПУБЛИКИ КАЗАХСТАН АСТАНА 1999

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Map 39.) Map 1:1000.000 Akmola Oblast with Korgalzhin State Nature Reserve indicated

7d. Lists of Plants and Animals

Table 1.) Checklist of the vertebrate fauna of the world heritage site „Saryarka- Steppe and Lakes in Northern Kazakhstan“

KR: Korgalzhyn state nature reserve

NR: Naursum state nature reserve

* introduced species

** taxonomy and English names of the birds after Beaman 1994

(Beaman, M. 1994. *Palaearctic Birds: a checklist of the birds of Europe, North Africa and Asia north of the foothills of the Himalayas*. Harrier Publications, Stonyhorst, UK.)

№	№	Systematic	Scientific name	English name**	KR	NR
OSTEICHTHYES						
SALMONIFORMES						
1.	1.	Salmonidae	<i>Coregonus peled Gm.</i>	Peled (Northern Whitewish)	-	+
2.	2.	Eocidae	<i>Esox lucius L.</i>	Pike (Northern Pike)	+	+
CYPRINIFORMES						
3.	3.	Cyprinidae	<i>Rutilus rutilus L</i>	Roach	+	+
4.			<i>Leuciscus leuciscus L.</i>	Dace	+	+
5.			<i>Leuciscus idus Linne</i>	Ide (Orfe)	+	-
6.			<i>Phoxinus phoxinus L</i>	Lake Minnow	-	+
7.			<i>Tinca tinca L.</i>	Tench	+	+
8.			<i>Abramis brama L.*</i>	Bream (Freshwater Bream)	+	-
9.			<i>Carassius carassius L.</i>	Crucian (Crucian Carp)	+	+
10.			<i>Carassius gibelio Bloch</i>	Prussian Carp	+	+
11.			<i>Cyprinus carpio L.*</i>	Common Carp	+	+
12.	4.	Cobitidae	<i>Cobitis taenia Linne</i>	Spined Loach	+	-
GASTEROSTEIFORMES						
13.	5.	Gasterosteidae	<i>Pungitius platygaster Kessler</i>	Southern ninespine stickleback	+	-
PERCIFORMES						
14.	6.	Percidae	<i>Perca fluviatilis L.</i>	Perch (European Perch)	+	+
15.			<i>Gymnocephalus cernua (L.)</i>	Ruffe (Pope)	+	-
16.			<i>Stizostedion lucioperca Linne*</i>	Pikeperch	+	-
AMPHIBIA						
ANURA						
17.	7.	Pelobatidae	<i>Pelobates fuscus Laur.</i>	Common Spadefoot	-	+
18.	8.	Bufo	<i>Bufo viridis Laur.</i>	Green Toad	+	+
19.	9.	Ranidae	<i>Rana arvalis Nilss.</i>	Moor Frog	+	+
20.			<i>Rana temporaria L.</i>	Common Frog	-	+

REPTILIA

TESTUDINEA

21.	10.	Emydidae	<i>Emys orbicularis L.</i>	European Pond Turtle	-	+
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SQUAMATA

22.	11.	Lacertidae	<i>Eremias velox Pall.</i>	Rapid Fringe-toed Lizard	-	+
23.			<i>Eremias arguta Pall.</i>	Racerunner (Desert Lacertid)	+	+
24.			<i>Lacerta agilis L.</i>	Sand Lizard	+	+
25.	12.	Columbridae	<i>Natrix tessellata Laur.</i>	Dice Snake (Tessellated Snake)	-	+
26.			<i>Elaphe dione Pall.</i>	Rat Snake	+	-
27.	13.	Viperidae	<i>Vipera ursini Bonap.</i>	Meadow Viper (Orsini's Viper)	+	+

AVES

GAVIIFORMES

28.	14.	Gaviidae	<i>Gavia arctica L.</i>	Black-throated Loon	+	+
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PODICIPEDIFORMES

29.	15.	Podicipedidae	<i>Podiceps auritus L.</i>	Horned Grebe	+	+
30.			<i>Podiceps nigricollis C.L.Brehm.</i>	Black-necked Grebe	+	+
31.			<i>Podiceps cristatus L.</i>	Great Crested Grebe	+	+
32.			<i>Podiceps grisegena Bodd.</i>	Red-necked Grebe	+	+

PELECANIFORMES

33.	16.	Phalacrocoracidae	<i>Phalacrocorax carbo L.</i>	Great Cormorant	+	+
34.			<i>Phalacrocorax pygmeus Pallas</i>	Pygmy Cormorant	+	-
35.	17.	Pelecanidae	<i>Pelecanus onocrotalus L.</i>	Eastern White Pelican	+	+
36.			<i>Pelecanus crispus Bruch.</i>	Dalmatian Pelican	+	+

CICONIIFORMES

37.	18.	Ardeidae	<i>Botaurus stellaris L</i>	Great Bittern	+	+
38.			<i>Ixobrychus minutus L.</i>	Little Bittern	+	+
39.			<i>Nycticorax nycticorax L.</i>	Black-crowned Night Heron	+	-
40.			<i>Ardeola ralloides Scop.</i>	Squacco Heron	-	+
41.			<i>Egretta garzetta L.</i>	Little Egret	+	+
42.			<i>Egretta alba L.</i>	Great White Egret	+	+
43.			<i>Ardea cinerea L.</i>	Grey Heron	+	+
44.			<i>Ardea purpurea L.</i>	Purple Heron	+	-
45.	19.	Ciconiidae	<i>Ciconia nigra L.</i>	Black Stork	+	-
46.	20.	Threskiornithidae	<i>Plegadis falcinellus L.</i>	Glossy Ibis	+	+
47.			<i>Platalea leucorodia L.</i>	Eurasian Spoonbill	+	+

PHOENICOPTERIFORMES

48.	21.	Phoenicopteridae	<i>Phoenicopterus ruber L.</i>	Greater Flamingo	+	+
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ANSERIFORMES

49.	22.	Anatidae	<i>Cygnus olor Gm.</i>	Mute Swan	+	+
50.			<i>Cygnus columbianus (bewickii) Yarrell.</i>	Bewick's Swan	+	+
51.			<i>Cygnus cygnus L.</i>	Whooper Swan	+	+
52.			<i>Anser fabalis Lath.</i>	Bean Goose	+	+
53.			<i>Anser albifrons Scop.</i>	Greater White-fronted	+	+

				Goose		
54.			<i>Anser erythropus L.</i>	Lesser White-fronted Goose	+	+
55.			<i>Anser anser L.</i>	Greylag Goose	+	+
56.			<i>Anser indicus Lath.</i>	Bar-headed Goose	+	-
57.			<i>Branta bernicla L.</i>	Brent Goose	+	+
58.			<i>Branta ruficollis Pall.</i>	Red-breasted Goose	+	+
59.			<i>Tadorna ferruginea Pall.</i>	Ruddy Shelduck	+	+
60.			<i>Tadorna tadorna L.</i>	Common Shelduck	+	+
61.			<i>Anas penelope L.</i>	Eurasian Wigeon	+	+
62.			<i>Anas strepera L.</i>	Gadwall	+	+
63.			<i>Anas crecca L.</i>	Common Teal	+	+
64.			<i>Anas platyrhynchos L.</i>	Mallard	+	+
65.			<i>Anas acuta L.</i>	Northern Pintail	+	+
66.			<i>Anas querquedula L.</i>	Garganey	+	+
67.			<i>Anas clypeata L.</i>	Northen Shoveler	+	+
68.			<i>Netta rufina Pall.</i>	Red-crested Pochard	+	+
69.			<i>Aythya ferina L.</i>	Common Pochard	+	+
70.			<i>Aythya nyroca Guld.</i>	Ferruginous Duck	+	+
71.			<i>Aythya fuligula L.</i>	Tufted Duck	+	+
72.			<i>Aythya marila L.</i>	Greater Scaup	+	+
73.			<i>Clangula hyemalis L.</i>	Long-tailed Duck	+	+
74.			<i>Melanitta nigra L.</i>	Common Scoter	+	-
75.			<i>Melanitta fusca L.</i>	Velvet Scoter	+	+
76.			<i>Bucephala clangula L.</i>	Common Goldeneye	+	+
77.			<i>Mergellus albellus L.</i>	Smew	+	+
78.			<i>Mergus serrator L.</i>	Red-breasted Merganser	+	+
79.			<i>Mergus merganser L.</i>	Goosander	+	+
80.			<i>Oxyura leucocephala Scop.</i>	White-headed Duck	+	+
ACCIPITRIFORMES						
81.	23.	Accipitridae	<i>Pernis apivorus L.</i>	European Honey Buzzard	+	+
82.			<i>Milvus migrans (lineatus) Bodd.</i>	Black-eared Kite	+	+
83.			<i>Haliaeetus leucoryphus Pall.</i>	Pallas's Fish Eagle	+	+
84.			<i>Haliaeetus albicilla L.</i>	White-tailed Eagle	+	+
85.			<i>Gyps fulvus Habl.</i>	Eurasian Griffon Vulture	+	+
86.			<i>Aegypius monachus L.</i>	Eurasian Black Vulture	+	+
87.			<i>Circaetus gallicus Gm.</i>	Short-toed Eagle	+	+
88.			<i>Circus aeruginosus L.</i>	Western Marsh Harrier	+	+
89.			<i>Circus spilonotus Kaup</i>	Eastern Marsh Harrier	+	-
90.			<i>Circus cyaneus L.</i>	Hen Harrier	+	+
91.			<i>Circus macrourus Gm.</i>	Pallid Harrier	+	+
92.			<i>Circus pygargus L.</i>	Montagu's Harrier	+	+
93.			<i>Accipiter gentilis L</i>	Northern Goshawk	+	+
94.			<i>Accipiter nisus L.</i>	Eurasian Sparrowhawk	+	+
95.			<i>Buteo buteo (vulpinus) L.</i>	Steppe Buzzard	+	+
96.			<i>Buteo rufinus L.</i>	Long-Legged Buzzard	+	+
97.			<i>Buteo lagopus Pontopp.</i>	Rough-legged Buzzard	+	+
98.			<i>Aquila clanga Pall.</i>	Greater Spotted Eagle	+	+
99.			<i>Aquila nipalensis Hodg.</i>	Steppe Eagle	+	+

100.			<i>Aquila heliaca Sav.</i>	Imperial Eagle	+	+
101.			<i>Aquila chrysaetos L.</i>	Golden Eagle	+	+
102.			<i>Hieraetus pennatus Gm.</i>	Booted Eagle	+	-
103.	24.	Pandionidae	<i>Pandion haliaetus L.</i>	Osprey	+	+
104.	25.	Falconidae	<i>Falco naumanni Fleischer.</i>	Lesser Kestrel	+	+
105.			<i>Falco tinnunculus L.</i>	Common Kestrel	+	+
106.			<i>Falco vespertinus L.</i>	Red-footed Falcon	+	+
107.			<i>Falco columbarius L.</i>	Merlin	+	+
108.			<i>Falco subbuteo L.</i>	Eurasian Hobby	+	+
109.			<i>Falco cherrug Gray.</i>	Saker Falcon	+	+
110.			<i>Falco rusticolus L.</i>	Gyr Falcon	+	-
111.			<i>Falco peregrinus Tunst.</i>	Peregrine Falcon	+	+
GALLIFORMES						
112.	26.	Tetraonidae	<i>Lagopus lagopus L.</i>	Willow Ptarmigan	+	+
113.			<i>Tetrao tetrix L.</i>	Black Grouse	-	+
114.	27.	Phasianidae	<i>Perdix perdix L.</i>	Grey Partridge	+	+
115.			<i>Coturnix coturnix L.</i>	Common Quail	+	+
GRUIFORMES						
116.	28.	Rallidae	<i>Rallus aquaticus L.</i>	Water Rail	+	+
117.			<i>Porzana porzana L.</i>	Spotted Crake	+	+
118.			<i>Porzana parva Scop.</i>	Little Crake	+	+
119.			<i>Porzana pusilla Pall.</i>	Baillon's Crake	+	+
120.			<i>Crex crex L.</i>	Corn Crake	+	+
121.			<i>Gallinula chloropus L.</i>	Common Moorhen	+	+
122.			<i>Fulica atra L.</i>	Eurasian Coot	+	+
123.	29.	Gruidae	<i>Grus grus L.</i>	Common Crane	+	+
124.			<i>Grus leucogeranus Pall.</i>	Siberian Crane	+	+
125.			<i>Anthropoides virgo L.</i>	Demoiselle Crane	+	+
126.	30.	Otididae	<i>Tetrax tetrax L.</i>	Little Bustard	+	+
127.			<i>Chlamydotis undulata Jacquin.</i>	Houbara Bustard	+	-
128.			<i>Otis tarda L.</i>	Great Bustard	+	+
CHARADRIIFORMES						
129.	31.	Haematopodidae	<i>Haematopus ostralegus But.</i>	Eurasian Oystercatcher	+	+
130.	32.	Recurvirostridae	<i>Himantopus himantopus L.</i>	Black-winged Stilt	+	+
131.			<i>Recurvirostra avosetta L.</i>	Pied Avocet	+	+
132.	33.	Burhinidae	<i>Burhinus oedicephalus L.</i>	Stone Curlew	+	+
133.	34.	Glareolidae	<i>Glareola pratincola L.</i>	Collared Pratincole	+	-
134.			<i>Glareola nordmanni Nordm.</i>	Black-winged Pratincole	+	+
135.	35.	Charadriidae	<i>Charadrius dubius Scop.</i>	Little Ringed Plover	+	+
136.			<i>Charadrius hiaticula L.</i>	Common Ringed Plover	+	+
137.			<i>Charadrius alexandrinus L.</i>	Kentish Plover	+	+
138.			<i>Charadrius asiaticus Pall.</i>	Caspian Plover	+	+
139.			<i>Charadrius morinellus L.</i>	Eurasian Dotterel	+	+
140.			<i>Pluvialis fulva Gm.</i>	Pacific Golden Plover	+	+
141.			<i>Pluvialis apricaria L.</i>	European Golden Plover	+	+
142.			<i>Pluvialis squatarola L.</i>	Grey Plover	+	+
143.			<i>Vanellus gregarius Pall.</i>	Sociable Lapwing	+	+
144.			<i>Vanellus leucurus Licht.</i>	White-tailed Lapwing	-	+
145.			<i>Vanellus vanellus L.</i>	Northern Lapwing	+	+
146.	36.	Scolopacidae	<i>Calidris canutus L.</i>	Red Knot	+	-

147.			<i>Calidris alba</i> Pall.	Sanderling	+	+
148.			<i>Calidris ruficollis</i> Pall.	Red-necked Stint	+	-
149.			<i>Calidris minuta</i> Leisl.	Little Stint	+	+
150.			<i>Calidris temminckii</i> Leisl.	Temminck's Stint	+	+
151.			<i>Calidris subminuta</i> Midd.	Long-toed Stint	+	-
152.			<i>Calidris ferruginea</i> Pontop.	Curlew Sandpiper	+	+
153.			<i>Calidris alpina</i> L.	Dunlin	+	+
154.			<i>Limicola falcinellus</i> Pontop.	Broad-billed Sandpiper	+	+
155.			<i>Philomachus pugnax</i> L.	Ruff	+	+
156.			<i>Lymnocyptes minimus</i> Brunn.	Jack Snipe	+	+
157.			<i>Gallinago gallinago</i> L.	Common Snipe	+	+
158.			<i>Gallinago media</i> Lath.	Great Snipe	-	+
159.			<i>Gallinago stenura</i> Bp.	Pintail Snipe	+	-
160.			<i>Limnodromus semipalmatus</i> Blyth.	Asian Dowitcher	+	-
161.			<i>Scolopax rusticola</i> L.	Eurasian Woodcock	+	+
162.			<i>Limosa limosa</i> L.	Black-tailed Godwit	+	+
163.			<i>Limosa lapponica</i> L.	Bar-tailed Godwit	+	+
164.			<i>Numenius phaeopus</i> L.	Whimbrel	+	+
165.			<i>Numenius tenuirostris</i> Vieill.	Slender-billed Curlew	+	+
166.			<i>Numenius arquata</i> L.	Eurasian Curlew	+	+
167.			<i>Tringa erythropus</i> Pall.	Spotted Redshank	+	+
168.			<i>Tringa totanus</i> L.	Common Redshank	+	+
169.			<i>Tringa stagnatilis</i> Bechst.	Marsh Sandpiper	+	+
170.			<i>Tringa nebularia</i> Gunn.	Common Greenshank	+	+
171.			<i>Tringa ochropus</i> L.	Green Sandpiper	+	+
172.			<i>Tringa glareola</i> L.	Wood Sandpiper	+	+
173.			<i>Xenus cinereus</i> Guld.	Terek Sandpiper	+	+
174.			<i>Actitis hypoleucos</i> L.	Common Sandpiper	+	+
175.			<i>Arenaria interpres</i> L.	Ruddy Turnstone	+	+
176.			<i>Phalaropus lobatus</i> L.	Red-necked Phalarope	+	+
177.			<i>Phalaropus fulicarius</i> L.	Red Phalarope	+	-
178.	37.	Stercorariidae	<i>Stercorarius pomarinus</i> Temm.	Pomarine Jaeger	+	-
179.			<i>Stercorarius parasiticus</i> L.	Parasitic Jaeger	+	+
180.	38.	Laridae	<i>Larus ichthyaetus</i> Pall.	Pallas' Gull	+	+
181.			<i>Larus melanocephalus</i> Temm.	Mediterranean Gull	+	-
182.			<i>Larus minutus</i> Pall.	Little Gull	+	+
183.			<i>Larus ridibundus</i> L.	Black-headed Gull	+	+
184.			<i>Larus genei</i> Brem.	Slender-billed Gull	+	+
185.			<i>Larus canus</i> L.	Mew Gull	+	+
186.			<i>Larus cachinnans</i> (barabensis) Johansen	Baraba Gull	+	+
187.			<i>Larus cachinnans</i> (mongolicus) Sushkin	Mongolian Gull	+	-
188.			<i>Larus heuglini</i> Bree	Heuglin's Gull	+	-
189.			<i>Sterna nilotica</i> Gm.	Gull-billed Tern	+	+
190.			<i>Sterna caspia</i> Pall.	Caspian Tern	+	+
191.			<i>Sterna hirundo</i> L.	Common Tern	+	+
192.			<i>Sterna albifrons</i> Pall.	Little Tern	+	+

193.			<i>Chlidonias hybridus</i> Pall.	Whiskered Tern	+	-
194.			<i>Chlidonias niger</i> L.	Black Tern	+	+
195.			<i>Chlidonias leucopterus</i> Temm.	White-winged Tern	+	+
PTEROCLIDIFORMES						
196.	39.	Pteroclididae	<i>Pterocles orientalis</i> L.	Black-bellied Sandgrouse	+	+
197.			<i>Pterocles alchata</i> L.	Pin-tailed Sandgrouse	+	-
198.			<i>Syrrhaptes paradoxus</i> Pall.	Pallas's Sandgrouse	+	+
199.	40.	Columbidae	<i>Columba livia</i> (f. <i>domestica</i>) Gm.	Rock Dove	+	+
200.			<i>Columba oenas</i> L.	Stock Dove	+	+
201.			<i>Columba palumbus</i> L.	Common Wood Pigeon	+	+
202.			<i>Streptopelia decaocto</i> Friv.	Eurasian Collared Dove	+	+
203.			<i>Streptopelia turtur</i> L.	European Turtle Dove	+	+
204.			<i>Streptopelia orientalis</i> Lath.	Oriental Turtle Dove	+	+
205.			<i>Streptopelia senegalensis</i> Bonap.	Laughing Dove	+	+
CUCULIFORMES						
206.	41.	Cuculidae	<i>Cuculus canorus</i> L.	Common Cuckoo	+	+
207.			<i>C. saturatus</i> Blyth	Oriental Cuckoo	+	+
STRIGIFORMES						
208.	42.	Strigidae	<i>Otus scops</i> L.	European Scops Owl	+	+
209.			<i>Bubo bubo</i> L.	Eurasian Eagle Owl	+	+
210.			<i>Nyctea scandiaca</i> L.	Snowy Owl	+	+
211.			<i>Glaucidium passerinum</i> L.	Eurasian Pygmy Owl	+	-
212.			<i>Athene noctua</i> Scop.	Little Owl	+	-
213.			<i>Strix aluco</i> L.	Tawny Owl	-	+
214.			<i>Asio otus</i> L.	Long-eared Owl	+	+
215.			<i>Asio flammeus</i> Pontopp.	Short-eared Owl	+	+
216.			<i>Aegolius funereus</i> L.	Tengmalm's Owl	+	+
CAPRIMULGIFORMES						
217.	43.	Caprimulgidae	<i>Caprimulgus europaeus</i> L.	European Nightjar	+	+
APODIFORMES						
218.	44.	Apodidae	<i>Apus apus</i> L.	Common Swift	+	+
CORACIIFORMES						
219.	45.	Alcedinidae	<i>Alcedo atthis</i> L.	Common Kingfisher	+	+
220.	46.	Meropidae	<i>Merops persicus</i> Pall.	Blue-cheeked Bee-eater	+	-
221.			<i>Merops apiaster</i> L.	European Bee-eater	+	+
222.	47.	Coraciidae	<i>Coracias garrulus</i> L.	European Roller	+	+
223.	48.	Upupidae	<i>Upupa epops</i> L.	Eurasian Hoopoe	+	+
PICIFORMES						
224.	49.	Picidae	<i>Jynx torquilla</i> L.	Eurasian Wryneck	+	+
225.			<i>Dryocopus martius</i> L.	Black Woodpecker	-	+
226.			<i>Dendrocopos major</i> L.	Great Spotted Woodpecker	+	+
227.			<i>Dendrocopos minor</i> L.	Lesser Spotted Woodpecker	-	+
PASSERIFORMES						
228.	50.	Alaudidae	<i>Melanocorypha calandra</i> L.	Calandra Lark	+	+
229.			<i>Melanocorypha bimaculata</i> Ménétr.	Bimaculated Lark	+	-

230.			<i>Melanocorypha leucoptera</i> Pall.	White-winged Lark	+	+
231.			<i>Melanocorypha yeltoniensis</i> Forst.	Black Lark	+	+
232.			<i>Calandrella brachydactyla</i> Leisler	Greater Short-toed Lark	+	+
233.			<i>Calandrella rufescens</i> Vieillot	Lesser Short-toed Lark	+	+
234.			<i>Alauda arvensis</i> L.	Eurasian Skylark	+	+
235.			<i>Eremophila alpestris</i> L.	Horned Lark	+	+
236.	51.	Hirundinidae	<i>Riparia riparia</i> L.	Sand Martin	+	+
237.			<i>Hirundo rustica</i> L.	Barn Swallow	+	+
238.			<i>Delichon urbica</i> L.	Common House Martin	+	+
239.	52.	Motacillidae	<i>Anthus richardi</i> Vieill.	Richard's Pipit	+	-
240.			<i>Anthus campestris</i> L.	Tawny Pipit	+	+
241.			<i>Anthus hodgsoni</i>	Olive-backed Pipit	+	-
242.			<i>Anthus trivialis</i> L.	Tree Pipit	+	+
243.			<i>Anthus gustavi</i>	Pechora Pipit	+	-
244.			<i>Anthus pratensis</i> L.	Meadow Pipit	+	-
245.			<i>Anthus cervinus</i> Pall.	Red-troated Pipit	+	+
246.			<i>Motacilla flava</i> L.	Yellow Wagtail	+	+
247.			<i>Motacilla feldegg</i> (<i>melanogrisea</i>) Mich.	Black-headed Wagtail	+	-
248.			<i>Motacilla lutea</i> Gm.	Yellow-headed Wagtail	+	+
249.			<i>Motacilla citreolla</i> Pall.	Citrine Wagtail	+	+
250.			<i>Motacilla cinerea</i> Tunst.	Grey Wagtail	+	+
251.			<i>Motacilla alba</i> L.	White Wagtail	+	+
252.			<i>Motacilla personata</i> Gould.	Masked Wagtail	+	-
253.	53.	Bombycillidae	<i>Bombycilla garrulus</i> L.	Bohemian Waxwing	+	+
254.	54.	Prunellidae	<i>Prunella modularis</i> L.	Dunnock	+	+
255.			<i>Prunella montanella</i> Pall.	Siberian Accentor	+	+
256.			<i>Prunella atrogularis</i> Brandt	Black-throated Accentor	+	-
257.	55.	Turdidae	<i>Cercotrichas galactotes</i> Temm.	Rufous-tailed Scrub Robin	+	-
258.			<i>Erithacus rubecula</i> L.	European Robin	+	+
259.			<i>Luscinia luscinia</i> L.	Thrush Nightingale	+	+
260.			<i>Luscinia megarhynchos</i> Brehm.	Common Nightingale	+	+
261.			<i>Luscinia svecica</i> L.	Bluethroat	+	+
262.			<i>Tarsiger cyanurus</i> Pall.	Red-flanked Bluetail	+	-
263.			<i>Phoenicurus ochruros</i> Gm.	Black Redstart	+	-
264.			<i>Phoenicurus phoenicurus</i> L.	Common Redstart	+	+
265.			<i>Saxicola rubetra</i> L.	Whinchat	+	+
266.			<i>Saxicola torquata</i> L.	Siberian Stonechat	+	+
267.			<i>Oenanthe isabellina</i> Temm.	Isabelline Wheatear	+	+
268.			<i>Oenanthe oenanthe</i> L.	Northern Wheatear	+	+
269.			<i>Oenanthe pleschanka</i> Lepech	Pied Wheatear	+	+
270.			<i>Oenanthe deserti</i> Temm.	Desert Wheatear	+	-
271.			<i>Monticola saxatilis</i> L.	Rufous-tailed Rock Thrush	+	-
272.			<i>Zoothera dauma</i> Lath.	Scaly Thrush	-	+
273.			<i>Turdus merula</i> L.	Common Blackbird	+	+
274.			<i>Turdus ruficollis</i> (<i>atrogularis</i>)	Black-throated Thrush	+	-

			<i>Pall.</i>			
275.			<i>Turdus pilaris L.</i>	Fieldfare	+	+
276.			<i>Turdus philomelos Brehm.</i>	Song Thrush	+	+
277.			<i>Turdus iliacus L.</i>	Redwing	+	+
278.			<i>Turdus viscivorus L.</i>	Mistle Thrush	+	+
279.	56.	Sylviidae	<i>Cettia cetti Temm.</i>	Cetti's Warbler	+	+
280.			<i>Locustella naevia Bodd.</i>	Common Grasshopper Warbler	+	+
281.			<i>Locustella luscinioides Savi.</i>	Savi's Warbler	+	+
282.			<i>Acrocephalus melanopogon Temm.</i>	Moustached Warbler	+	-
283.			<i>Acrocephalus schoenobaenus L.</i>	Sedge Warbler	+	+
284.			<i>Acrocephalus agricola Jerd.</i>	Paddyfield Warbler	+	+
285.			<i>Acrocephalus dumetorum Blyth.</i>	Blyth's Reed Warbler	+	+
286.			<i>Acrocephalus palustris Bechst.</i>	Marsh Warbler	+	-
287.			<i>Acrocephalus scirpaceus Herm.</i>	European Reed Warbler	+	+
288.			<i>Acrocephalus arundinaceus L.</i>	Great Reed Warbler	+	+
289.			<i>Hippolais caligata Licht.</i>	Booted Warbler	+	+
290.			<i>Hippolais icterina Vieill.</i>	Isterine Warbler	+	-
291.			<i>Sylvia nisoria Bechst.</i>	Barred Warbler	+	+
292.			<i>Sylvia curruca L.</i>	Lesser Whitethroat	+	+
293.			<i>Sylvia communis Lath.</i>	Common Whitethroat	+	+
294.			<i>Sylvia borin Bodd.</i>	Garden Warbler	+	+
295.			<i>Sylvia atricapilla L.</i>	Blackcap	+	-
296.			<i>Phylloscopus trochiloides Sund.</i>	Greenish Warbler	+	+
297.			<i>Phylloscopus borealis Blas.</i>	Arctic Warbler	+	-
298.			<i>Phylloscopus proregulus Pall.</i>	Pallas's Leaf Warbler	+	-
299.			<i>Phylloscopus inornatus Blyth.</i>	Yellow-browed Warbler	+	-
300.			<i>Phylloscopus sibilatrix Bechst.</i>	Wood Warbler	+	-
301.			<i>Phylloscopus collybita Vieil.</i>	Chiffchaff	+	+
302.			<i>Phylloscopus trochilus L.</i>	Willow Warbler	+	+
303.			<i>Regulus regulus L.</i>	Goldcrest	+	+
304.	57.	Muscicapidae	<i>Muscicapa striata Pall.</i>	Spotted Flycatcher	+	+
305.			<i>Ficedula parva Bechst.</i>	Red-breasted Flycatcher	+	+
306.			<i>Ficedula hypoleuca Pall.</i>	European Pied Flycatcher	+	+
307.	58.	Timaliidae	<i>Panurus biarmicus L.</i>	Bearded Reedling	+	+
308.	59.	Aegithalidae	<i>Aegithalos caudatus L.</i>	Long-tailed Tit	-	+
309.	60.	Paridae	<i>Parus montanus Bold.</i>	Willow Tit	-	+
310.			<i>Parus ater L.</i>	Coal Tit	+	-
311.			<i>Parus caeruleus L.</i>	Blue Tit	+	-
312.			<i>Parus cyanus Pall.</i>	Azure Tit	+	+
313.			<i>Parus major L.</i>	Great Tit	+	+
314.	61.	Sittidae	<i>Sitta europaea L.</i>	Eurasian Nuthatch	-	+
315.	62.	Certhiidae	<i>Certhia familiaris L.</i>	Eurasian Treecreeper	-	+
316.	63.	Remezidae	<i>Remiz pendulinus L.</i>	Eurasian Penduline Tit	+	+
	64.	Oriolidae	<i>Oriolus oriolus L.</i>	Eurasian Golden Oriole	+	+
317.	65.	Laniidae	<i>Lanius isabellinus (phoenicuroides) Schalow.</i>	Red-tailed Shrike	+	+
318.			<i>Lanius collurio L.</i>	Red-backed Shrike	+	+
319.			<i>Lanius schach L.</i>	Long-tailed Shrike	+	+

320.			<i>Lanius minor</i> Gm.	Lesser Grey Shrike	+	+
321.			<i>Lanius excubitor</i> L.	Great Grey Shrike	+	+
322.	66.	Corvidae	<i>Garrulus glandarius</i> L.	Eurasian Jay	+	+
323.			<i>Perisoreus infaustus</i> L.	Siberian Jay	+	-
324.			<i>Pica pica</i> L.	Common Magpie	+	+
325.			<i>Nucifraga caryocatactes</i> L.	Spotted Nutcracker	+	+
326.			<i>Corvus monedula</i> L.	Western Jackdaw	+	+
327.			<i>Corvus frugilegus</i> L.	Rook	+	+
328.			<i>Corvus corone</i> L.	Carrion Crow	+	+
329.			<i>Corvus cornix</i> L.	Hooded Crow	+	+
330.			<i>Corvus corax</i> L.	Common Raven	+	+
331.	67.	Sturnidae	<i>Sturnus vulgaris</i> L.	Common Starling	+	+
332.			<i>Sturnus roseus</i> L.	Rose-coloured Starling	+	+
333.			<i>Acridotheres tristis</i> L.	Common Mynah	+	-
334.	68.	Passeridae	<i>Passer domesticus</i> L.	House Sparrow	+	+
335.			<i>Passer hispaniolensis</i> Temm.	Spanish Sparrow	+	-
336.			<i>Passer montanus</i> L.	Eurasian Tree Sparrow	+	+
337.			<i>Petronia petronia</i> L.	Rock Sparrow	-	+
338.	69.	Fringillidae	<i>Fringilla coelebs</i> L.	Common Chaffinch	+	+
339.			<i>Fringilla montifringilla</i> L.	Brambling	+	+
340.			<i>Serinus pusillus</i> Pall.	Red-fronted Serin	+	-
341.			<i>Carduelis chloris</i> L.	European Greenfinch	-	+
342.			<i>Carduelis carduelis</i> L.	European Goldfinch	+	+
343.			<i>Carduelis spinus</i> L.	Eurasian Siskin	+	+
344.			<i>Carduelis cannabina</i> L.	Common Linnet	+	-
345.			<i>Carduelis flavirostris</i> L.	Twite	+	+
346.			<i>Carduelis flammea</i> L.	Common Redpoll	+	+
347.			<i>Loxia leucoptera</i> Gm.	Two-barred Crossbill	+	-
348.			<i>Loxia curvirostra</i> L.	Common Crossbill	+	+
349.			<i>Leucosticte nemoricola</i> Hodgs.	Plain Mountain Finch	+	-
350.			<i>Rhodospiza obsoleta</i> Licht.	Desert Finch	+	-
351.			<i>Carpodacus erythrinus</i> Pall.	Common Rosefinch	+	+
352.			<i>Uragus sibiricus</i> Pall.	Long-tailed Rosefinch	+	+
353.			<i>Pyrrhula pyrrhula</i> L.	Eurasian Bullfinch	+	+
354.			<i>Pyrrhula cineracea</i> Cab.	Grey Bullfinch	+	-
355.			<i>Coccothraustes coccothraustes</i> L.	Hawfinch	+	+
356.	70.	Emberizidae	<i>Calcarius lapponicus</i> L.	Lapland Bunting	+	+
357.			<i>Plectrophenax nivalis</i> L.	Snow Bunting	+	+
358.			<i>Emberiza leucocephalos</i> Gm.	Pine Bunting	+	+
359.			<i>Emberiza citrinella</i> L.	Yellowhammer	+	+
360.			<i>Emberiza hortulana</i> L.	Ortolan Bunting	+	+
361.			<i>Emberiza buchanani</i> Blyth.	Grey-necked Bunting	+	-
362.			<i>Emberiza rustica</i> Pall.	Rustic Bunting	+	+
363.			<i>Emberiza pusilla</i> Pall.	Little Bunting	+	-
364.			<i>Emberiza aureola</i> Pall.	Yellow-breasted Bunting	+	-
365.			<i>Emberiza schoeniclus</i> L.	Common Reed Bunting	+	+
366.			<i>Emberiza pallasi</i> Cab.	Pallas's Reed Bunting	+	-
367.			<i>Emberiza bruniceps</i> Brandt.	Red-headed Bunting	+	+

368.			<i>Miliaria calandra L.</i>	Corn Bunting	+	-
MAMMALIA						
INSECTIVORA						
369.	73.	Erinaceidae	<i>Erinaceus europaeus L</i>	Northern Hedgehog	-	+
370.			<i>Hemiechinus auritus Gm.</i>	Long-eared Hedgehog	+	+
371.	74.	Soricidae	<i>Sorex minutus L.</i>	Pygmy Shrew	+	+
372.			<i>Sorex araneus L.</i>	Common Shrew	+	+
373.			<i>Sorex minutissimus Zimm.</i>	Least Siberian Shrew	+	-
374.			<i>Crocidura suaveolens Pall.</i>	Lesser White-toothed Shrew	+	+
375.			<i>Neomys fodiens Pennant.</i>	Eurasian Water Shrew (Northern Water Shrew)	+	-
CHIROPTERA						
376.	75.	Vespertilionidae	<i>Vespertilio murinus L.</i>	Parti-coloured Bat	-	+
377.			<i>Myotis dasycneme Boie</i>	Pond Bat	+	-
CARNIVORA						
378.	84.	Canidae	<i>Canis lupus L.</i>	Wolf	+	+
379.			<i>Vulpes corsac L.</i>	Corsac Fox	+	+
380.			<i>Vulpes vulpes L.</i>	Red Fox	+	+
381.			<i>Nyctereutes procyonoides Gray</i>	Raccoon Dog	-	+
382.	85.	Mustelidae	<i>Mustela erminea L</i>	Stoat	+	+
383.			<i>Mustela nivalis L.</i>	Least Weasel	+	+
384.			<i>Mustela eversmanni Less</i>	Steppe Polecat	+	+
385.			<i>Martes martes L</i>	Pine Marten	-	+
386.			<i>Meles meles L</i>	Badger	+	+
387.	86.	Felidae	<i>Lynx lynx L.</i>	Eurasian Lynx	-	+
ARTIODACTYLA						
388.	87.	Suidae	<i>Sus scrofa L</i>	Wild Boar	+	+
389.	88.	Cervidae	<i>Capreolus pygargus Pall.</i>	Roe Deer	-	+
390.			<i>Alces alces L</i>	Moose	-	+
391.	89.	Bovidae	<i>Saiga tatarica L.</i>	Saiga Antelope	+	+
RODENTIA						
392.	78.	Sciuridae	<i>Spermophilus pygmaeus Pall.</i>	Little Souslik	+	+
393.			<i>Spermophilus fulvus Licht</i>	Large-toothed Souslik	+	+
394.			<i>Spermophilus major Pall</i>	Russet Souslik	-	+
395.			<i>Marmota bobak Mull.</i>	Bobak Marmot	+	+
396.			<i>Sciurus vulgaris L</i>	Eurasian Red Squirrel	-	+
397.	79.	Sminthidae	<i>Sicista subtilis Pall</i>	Southern Birch Mouse	+	+
398.	80.	Allactagidae	<i>Allactaga major Kerr</i>	Great Jerboa	+	+
399.			<i>Allactaga elater Licht.</i>	Five-toed Jerboa	+	-
400.			<i>Alactagulus pumilio Kerr</i>	Lesser Five-toed Jerboa	-	+
401.			<i>Pygeretmus platiurus Licht.</i>	Fat-tailed Jerboa	-	+
402.	81.	Dipodidae	<i>Stylodipus telum Licht.</i>	Thick-tailed Three-toed Jerboa	-	+
403.	82.	Cricetidae	<i>Cricetulus eversmanni Brandt</i>	Eversmann's Hamster	+	+
404.			<i>Cricetulus migratorius Pall.</i>	Grey Hamster	+	-

405.			<i>Phodopus sungorus Pall</i>	Striped Hairy-footed Hamster	+	+
406.			<i>Cricetus cricetus L.</i>	Common Hamster	+	+
407.			<i>Ondatra zibethica L.*</i>	Muskrat	+	+
408.			<i>Clethrionomys rutilus Pall.</i>	Northern Red-backed Vole	+	-
409.			<i>Ellobius talpinus Pall.</i>	Northern Mole-vole	+	+
410.			<i>Lagurus lagurus Pall.</i>	Steppe Lemming	+	+
411.			<i>Arvicola terrestris L.</i>	European Water Vole	+	+
412.			<i>Microtus gregalis Pall</i>	Narrow-skulled Vole	+	+
413.			<i>Microtus arvalis Pall</i>	Common Vole	+	+
414.			<i>Microtus oeconomus Pall</i>	Root Vole	+	+
415.	83.	Muridae	<i>Apodemus sylvaticus L.</i>	Wood Mouse	+	+
416.			<i>Mus musculus L.</i>	House Mouse	+	+
417.			<i>Micromys minutus Pall.</i>	Harvest mouse	+	+
418.			<i>Rattus norvegicus Berk.</i>	Brown Rat (Common Rat)	+	+
LAGOMORPHA						
419.	76.	Leporidae	<i>Lepus europaeus Pall</i>	Brown Hare	+	+
420.			<i>Lepus timidus L.</i>	Arctic Hare (Mountain Hare)	+	+
421.	77	Ochotonidae	<i>Ochotona pusilla Pall.</i>	Steppe Pika	+	+

Table 2.) Checklist of threatened vertebrates of the world heritage site „Steppe and Lakes in Northern Kazakhstan“ and notes about their status

RK: Red List of the Republic of Kazakhstan

Categories RK: 1 - endangered; 2 - vulnerable; 3 - rare; 4 - indeterminate; 5 – out of danger

IUCN: Red List of Threatened Species (Hilton-Taylor, C. (comp.) 2000. *2000 IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland and Cambridge, UK)

Categories IUCN: CR – critically endangered; EN – endangered; VU – vulnerable; LR – lower risk; DD – data deficient (detailed see below).

KR: Korgalzhyn state nature reserve

NR: Naursum state nature reserve

Status: B – breeding; M – migrating; V – vagrant

№	Scientific name	English name	Red list RK	Red list IUCN	Status	
					KR	NR
OSTEICHTHYES						
1.	<i>Cyprinus carpio</i>	Common Carp	-	DD	+	+
REPTILIA						
2.	<i>Emys orbicularis</i>	European Pond Turtle	-	LR/nt	-	+
3.	<i>Vipera ursinii</i>	Meadow Viper (Orsnini's Viper)	-	EN A1c+2c	+	+
AVES						
4.	<i>Phalacrocorax pygmeus</i>	Pygmy Cormorant	-	LR/nt	V	-
5.	<i>Pelecanus onocrotalus</i>	Eastern White Pelican	1	-	V	B;M
6.	<i>Pelecanus crispus</i>	Dalmatian Pelican	2	VU A2c+3c	B;M	B;M
7.	<i>Ardeola ralloides</i>	Squacco Heron	2	-	-	V
8.	<i>Egretta garzetta</i>	Little Egret	3	-	V	V
9.	<i>Ciconia nigra</i>	Black Stork	3	-	V	-
10.	<i>Plegadis falcinellus</i>	Glossy Ibis	2	-	V	V
11.	<i>Platalea leucorodia</i>	Eurasian Spoonbill	2	-	B;M	B
12.	<i>Phoenicopterus ruber</i>	Greater Flamingo	2	-	B;M	V
13.	<i>Cygnus columbianus bewickii</i>	Bewick's Swan	5	-	V	M
14.	<i>Cygnus cygnus</i>	Whooper Swan	2	-	B;M	B;M
15.	<i>Anser erythropus</i>	Lesser White-fronted Goose	?	VU A2bcd+3bcd	M	M
16.	<i>Branta ruficollis</i>	Red-breasted Goose	2	VU B1ab (iii)	M	M
17.	<i>Aythya nyroca</i>	Ferruginous Duck	3	LR/nt	B;M	B?;M
18.	<i>Melanitta fusca</i>	Velvet Scoter	3	-	M	M
19.	<i>Oxyura leucocephala</i>	White-headed Duck	1	EN A2bcde	B;M	B;M
20.	<i>Haliaeetus leucoryphus</i>	Pallas's Fish Eagle	1	VU C1	V	V
21.	<i>Haliaeetus albicilla</i>	White-tailed Eagle	2	LR/nt	M	B;M
22.	<i>Aegypius monachus</i>	Eurasian Black Vulture	-	LR/nt	M	V
23.	<i>Circaetus gallicus</i>	Short-toed Eagle	2	-	V	V
24.	<i>Circus macrourus</i>	Pallid Harrier	-	LR/nt	B;M	B;M

25.	<i>Aquila clanga</i>	Greater Spotted Eagle	-	VU C1	M	M
26.	<i>Aquila nipalensis</i>	Steppe Eagle	5	-	B;M	B
27.	<i>Aquila heliaca</i>	Imperial Eagle	3	VU C1	M	B;M
28.	<i>Aquila chrysaetos</i>	Golden Eagle	3	-	M	B;M
29.	<i>Hieraaetus pennatus</i>	Booted Eagle	3	-	V	-
30.	<i>Pandion haliaetus</i>	Osprey	1	-	M	M
31.	<i>Falco naumanni</i>	Lesser Kestrel	-	VU A2bce+3b ce	B;M	B;M
32.	<i>Falco peregrinus</i>	Peregrine	1	-	M	M
33.	<i>Falco cherrug</i>	Saker Falcon	1	-	M	B
34.	<i>Falco rusticolus</i>	Gyrfalcon	3	-	V	V
35.	<i>Crex crex</i>	Corn Crake	-	LR/nt	B?;M	B?;M
36.	<i>Grus grus</i>	Common Crane	3	-	B;M	B;M
37.	<i>Grus leucogeranus</i>	Siberian Crane	1	CR A3cde, C1	V	M
38.	<i>Anthropoides virgo</i>	Demoiselle Crane	5	-	B;M	B;M
39.	<i>Tetrax tetrax</i>	Little Bustard	2	LR/nt	B?;M	B
40.	<i>Chlamydotis undulata</i>	Houbara Bustard	2	VU A2bcd+3b cd	V	-
41.	<i>Otis tarda</i>	Great Bustard	1	VU A3c	V	B
42.	<i>Glareola nordmanni</i>	Black-winged Pratincole	-	DD	B;M	-
43.	<i>Vanellus gregarius</i>	Sociable Lapwing	1	CR A3bc	B;M	B;M
44.	<i>Limnodromus semipalmatus</i>	Asian Dowitcher	4	LR/nt	V	-
45.	<i>Numenius tenuirostris</i>	Slender-billed Curlew	1	CR C2a (ii), D	V	V
46.	<i>Larus ichthyaetus</i>	Pallas's Gull	2	-	B;M	B;M
47.	<i>Pterocles orientalis</i>	Black-bellied Sandgrouse	3	-	M	V
48.	<i>Pterocles alchata</i>	Pin-tailed Sandgrouse	3	-	V	-
49.	<i>Syrrhaptes paradoxus</i>	Pallas's Sandgrouse	4	-	B?;M	B?;V
50.	<i>Bubo bubo</i>	Eurasian Eagle Owl	2	-	M	B
MAMMALIA						
51.	<i>Myotis dasycneme</i>	Pond Bat	-	VU A2c	+	-
52.	<i>Vulpes corsac</i>	Corsac Fox	-	VU C1	+	+
53.	<i>Saiga tatarica</i>	Saiga Antelope	-	CR A2a	+	+
54.	<i>Marmota bobak</i>	Bobak Marmot	-	LR/cd	+	+
55.	<i>Sicista subtilis</i>	Southern Birch Mouse	-	LR/nt	+	+
56.	<i>Cricetulus migratorius</i>	Grey Hamster	-	LR/nt	+	-
57.	<i>Ochotona pusilla</i>	Steppe Pika	-	VU A1cd C2a	+	+

IUCN categories (detailed):
CRITICALLY ENDANGERED (CR)

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

An observed, estimated, inferred or suspected reduction of at least 80% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:
direct observation

an index of abundance appropriate for the taxon

a decline in area of occupancy, extent of occurrence and/or quality of habitat

actual or potential levels of exploitation

the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

A reduction of at least 80%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 100 km² or area of occupancy estimated to be less than 10 km², and estimates indicating any two of the following:

Severely fragmented or known to exist at only a single location.

Continuing decline, observed, inferred or projected, in any of the following:

extent of occurrence

area of occupancy

area, extent and/or quality of habitat

number of locations or subpopulations

number of mature individuals

Extreme fluctuations in any of the following:

extent of occurrence

area of occupancy

number of locations or subpopulations

number of mature individuals

C) Population estimated to number less than 250 mature individuals and either:

An estimated continuing decline of at least 25% within three years or one generation, whichever is longer or

A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals)

all individuals are in a single subpopulation

D) Population estimated to number less than 50 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or three generations, whichever is the longer.

ENDANGERED (EN)

A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

An observed, estimated, inferred or suspected reduction of at least 50% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

direct observation

an index of abundance appropriate for the taxon

a decline in area of occupancy, extent of occurrence and/or quality of habitat

actual or potential levels of exploitation

the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

A reduction of at least 50%, projected or suspected to be met within the next 10 years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d), or (e) above.

B) Extent of occurrence estimated to be less than 5000 km² or area of occupancy estimated to be less than 500 km², and estimates indicating any two of the following:

Severely fragmented or known to exist at no more than five locations.

Continuing decline, inferred, observed or projected, in any of the following:

extent of occurrence

area of occupancy

area, extent and/or quality of habitat

number of locations or subpopulations

number of mature individuals

Extreme fluctuations in any of the following:

extent of occurrence

area of occupancy

number of locations or subpopulations

number of mature individuals

C) Population estimated to number less than 2500 mature individuals and either:

An estimated continuing decline of at least 20% within five years or two generations, whichever is longer, or

A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

severely fragmented (i.e. no subpopulation estimated to contain more than 250 mature individuals)

all individuals are in a single subpopulation.

D) Population estimated to number less than 250 mature individuals.

E) Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or five generations, whichever is the longer.

VULNERABLE (VU)

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the following criteria (A to E):

A) Population reduction in the form of either of the following:

An observed, estimated, inferred or suspected reduction of at least 20% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:

direct observation

an index of abundance appropriate for the taxon

a decline in area of occupancy, extent of occurrence and/or quality of habitat

actual or potential levels of exploitation

the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.

A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

B) Extent of occurrence estimated to be less than 20,000 km² or area of occupancy estimated to be less than 2000 km², and estimates indicating any two of the following:

Severely fragmented or known to exist at no more than ten locations.

Continuing decline, inferred, observed or projected, in any of the following:

extent of occurrence

area of occupancy

area, extent and/or quality of habitat

number of locations or subpopulations

number of mature individuals

Extreme fluctuations in any of the following:

extent of occurrence

area of occupancy

number of locations or subpopulations

number of mature individuals

C) Population estimated to number less than 10,000 mature individuals and either:

An estimated continuing decline of at least 10% within 10 years or three generations, whichever is longer, or

A continuing decline, observed, projected, or inferred, in numbers of mature individuals and population structure in the form of either:

severely fragmented (i.e. no subpopulation estimated to contain more than 1000 mature individuals)

all individuals are in a single subpopulation

D) Population very small or restricted in the form of either of the following:

Population estimated to number less than 1000 mature individuals.

Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km²) or in the number of locations (typically less than five). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

E) Quantitative analysis showing the probability of extinction in the wild is at least 10% within 100 years.

LOWER RISK (LR)

A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into three subcategories:

Conservation Dependent (cd). Taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.

Near Threatened (nt). Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

Least Concern (lc). Taxa which do not qualify for Conservation Dependent or Near Threatened.

DATA DEFICIENT (DD)

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution is lacking. Data Deficient is therefore not a category of threat or Lower Risk. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate. It is important to make positive use of whatever data are available. In many cases great care should be exercised in choosing between DD and threatened status. If the range of a taxon is suspected to be relatively circumscribed, if a considerable period of time has elapsed since the last record of the taxon, threatened status may well be justified.

Table 3.) List of the Flora Of the clustured, natural World Heritage Site “Saryarka - Steppe and Lakes in Northern Kazakhstan”

KR: Korgalzhyn state nature reserve

NR: Naursum state nature reserve

* - cultural species

Scientific names are given after S.K. Tsherepanov Higher Plants of Russia and adjacent states (territory of the former Sowjetunion) St. Petersburg; 1995; 990 pages.

№	Family Name	Species Name	KR	NR	
PTERIDOPHYTA					
FILICALES					
	1.	Dryopteridaceae Ching	Dryopteris cristata (L.) S.F.Gray	-	+
	2.	Onocleaceae Pichi Sermolli	Matteuccia struthiopteris (L.) Tod.	-	+
	3.	Thelypteridaceae Pichi Sermolli	Thelypteris palustris Schott.	-	+
	4.	Marsileaceae R. Br.	Marsilia aegyptiaca Willd.	-	+
			M. strigosa Willd.	+	+
EQUISETALES					
	5.	Equisetaceae Rich.	Equisetum hyemale L.	-	+
			E. fluviatile L.	-	+
			E. pratense Ehrh.	-	+
			E. ramosissimum Desf.	-	+
			E. sylvaticum L.	-	+
GYMNOSPERMAE					
CONIFERALES					
	6.	Pinaceae Lindl.	Pinus sylvestris L.	-	+
	7.	Cupressaceae Rich & Bartl	Juniperus communis L.	-	+
			J. sabina L.	-	+
GNETALES					
	8.	Ephedraceae Dumort	Ephedra distachya L.	+	+
ANGIOSPERMAE					
CLASS MONOCOTYLEDONEAE					
	9.	Typhaceae Juss.	Typha angustifolia L.	+	+
			T. latifolia L.	+	+
			T. laxmanni Lepech.	+	+
	10.	Sparganiaceae Rudolphi.	Sparganium erectum L. (subsp. microcarpum (Neim.) Domin	-	+
			S. stoloniferum (Graebn.) Buch.-Ham & Juz.	+	+
	11.	Potamogetonaceae Dumort.	Potamogeton crispus L.	+	-
			P. filiformis Pers.	-	+
			P. friesii Rupr.	-	+
			P. lucens L.	+	+
			P. macrocarpus Dobroch.	+	-
			P. natans L.	-	+
			P. obtusifolius Mert. & Koch	-	+

			<i>P. pectinatus</i> L.	+	+
			<i>P. perfoliatus</i> L.	+	+
			<i>P. pusillus</i> L.	+	-
12.	Ruppiaceae Hutch.		<i>Ruppia maritima</i> L.	+	-
13.	Zanichelliaceae Dumort.		<i>Althenia filiformis</i> F. Subsp orientalis Tzvel.	+	-
			<i>Zannichelia palustris</i> L.	+	+
14.	Najadaceae Juss.		<i>Najas marina</i> L.	+	+
15.	Juncaginaceae Rich		<i>Triglochin maritimum</i> L.	+	-
			<i>T. palustre</i> L.	+	+
16.	Alismataceae Vent.		<i>Alisma gramineum</i> Lej.	+	+
			<i>A. plantago-aquatica</i> L.	+	+
			<i>Damasonium alisma</i> Mill.	+	+
			<i>Sagittaria sagittifolia</i> L.	+	+
17.	Butomaceae Rich.		<i>Butomus umbellatus</i> L.	+	+
18.	Hydrocharitaceae Juss.		<i>Stratiotes aloides</i> L.	+	-
19.	Poaceae Barnhart.		<i>Achnatherum splendens</i> (Trin.) Nevski	+	+
			<i>Aeluropus intermedius</i> Regel.	+	-
			<i>A. littoralis</i> (Gouan) Parl.	-	+
			<i>Agropyron cristatum</i> (L.) Beauv.*	-	+
			<i>A. desertorum</i> (Fisch ex Link) Shult.	-	+
			<i>A. fragile</i> (Roth) P.Candargy*	-	+
			<i>A. pectinatum</i> (Bieb) Beauv.*	+	+
			<i>Agrostis gigantea</i> Roth.*	+	+
			<i>Alopecurus aequalis</i> Sobol.	-	+
			<i>A. arundinaceus</i> Poir.*	+	+
			<i>A. pratensis</i> L.*	-	+
			<i>Beckmannia eruciformis</i> (L.) Host.*	+	-
			<i>Bromopsis inermis</i> (Leyss.) Holub.*	+	+
			<i>Calamagrostis canescens</i> (Web). Roth	-	+
			<i>C. epigeios</i> (L.) Roth	+	+
			<i>Catobrosella humilis</i> (Bieb.) Tzvel.	-	+
			<i>Cleistogenes squarrosa</i> (Trin.) Keng	-	+
			<i>Crypsis aculeata</i> (L.) Ait.	+	+
			<i>C. alopecuroides</i> (Pill. & Mitt.) Schrad.	-	+
			<i>C. schoenoides</i> (L.) Lam	-	+
			<i>Elytrigia repens</i> (L.). Nevski*	+	+
			<i>Eragrostis collina</i> Trin.	-	+
			<i>Eremopoa songarica</i> (Schrenk) Roschev.	-	+
			<i>Eremopyrum orientale</i> (L.) Jaub. & Spach.	+	-
			<i>Eremopyrum triticeum</i> (Gaertn.) Nevski	+	+
			<i>Festuca beckeri</i> (Hack.) Trautv.	-	+
			<i>F. gigantea</i> (L.) Vill.*	-	+
			<i>F. orientalis</i> Kerner.*	-	+
			<i>F. pratensis</i> Huds*	-	+
			<i>F. valesiaca</i> Gaudin	+	+
			<i>Helictotrichon desertorum</i> (Less.)	-	+

			Nevski		
			Hierochloë odorata (L.) Beauv.	+	+
			H. repens (Host.) Beauv. (H. stepporum Smirn.)	-	+
			Hordeum bogdanii Wilensky.	+	+
			H. brevisubulatum (Trin.) Link.	-	+
			Koeleria glauca. (Spreng.) DC	-	+
			K. cristata (L.) Pers.	+	+
			K. sclerophylla P. Smirn.	-	+
			Leymus akmolinensis (Drob.) Tzvel.	+	-
			L. angustus (Trin.) Pilg.	-	+
			L. multicaulis (Kar & Kir.) Tzvel.	-	+
			L. paboanus (Claus.) Pilg.	+	+
			L. racemosus (Lam.) Tzvel.*	-	+
			L. ramosus (Lam.) Tzvel.	+	+
			L. secalinus (Georgi.) Tzvel. (Elymus dasystachys Trin.)	-	+
			Phalaroides arundinacea (L.) Rauschert.*	-	+
			Phleum phleoides (L.) Karst.*	-	+
			P. pratense L.*	-	+
			Phragmites australis (Cav.) Trin.	+	+
			Poa angustifolia L.*	+	+
			P. bulbosa L.*	+	+
			P. palustris L.	-	+
			P. pratensis L.	+	+
			P. stepposa (Kryl.) Roshev.	+	+
			Psathyrostachys juncea (Fisch.) Nevski*	+	+
			Puccinellia dolicholepis V.Krecz.	+	+
			P. gigantea (Grossh.) Grossh.	+	-
			P. hauptiana V.Krecz.	-	+
			P. tenuiflora (Turcz) Scribn. & Merr.	+	+
			Roegneria canina (L.) Nevski	-	+
			Scolochloa festucaceae (Willd.) Link	-	+
			Setaria pumila (Poir.) Shult.	-	+
			S. viridis (L.) Beauv.	+	-
			Stipa capillata L.	+	+
			S. dasphylla (Lindem.) Trautv.	-	+
			S. korshinskyi Roshev.	-	+
			S. lessingiana Trin & Rupr.	+	+
			S. pennata L.	-	+
			S. sareptana A. Beck.	+	+
			S. tirsia Stev.	-	+
			S. zalesskii Wilensky	+	+
20.	Cyperaceae Juss.		Juncellus pannonicus (Jacq.) Clarke	-	+
			Bolboschoenus maritimus (L.) Palla	+	+
			Carex acuta L (C. fuscovaginata Kuk).	+	+
			C. acutiformis Ehrh.	-	+
			C. buxbaumii Wahlenb.	-	+
			C. diandra Schrank	-	+

			<i>C. diluta</i> Bieb.	-	+
			<i>C. disticha</i> Huds.	-	+
			<i>C. elongata</i> L.	-	+
			<i>C. melanostachya</i> Bieb. & Willd.	+	+
			<i>C. omskiana</i> Meinsh.	-	+
			<i>C. praecox</i> Schreb.	+	+
			<i>C. pseudocyperus</i> L.	-	+
			<i>C. riparia</i> Curt.	-	+
			<i>C. secalina</i> Willd. & Wahlenb	-	+
			<i>C. stenophylla</i> Walenb. (<i>C. uralensis</i> Clarke)	+	+
			<i>C. supina</i> Willd. & Wahlenb.	-	+
			<i>C. vesicaria</i> L.	-	+
			<i>C. vulpina</i> L.	-	+
			<i>Eriophorum polystachion</i> L	-	+
			<i>Eleocharis palustris</i> (L.) Roem. & Schult. (<i>E. kasakstanica</i> Zinserl.)	+	+
			<i>E. uniglumis</i> (Link.) Schult.	+	+
			<i>Scirpus lacustris</i> L.	+	+
			<i>S. tabernaemontani</i> C. C. Gmel.	+	-
			<i>Trichophorum pumilum</i> (Vahl.) Schinz. & Tell.	-	+
21.	Lemnaceae S.F.Gray		<i>Lemna minor</i> L.	-	+
			<i>Lemna trisulca</i> L.	+	+
22.	Juncaceae Juss.		<i>Juncus ambiguus</i> Guss.	+	-
			<i>J. atratus</i> Krock.	+	+
			<i>J. bufonius</i> L.	+	+
			<i>J. compressus</i> Jacq	+	+
			<i>J. gerardii</i> Loisel.	+	+
			<i>J. sphaerocarpus</i> Nees	+	-
23.	Alliaceae J. Agardh		<i>Allium angulosum</i> L.	-	+
			<i>A. caesium</i> Schrenk	+	-
			<i>A. coreuleum</i> Pall.	-	+
			<i>A. decipiens</i> Fisch. & Schult	+	+
			<i>A. delicatulum</i> Siev.ex Schult &Schult.fil	+	-
			<i>A. flavescens</i> Bess.	+	+
			<i>A. globosum</i> Bieb & Redoute	-	+
			<i>A. lineare</i> L.*	+	+
			<i>A. pallasii</i> Murr.	+	-
			<i>A. praescissum</i> Reichenb.	+	+

	24.	Asparagaceae Juss.	Asparagus brachyphyllus Turcz.	+	+
			A. inderiensis Blum & Pacz (A. kasakstanicus Iljin).	-	+
			A. neglectus Kar & Kir	+	-
			A. officinalis L	+	+
	25.	Liliaceae Juss.	Fritillaria meleagroides Patrin.& Shult.	+	+
			Gagea bulbifera (Pall.) Salisb.	+	+
			G. pusilla (F.W.Schmidt) Schult.	+	+
			Ornithogalum fisherianum Krasch.	-	+
			Tulipa biebersteiniana Schult.	-	+
			T. biflora Pall.	+	+
			T. patens Agardh.& Shult.	+	+
			T. schrenkii Regel	+	+
	26.	Ixioliriaceae Nakai	Ixiolirion tataricum (Pall). Schult.& Schult.fil.	+	-
	27.	Iridaceae Juss.	Iris pumila L.	-	+
			I. humilis Georgi (I. flavissima Pall.)	-	+
			I. halophila Pall.	+	+
			I. scariosa Willd. & Link.	+	-
			I. sibirica L.	-	+
	28.	Orchidaceae Juss.	Malaxis monophyllos (L.) Sw.	-	+
			Dactylorhiza majalis (Reichenb.) P.F.Hunt. (Orchis latifolia L.)	-	+
CLASS DICOTYLEDONIAE					
	29.	Salicaceae Mirb.	Populus alba L.	-	+
			P. canescens (Ait.) Smith	-	+
			P. tremula L.	-	+
			Salix caprea L.	-	+
			S. caspica Pall.	-	+
			S. cinerea L.	-	+
			S. pentandra L.	-	+
			S. rosmarinifolia Pall. (S.sibirica Pall.)	-	+
			S. triandra L.	+	+
			S. vinogradovii A.Skvorts.	+	-
			S. viminalis L.	-	+
	30.	Betulaceae S.F. Gray	Betula kirghisorum Sav.-Rycz.	-	+
			B. pendula Roth	-	+
			B. pubescens Ehrh.	-	+
	31.	Cannabaceae Endl.	Humulus lupulus L.	-	+
	32.	Urticaceae Juss.	Urtica dioica L.	+	+
	33.	Santalaceae R. Br.	Thesium arvense Horvatovsky	-	+
	34.	Polygonaceae Juss.	Atraphaxis frutescens (L.) C.Koch.	+	+
			Fallopia convolvulus (L.) A.Löve. (Polygonum convolvulus L.)	+	-
			F. dumetorum (L.) Holub. (Polygonum dumetorum L)	-	+
			Persicaria amphibia (L.) S. F. Gray (Polygonum amphibium L.).	+	+
			P. hydropiper (L.) Spach (Polygonum hydropiper L.)	-	+

			P. lapathifolia (L.) S.F. Gray (Polygonum lapathifolium L.)	-	+
			P. maculata (Rafin.) A. & D.Löve (Polygonum persicaria L.)	-	+
			P. scabra (Moench.) Mold (Polygonum scabrum Moench.)	-	+
			Polygonum argyrocoleon Stend. & G. Kuntze	-	+
			P. aviculare L	+	+
			P. patulum Bieb.	+	+
			P. pseudoarenarium Klok. (P. junceum Ledeb.)	-	+
			P. salsugenum Bieb.	-	+
			Rumex acetosa L.*	-	+
			R. confertus Wild.	-	+
			R. crispus L.	+	+
			R. maritimus L.	-	+
			R. marshallianus Reichenb.	+	+
			R. stenophyllus Ledeb.	+	+
			R. thyrsoflorus Fingerh.*	-	+
			R. ucranicus Fisch.& Spreng	+	-
35.	Chenopodiaceae Vent.		Anabasis aphylla L.	-	+
			A. cretacea Pall.	-	+
			A. salsa (C.A.Mey) Benth.	+	+
			Atriplex auscherii Moq.	+	+
			A. calotheca (Rafn.) Fries (A. hastata L.)	+	+
			A. cana C.A.Mey.	+	+
			patens (Litv.) Iljin (A. laevis C.A.Mey)	+	-
			A. patula L.	-	+
			A. sagittata Borkh. (A. nitens Schkuchr.)	+	+
			A. tatarica L.	+	-
			Bassia hirsuta (L.) Aschers.	+	+
			B. hyssopifolia (Pall.) O. Kuntze.	+	+
			B. sedoides (Pall.) Aschers.	+	+
			Camphorosma lessingii Litv.	+	+
			C. monspeliaca L.	+	+
			Ceratocarpus arenarius L.	+	+
			Chenopodium acuminatum Willd.	-	+
			Ch. album L.	+	-
			Ch. chenopodioides (L.) Aell.	+	+
			Ch. glaucum L.	-	+
			Ch. rubrum L.	-	+
			Ch. murale L.	-	+
			Ch. urbicum L.	+	+
			Climacoptera brachiata (Pall.) Botsch.		+
			C. crassa (Bieb.) Botsch.	+	-
			Corispermum declinatum Steph.& Ilyin	-	+

			<i>C. hyssopifolium</i> L.	-	+
			<i>C. orientale</i> Lam.	-	+
			<i>Halimione pedunculata</i> (L.) Aell. (<i>Atriplex pedunculata</i> L.)	+	+
			<i>Halimione verrucifera</i> (Bieb.) Aell. (<i>Atriplex verrucifera</i> Bieb.)	+	+
			<i>Halocneum strobilaceum</i> (Pall.) Bieb.	+	+
			<i>Halogeton glomeratus</i> C.A.Mey	+	-
			<i>Kalidium foliatum</i> (Pall.) Moq.	+	+
			<i>Kochia laniflora</i> (S.G.Gmel.) Borb.	-	+
			<i>K. prostrata</i> (L.) Schrad.*	+	+
			<i>K. scoparia</i> (L.) Schrad.	+	-
			<i>Nanophyton erinaceum</i> (Pall.) Bunge	+	-
			<i>Ofaiston monandrum</i> (Pall.) Moq.	+	+
			<i>Petrosimonia brachyphylla</i> (Bunge) Iljin	+	-
			<i>P. glaucescens</i> (Bunge) Iljin	-	+
			<i>P. litwinowi</i> Korsh.	+	+
			<i>P. oppositifolia</i> (Pall.) Litv.	+	+
			<i>P. triandra</i> (Pall.) Simonk.	+	+
			<i>Salicornia europaea</i> L. (<i>S. herbacea</i> L.)	+	+
			<i>Salsola australis</i> R. Br. (<i>S. ruthenica</i> Iljin)	-	+
			<i>S. collina</i> Pall.	+	+
			<i>S. foliosa</i> (L.) Schrad.	+	+
			<i>S. mutica</i> C.A. Mey. (<i>S. acutifolia</i> (Bunge) Botsch)	+	+
			<i>S. soda</i> L.	-	+
			<i>S. tamariscina</i> Pall.	+	-
			<i>Suaeda acuminata</i> (C.A.Mey) Moq.	+	-
			<i>Suaeda confusa</i> Iljin	+	+
			<i>S. corniculata</i> (C.A.Mey) Bunge	-	+
			<i>S. linifolia</i> Pall.	+	+
			<i>S. physophora</i> Pall.	+	+
			<i>S. prostrata</i> Pall.	+	+
			<i>S. salsa</i> (L.) Pall.	+	-
36.	Amaranthaceae Juss.		<i>Amaranthus albus</i> L.	+	-
			<i>A. blitoides</i> S.Wats.	-	+
			<i>A. retroflexus</i> L.	+	+
37.	Caryophyllaceae Juss.		<i>Arenaria koriniana</i> Fisch. & Fenzl.	+	+
			<i>A. longifolia</i> Bieb.	+	+
			<i>Dianthus acicularis</i> Fisch. & Ledeb.	-	+
			<i>D. borbasii</i> Vandas	-	+
			<i>D. campestris</i> Bieb.	-	+
			<i>D. leptopetalus</i> Willd.	+	+
			<i>Gypsophila altissima</i> L.	-	+
			<i>G. muralis</i> L.	-	+
			<i>G. paniculata</i> L.	+	+
			<i>G. patrinii</i> Ser.	-	+
			<i>G. perfoliata</i> L. (<i>G. trichotoma</i> Wend.)	-	+

			<i>G. stepposa</i> Klok.	-	+
			<i>Herniaria polygama</i> J. Gay.	-	+
			<i>Lychnis chalcedonica</i> L.	-	+
			<i>Melandrium album</i> (Mill.) Garcke	-	+
			<i>M. viscosa</i> (Schreb) Schintz.	+	+
			<i>Silene chlorantha</i> (Willd.) Ehrh.	+	+
			<i>S. dichotoma</i> Ehrh.	-	+
			<i>S. media</i> (Litv.) Kleop.	+	+
			<i>S. multiflora</i> (Ehrh.) Pers.	+	+
			<i>S. parviflora</i> (Ehrh.) Pers.	-	+
			<i>S. procumbens</i> Murr.	+	+
			<i>S. wolgensis</i> (Hornem.) Bess.& Spreng	+	+
			<i>Spergularia diandra</i> (Guss) Boiss.	+	-
			<i>S. salina</i> J. & C. Presl.	+	+
			<i>S. segetalis</i> (L.) G. Don fil. (<i>Alsine segetalis</i> L.)	+	-
			<i>Stellaria graminea</i> L.	+	+
			<i>Steris viscaria</i> (L.) Rafin (<i>Viscaria viscosa</i> (Scop.) Aschars.)	-	+
38.	Nymphaeaceae Salisb.		<i>Nuphar lutea</i> (L.) Smith	+	-
			<i>Nymphaea candida</i> J. Presl.	+	+
39.	Ceratophyllaceae S.F. Gray		<i>Ceratophyllum demersum</i> L.	+	-
			<i>C. submersum</i> L.	+	+
40.	Ranunculaceae Juss.		<i>Adonis wolgensis</i> Stev.	+	+
			<i>Anemone sylvestris</i> L.	-	+
			<i>Batrachium circinatum</i> (Sibth.) Spach. (<i>B. foeniculaceum</i> (Gilib.) V.Krecz.)	+	-
			<i>B. trichophyllum</i> (Chaix.) Bosch. (<i>B. divaricatum</i> (Schrank.) Schur.)	+	-
			<i>Ceratocephalus testiculata</i> (Crantz) Bess. (<i>C. orthoceras</i> DC.)	+	+
			<i>Clematis orientalis</i> L.	-	+
			<i>Myosurus minimus</i> L.	+	+
			<i>Pulsatilla flavescens</i> (Zucc.)Juz.	-	+
			<i>P. multifida</i> (G. Pritz.) Juz.	-	+
			<i>P. patens</i> (L.) Mill.	+	-
			<i>Ranunculus pedatus</i> Waldst. & Kit.	+	+
			<i>R. polyanthemos</i> L.	-	+
			<i>R. polyphyllus</i> Waldst. & Kit. ex Willd.	-	+
			<i>R. polyrhizos</i> Steph.	+	+
			<i>R. repens</i> L.	+	+
			<i>R. sceleratus</i> L.	+	+
			<i>Thalictrum flavum</i> L.	+	+
			<i>T. minus</i> L.	-	+
			<i>T. simplex</i> L.	-	+
41.	Fumariaceae DC.		<i>Fumaria vaillantii</i> Loisel.	+	-
42.	Brassicacea Burnett		<i>Alyssum turkestanicum</i> Regel & Schmalch (<i>A. desertorum</i> Stapf.)	+	+

		A. lenense Adams.	-	+
		A. tortuosum Waldst. & Kit. ex Willd.	-	+
		Arabidopsis parvula (Schrenk) O.E.Schulz.	+	-
		A. thaliana (L.) Heynh.	-	+
		A. toxophylla (Bieb.) N. Busch.	+	+
		Arabis gerardii (Bess.) Koch (A. hirsuta (L.) Scop.).	-	+
		Barbarea stricta Andrz.	-	+
		Brassica campestris L.*	-	+
		Brassica cretica Lam. (B. elongata Ehrh.)	-	+
		Camelina microcarpa Andrz.	+	+
		Capsella bursa-pastoris (L.) Medik.	+	+
		Cardaria pubescens (C.A.Mey.) Jarm.	+	-
		Chorispora tenella (Pall.) DC.	+	+
		Conringia orientalis (L.) Dumort.	-	+
		Descurainia sophia (L.) Webb & Prantl	+	+
		Draba nemorosa L.	-	+
		Erysimum cheiranthoides L.	+	+
		E. hieracifolium L. (E. Marschallianum Andrz.)	+	-
		E. leucanthemum (Steph.) B. Fedtsch.	+	+
		E. sisymbrioides C.A.Mey.	+	-
		Euclidium syriacum (L.) R.Br.	+	-
		Hymenolobus procumbens (L.) Fourr.	+	+
		Isatis costata C.A.Mey.	+	+
		I. laevigata Trautv.	-	+
		Lepidium crassaifolium Waldst.& Kit.	-	+
		L. latifolium L.	+	+
		L. perfoliatum L.	+	+
		L. ruderale L.	+	-
		L. songaricum Schrenk	+	+
		Matthiola superba Conti.	+	+
		Meniocus linifolius (Steph.) DC.	+	-
		Rorippa amphibia (L.) Bess.	+	+
		R. brachycarpa (C.A.Mey) Hayek	+	+
		R. palustris (L.) Bess.	-	+
		Sisymbrium polymorphum (Murr.) Roth.	+	+

			<i>Sterigmostemum tomentosum</i> Willd. (Bieb.)	-	+
			<i>Strigosella africana</i> (L.) Botsch. (<i>Malcolmia africana</i> (L.) R.Br.)	+	-
			<i>Syrenia montana</i> (Pall.) Klok.	-	+
			<i>S. siliculosa</i> (Bieb.) Andrz.	-	+
			<i>Tauscheria lasiocarpa</i> Fisch. ex DC.	+	-
			<i>Thellungiella salsuginea</i> (Pall.) O.E.Schulz.	+	+
			<i>Thlaspi arvense</i> L.	+	+
			<i>Turritis glabra</i> L.	+	+
	43.	Droseraceae Salisb.	<i>Drosera rotundifolia</i> L.	-	+
	44.	Crassulaceae DC.	<i>Orostachys spinosa</i> (L.) C.A.Mey.	+H	-
			<i>Orostachys thyrsoiflora</i> Fisch.	+	+
			<i>Pseudosedum lievenii</i> (Ledeb.) Berger	+	-
			<i>Sedum purpureum</i> (L.) Schult.	-	+
			<i>Tillaea vaillantii</i> Willd.	+	+
	45	Parnassiaceae S.F.Grey	<i>Parnassia palustris</i> L.	-	+
	46.	Grossulariaceae DC.	<i>Ribes nigrum</i> L.*	-	+
			<i>R. saxatile</i> Pall.*	-	+
	47.	Rosaceae Juss.	<i>Agrimonia asiatica</i> Juz.	-	+
			<i>Amygdalus nana</i> L.	-	+
			<i>Cerasus fruticosa</i> Pall.	-	+
			<i>Comarum palustre</i> L.	-	+
			<i>Cotoneaster melanocarpus</i> M. Pop.	-	+
			<i>Crataegus chlorocarpa</i> Lenne & Koch (<i>C. altaica</i> (Loud) Lange.)*	-	+
			<i>C. sanguinea</i> Pall.	-	+
			<i>Filipendula ulmaria</i> (L.) Maxim.	-	+
			<i>F. vulgaris</i> Moench. (<i>F. hexapetala</i> Gilib.)	+	+
			<i>Fragaria viridis</i> (Duch.) Weston*	-	+
			<i>Hulthemia berberifolia</i> (Pall.) Dumort.	+	-
			<i>Padus avium</i> Mill. (<i>P. racemosa</i> (Lam.) Gilib.)*	-	+
			<i>Potentilla arenaria</i> Borkh (P. <i>glaucescens</i> Schlecht.)	-	+
			<i>P. argentea</i> L.	+	-
			<i>P. bifurca</i> L.	+	+
			<i>P. humifusa</i> Willd. ex Schlecht	+	+
			<i>P. impolita</i> Wahlenb.	-	+
			<i>P. longipes</i> Ledeb.	-	+
			<i>P. pedata</i> Willd. ex Hornem. (<i>P. transcaspia</i> Th. Wolf.)	-	+
			<i>P. supina</i> L.	+	+
			<i>Rosa acicularis</i> Lindl.	-	+
			<i>R. majalis</i> Herrm.	+	+
			<i>R. glabrifolia</i> C.A.Mey. ex Rupr	-	+
			<i>R. laxa</i> Retz.	-	+
			<i>Rubus caesius</i> L.*	+	+

		<i>R. saxatilis</i> L.*	-	+
		<i>Sanguisorba officinalis</i> L.	-	+
		<i>Spiraea crenata</i> L.	+	+
		<i>S. hypericifolia</i> L.	+	+
48.	Fabaceae Lindl.	<i>Astragalus austriacus</i> Jacq.	-	+
		<i>A. brachylobus</i> Fisch.	+	-
		<i>A. buchtormensis</i> Pall.	+	+
		<i>A. contortuplicatus</i> L.	+	+
		<i>A. cornutus</i> Pall.	-	+
		<i>A. danicus</i> Retz.	-	+
		<i>A. dasyglottis</i> Fisch.	+	-
		<i>A. kasachstanicus</i> Golosk.	+	-
		<i>A. kustanaicus</i> M. Pop.	-	+
		<i>A. lasiophyllus</i> Ledeb.	-	+
		<i>A. longipes</i> Kar. & Kit.	+	-
		<i>longipetalus</i> Chater (<i>A. longiflorus</i> Pall.)	-	+
		<i>A. macropus</i> Bunge	+	+
		<i>A. medius</i> Schrenk	+	+
		<i>A. onobrychis</i> L.	+	+
		<i>A. physocarpus</i> Ledeb.	+	-
		<i>A. reticulatus</i> Bieb.	-	+
		<i>A. rupifragus</i> Pall.	+	+
		<i>A. stenoceras</i> C.A.Mey.	-	+
		<i>A. sulcatus</i> L.	+	+
		<i>A. tauricus</i> Pall.	-	+
		<i>A. testiculatus</i> Pall.	-	+
		<i>A. unijugus</i> Bunge	+	-
		<i>A. varius</i> S. G. Gmel. (<i>A. vulpinus</i> Willd.)	+	+
		<i>A. virgatus</i> Pall.	-	+
		<i>A. zingerii</i> Korsh.	-	+
		<i>Cytisus ruthenicus</i> Fisch.	-	+
		<i>Glycyrrhiza glabra</i> L.	-	+
		<i>G. uralensis</i> Fisch.	+	+
		<i>Hedysarum gmelinii</i> Ledeb.	+	-
		<i>Lathyrus palustris</i> L.*	-	+
		<i>L. pratensis</i> L.*	+	+
		<i>L. tuberosus</i> L.*	-	+
		<i>L. vernus</i> (L.) Bernh.	-	+
		<i>Lotus frondosus</i> Freyn.	+	+
		<i>L. praetermissus</i> Kupr.	-	+
		<i>Lupinaster pentaphyllus</i> Moench. (<i>Trifolium lupinaster</i> L.)*	-	+
		<i>Medicago falcata</i> L.*	+	+
		<i>M. lupulina</i> L.*	+	+
		<i>M. romanica</i> Prod.*	+	+
		<i>Melilotus albus</i> Medik.*	+	+
		<i>M. dentatus</i> (Walds. & Kit.) Pers.*	+	+
		<i>M. officinalis</i> (L.) Pall.*	-	+
		<i>M. wolgicus</i> Poir.	+	+

			Onobrychis sibirica (Sirj.) Turcz. & Grossh.	-	+
			Ononis arvensis L.	-	+
			Oxytropis pilosa (L.) DC.	-	+
			Pseudosophora alopecuroides (L.) Sweet (Goebelia alopecuroides (L.) Bunge)	-	+
			Thermopsis lanceolata R. Br.	-	+
			Vicia angustifolia Reichard	-	+
			V. cracca L.*	+	+
			V. sepium L.*	-	+
			V. tetrasperma (L.) Schreb.	-	+
49.	Geraniaceae Juss.		Geranium collinum Steph.	-	+
			G. pratense L.	-	+
			G. schrenkianum Trautv.	-	+
			G. transvensale (Kar. & Kir.) Vved.	+	+
50.	Linaceae S.F.Gray		Linum pallescens Bunge*	+	+
			L. perenne L.*	-	+
51.	Zygophyllaceae R. Br.		Zygophyllum pinnatum Cham. (Z. macropterum C.A.Mey.)	+	-
			Z. subtrijugum C.A.Mey.	+	-
52.	Nitrariaceae Bercht.		Nitraria schoberi L.	+	+
			N. sibirica Pall.	+	-
53.	Polygalaceae R. Br.		Polygala hybrida DC.	-	+
54.	Euphorbiaceae Juss.		Euphorbia microcarpa Prokh.	-	+
			E. seguieriana Neck.	-	+
			E. uralensis Fisch. ex Link.	-	+
			E. virgata Waldst.& Kit	+	-
55.	Callitrichaceae Link		Callitriche hermaphroditica L. (C. autumnalis L.)	+	-
			C. palustris L. (C.verna L.)	+	+
56.	Rhamnaceae Juss.		Rhamnus cathartica L.	+	+
57.	Malvaceae Juss.		Althaea officinalis L.	+	+
			Malva pusilla Smith	+	-
			Malva sylvestris L. (M. mauritiana L.)	-	+
58.	Frankeniaceae S.F.Gray		Frankenia hirsuta L.	+	+
			F. pulverulenta L.	+	+
59.	Tamaricaceae Link.		Tamarix gracilis Willd.	+	+
			T. ramosissima Ledeb.	-	+
			T. laxa Willd.	-	+
60.	Violaceae Batsch.		Viola montana L. (V. elatior Fries.)	-	+
			Viola elatior Fries.	-	+
			V. pumila Chaix.	-	+
61.	Eleagnaceae Juss.		Eleagnus oxycarpa Schlecht.	-	+

62.	Lythraceae J.St.-Hil.	Lythrum hyssopifolia L.	+	-
		L. nanum Kar. & Kit. (L. komarovii Murav.)	+	-
		L. salicaria L.	+	+
		L. thymifolia L.	+	-
		L. tribracteatum Salzm. ex Spreng.	+	-
		L. virgatum L.	+	+
		Middendorfia borysthenica (Bieb. ex Schrank.) Trautv. (Lythrum borysthenicum Litv.)	+	-
		Peplis alternifolia Bieb.	+	+
63.	Onagraceae Juss.	Chamaenerion angustifolium(L.)Scop.	-	+
		Epilobium hirsutum L.	-	+
		E. nervosum Boiss. & Buhse	-	+
		E. palustre L.	+	+
64.	Haloragaceae R. Br.	Myriophyllum spicatum L.	+	+
		Myriophyllum verticillatum L.	+	-
65.	Hippuridaceae Link.	Hippuris vulgaris L.	-	+
66.	Apiaceae Lindl.	Angelica palustris (Boiss.) Hoffm.	-	+
		A. sylvestris L.	-	+
		Cenolophium denudatum (Hornem.) Tutin (C. fischeri (Spreng.) Koch).	-	+
		Chaerophyllum prescottii DC	+	+
		Eryngium planum L.	+	+
		Falcaria vulgaris Bernh. (F. siodes Wib. Aschers).	+	+
		Ferula caspica Bieb.	+	+
		F. soongarica Pall. & Spreng	+	-
		F. tatarica Fisch. & Spreng	+	+
		Heracleum sibiricum L.	-	+
		Kadenia dubia (Schkuhr.) Lavrova (Cnidium dubium (Schkuhr.) Thell.)	-	+
		Oenanthe aquatica (L.) Poir.	+	+
		Palimbia salsa (L.) Bess (P.rediviva (Pall.) Thell.)	+	+
		Pastinaca clausii (Ledeb.) M. Pimen (Malabaila graveolens (Bieb.) Hoffm.)	+	+
		Peucedanum alsaticum L. (P. lubimenkoanum Kotov.)	+	-
		Seseli ledebourii G.Don.	-	+
		S. libanotis (L.) Koch (Libanotis montana Crantz.)	-	+
		S. strictum Ledeb.	+	-
		Silaum silaus (L.) Schinz. & Thell. (S. alpestre (L.) Thell.)	+	+
		Sium latifolium L.	+	+
		S. sisaroides DC.	+	+

			<i>Trinia muricata</i> Godet	+	+
			<i>Xanthoselinum alsaticum</i> (L.) Schur (<i>Peucedanum lubienkoanum</i> Kot.)	-	+
67.	Primulaceae Vent.		<i>Androsace maxima</i> L. (<i>A. turchaninowii</i> Freyn.)	+	+
			<i>Glaux maritima</i> L.	+	+
			<i>Lysimachia vulgaris</i> L.	+	+
			<i>Naumburgia thyrsoiflora</i> (L.) Reichenb.	-	+
			<i>Primula longiscapa</i> Ledeb.	-	+
68.	Limoniaceae Ser.		<i>Goniolimon elatum</i> (Fisch. & Spreng) Boiss.	-	+
			<i>G. speciosum</i> (L.) Boiss.	-	+
			<i>Limonium caspium</i> (Willd.) Gams.	+	+
			<i>L. gmelinii</i> (Willd.) Kuntze.	+	+
			<i>L. suffruticosum</i> (L.) O. Kuntze.	+	+
69.	Gentianaceae Juss.		<i>Centaurium meyeri</i> (Bunge) Druce	-	+
			<i>C. pulchelum</i> (Sw) Druce	-	+
			<i>Gentiana lingulata</i> (Agardh.) Pritchard	-	+
			<i>G. pneumonanthe</i> L.	-	+
70.	Apocynaceae Juss.		<i>Trachomitum lancifolium</i> (Russan.) Pobed. (<i>Apocynum lancifolium</i> Russau.)	-	+
71.	Asclepiadaceae R. Br.		<i>Cynanchum sibiricum</i> Willd.	-	+
72.	Convolvulaceae Juss.		<i>Calystegia sepium</i> (L.) R. Br.	+	+
			<i>Convolvulus arvensis</i> L.	+	+
			<i>C. fruticosus</i> Pall.	+	+
73.	Cuscutaceae Dumort.		<i>Cuscuta approximata</i> Bab. (<i>C. cupulata</i> Engelm.)	+	-
			<i>cesatiana</i> Bertol. (<i>C. australis</i> R. Br.)	-	+
			<i>C. lupuliformis</i> Krocker.	+	+
74.	Boraginaceae Juss.		<i>Argusia sibirica</i> (L.) Dandy (<i>Tournefortia sibirica</i> L.)	+	+
			<i>Asperugo procumbens</i> L.	+	-
			<i>Cynoglossum officinale</i> L.	+	+
			<i>Lappula brachycentroides</i> M. Pop.	+	-
			<i>L. consanguineae</i> (Fisch. & C.A.Mey) Guerke	+	+
			<i>L. patula</i> (Lehm.) Menyharth	+	+
			<i>L. squarrosa</i> (Retz.) Dumort. (<i>L. echinata</i> Gilib. <i>L. myosotis</i> Moench.)	+	-
			<i>L. stricta</i> (Ledeb.) Guerke	+	-
			<i>Lithospermum officinale</i> L.	+	+
			<i>Myosotis caespitosa</i> K. F. Schultz.	-	+
			<i>M. sparsiflora</i> Pohl.	-	+
			<i>Onosma simplicissima</i> L.	-	+
			<i>O. thransrhymnensis</i> Klok. & M. Pop.	-	+
			<i>O. tinctoria</i> Bieb. (<i>O. polychroma</i> Klok. & M. Pop)	+	-
			<i>Rindera tetraspis</i> Pall.	+	+

75.	Lamiaceae Lindl.	Dracocephalum thyrsofolium L.	+	+
		Glechoma hederacea L.	-	+
		Leonurus glaucescens Bunge	+	+
		L. tataricus L.	-	+
		Lycopus exaltatus L.	-	+
		L. europaeus L.	+	+
		Mentha aquatica L.	-	+
		M. arvensis L.	+	+
		Nepeta ucrainica L.	+	+
		Phlomoides agraria (Bunge) Adyl.R.Kam. & Machmedov (Phlomis agraria Bunge)	-	+
		P. tuberosa (L.) Moench (Phlomis tuberosa L.)	+	+
		Salvia deserta Schang. (S. tesquicula Klok.)	-	+
		S. stepposa Des.-Schost.	+	+
		Scutellaria galericulata L.	+	+
		Stachys palustris L.	+	+
		Teucrium scordium L.	-	+
		Thymus kirgisorum Dubjan. (T.kasachstanicus Klok. & Schost.)	-	+
		T. marschallianus Willd.	+	+
		T. mugodzaricus Klok. & Schost.	-	+
		T. serpyllum L.	-	+
76.	Solanaceae Juss.	Hyosciamus niger L.	+	+
		Solanum dulcamara L.	-	+
		S. kitagawae Schönbeck-Temesy (S. depilatum Kitag.)	+	-
		S. nigrum L.	+	+
77.	Scrophulariaceae Juss.	Dodartia orientalis L.	+	+
		Euphrasia pectinata Ten. (E. tatarica Fisch.)	-	+
		Limosella aquatica L.	+	+
		Linaria dolichocarpa Klok.	-	+
		L. genistifolia (L.) Mill.	-	+
		L. incompleta Kurpian	+	+
		L. ruthenica Bloski.	+	+
		L. vulgaris L.		+
		Melampyrum cristatum L.	-	+
		Odontites vulgaris Moench (O. serotina Rchb.)	+	+
		Pedicularis dasystachys Schrenk	+	-
		P. lasyostachys Bunge.	-	+
		P. physocalyx Bunge.	+	+

			Rhinanthus songaricus (Sterneck.) B.Fedtsch.	-	+
			Verbascum phoeniceum L.	+	+
			Veronica anagalis-aquatica L	+	+
			V. hispidula Boiss. & Huest (V. perpusilla Boiss.)	-	+
			V. longifolia L.	+	+
			V. prostrata L.	-	+
			V. scutellata L.	-	+
			V. spicata L.	+	+
			V. spuria L.	+	+
	78.	Orobanchaceae Vent.	Orobanche cumana Wallr.	+	+
			O. elatior Sutt.(O.major L.)	-	+
			Phelipanche lanuginosae (C. A. Mey.) Holub. (Orobanche caesia Rchb.)	-	+
	79.	Lentibulariaceae Rich.	Utricularia vulgaris L.	+	+
	80.	Plantaginaceae Juss.	Plantago cornutii Gouan.	+	+
			P. major L.	+	+
			P. maxima Juss. & Jacq.	+	+
			P. media L.	-	+
			P. polysperma Kar. & Kit.	+	-
			P. salsa Pall.	+	+
			P. tenuiflora Waldst. & Kit.	+	+
			P. urvillei Opiz. (P. stepposa Kipr.)	-	+
	81.	Rubiaceae Juss.	Asperula danilewskiana Basin.	-	+
			Galium amblyophyllum Schrenk	-	+
			G. boreale L. (G. septentrionale Roem. & Schult.)	+	+
			G. aparine L.	+	+
			G. palustre L.	-	+
			G. physocarpum Ledeb. (G. volgense Pobed.)	-	+
			G. ruthenicum Willd.	+	+
			G. spurium L.	+	-
			G. uliginosum L.	-	+
			G. verum L.	-	+
			Rubia krascheninnikovii Pojark.	-	+
	82.	Caprifoliaceae Juss.	Lonicera tatarica L.	+	+
	83.	Valerianaceae Batsch.	Valeriana tuberosa L.	+	+
	84.	Dipsacaceae Juss.	Dipsacus gmelinii Bieb.	+	+
			Scabiosa isetensis L.	-	+
			S. ochroleuca L.	-	+
	85.	Campanulaceae Juss.	Adenophora liliifolia (L.) A. DC.	-	+
			Campanula rappunculoides L.	-	+
			C. sibirica L.	-	+
	86.	Asteraceae Dumort.	Achillea. micrantha Willd.	-	+
			A. millefolium L.	-	+
			A. nobilis L.	+	+
			A. setacea Waldst. & Kit.	-	+

		<i>Acroptilon australe</i> Iljin	-	+
		<i>A. repens</i> (L.) DC.	+	-
		<i>Ancathia igniaria</i> (Spreng.) DC.	+	-
		<i>Arctium leiospermum</i> Juz. & C.Serg.	+	-
		<i>A. tomentosum</i> Mill.	+	+
		<i>Artemisia absinthium</i> L.	-	+
		<i>A. arenaria</i> DC.	-	+
		<i>A. armeniaca</i> Lam.	+	+
		<i>A. austriaca</i> Jacq.	+	+
		<i>A. campestris</i> var. <i>marschallianus</i> (Spreng.) Poljak. (<i>A. marchalliana</i> Spreng.)	+	+
		<i>A. commutata</i> Bess.	-	+
		<i>A. dracunculus</i> L.	+	+
		<i>A. frigida</i> Willd.	+	+
		<i>A. gracilescens</i> Krasch. & Iljin	+	-
		<i>A. laciniata</i> Willd.	-	+
		<i>A. latifolia</i> Ledeb.	-	+
		<i>A. lercheana</i> Web.	-	+
		<i>A. lessingiana</i> Bess.	+	+
		<i>A. nitrosa</i> Web.	+	+
		<i>A. pauciflora</i> Web.	+	+
		<i>A. pontica</i> L.	+	+
		<i>A. procera</i> Willd.	+	+
		<i>A. rupestris</i> L.	-	+
		<i>A. schrenkiana</i> Ledeb.	+	+
		<i>A. scoparia</i> Waldst. & Kit.	+	+
		<i>A. sericea</i> Web.	-	+
		<i>A. sieversiana</i> Willd.	+	+
		<i>A. sublessingiana</i> Krasch. & Poljak.	+	-
		<i>A. terrae albae</i> ssp. <i>semiarida</i> Krasch & Lavr.	+	+
		<i>A. vulgaris</i> L.	+	+
		<i>Aster alpinus</i> L.	-	+
		<i>Bidens tripartita</i> L.	+	+
		<i>B. cernua</i> L.	-	+
		<i>Carduus crispus</i> L.	+	+
		<i>C. nutans</i> L.	+	+
		<i>Centaurea adpressa</i> Ledeb.	-	+
		<i>C. ruthenica</i> Lam.	-	+
		<i>C. sibirica</i> L.	-	+
		<i>Chartolepis intermedia</i> Boiss.	-	+
		<i>Cichorium intybus</i> L.	-	+
		<i>Chondrilla brovirostris</i> Fisch.& C.A.Mey.	-	+
		<i>Cirsium alatum</i> (S.G.Gmel.) Bobr.	-	+
		<i>C. esculentum</i> (Siev.) C. A. Mey.	-	+
		<i>C. setosum</i> (Willd) Bess.	+	+
		<i>C. incanum</i> (S.G.Gmel.) Fisch.	-	+
		<i>C. vulgare</i> (Savi) Ten.	-	+
		<i>Conyza canadensis</i> (L.) Cronq.	+	+

		(Erigeron canadensis L.)		
		Crepis tectorum L.	+	+
		Echinops meyeri (DC.) Iljin	+	-
		E. ritro L.	+	+
		Filago arvensis L.	-	+
		Galatella angustissima (Tausch.) Novopokr.	+	+
		G. biflora (L.) Nees	+	+
		G. divaricata (Fisch. ex Bieb.) Novopokr.	+	-
		G. punctata (Waldst. & Kit) Nees	-	+
		G. tatarica (Less) Novopokr. (Linosyris tatarica (Less.) C.A.Mey)	+	+
		G. villosa (L.) Reichenb. (Linosyris villosa (L.) DC.)	+	+
		Filaginella kasachstanica (Kirp.) Tzvel. (Gnaphalium kasachstanicum Kirp.)	+	-
		G. rossicum Kirp.	-	+
		Helichrysum arenarium (L.) Moench.	+	+
		Hieracium echioides Lumn.	-	+
		H. umbellatum L.	+	+
		H. virosum Pall.	+	+
		Inula aspera Poir.	+	+
		I. britannica L.	+	+
		I. caspia Blum. ex Ledeb.	+	-
		I. germanica L.	-	+
		I. helenium L.	-	+
		I. salicina L.	-	+
		Jurinea cyanoides (L.) Reichenb.	-	+
		J. mugodsharica Iljin	-	+
		J. multiflora (L.) B. Fedtsh.	+	+
		J. polyclonos (L.) DC (J. amplexicaulis (S.G.Gmel.) Borb.)	-	+
		Lactuca altaica Fisch. & C.A.Mey.	+	-
		L. saligna L.	-	+
		L. serriola Torner*	-	+
		L. tatarica (L.) C.A.Mey.	+	+
		Phalacrachena calva (Ledeb.) Iljin	-	+
		Picris hieracioides L.	+	+
		Ptarmica cartilaginea Ledeb.& Reichehenb. (Achillea cartilaginea Ledeb.)	-	+
		P. salicifolia (Bess.) Serg.	+	-
		Pulicaria vulgaris Gaertn. (P. prostrata (Gilib.) Aschers.)	+	+
		Rhaponticum serratuloides (Georgi.) Bobr.	+	-
		Saussurea amara (L.) DC.	+	+
		S. salsa (Pall & Bieb.) Spreng.	-	+
		S. turgaiensis B. Fedtsch.	-	+

		<i>Scorzonera austriaca</i> Willd.	+	+
		<i>S. ensifolia</i> Bieb.	-	+
		<i>S. hispanica</i> L.	-	+
		<i>S. inconspicua</i> Lipsch. ex Pavl.	-	+
		<i>S. parviflora</i> Jacq.	-	+
		<i>S. pratorum</i> (Krasch.) Stankov.	-	+
		<i>S. pubescens</i> DC.	-	+
		<i>S. purpurea</i> L.	-	+
		<i>S. sericeolanata</i> (Bunge) Krasch. & Lipsch.	+	-
		<i>S. stricta</i> Hornem	+	+
		<i>Senecio dubitabilis</i> C. Jeffrey & Y.L.Chen (<i>Senecio dubius</i> Ledeb.)	+	-
		<i>S. jacobaea</i> L.	+	+
		<i>S. erucifolius</i> L.	-	+
		<i>S. grandidentatus</i> Ledeb.	-	+
		<i>S. paucifolius</i> S.G.Gmel.	-	+
		<i>S. subdentatus</i> Ledeb.	-	+
		<i>Serratula cardunculus</i> (Pall.) Schischk.	-	+
		<i>S. coronata</i> L.	-	+
		<i>S. dissecta</i> Ledeb.	+	-
		<i>S. kirghisorum</i> Iljin	+	-
		<i>Soligato virgaurea</i> L.	-	+
		<i>Sonchus arvensis</i> L.	-	+
		<i>S. oleraceus</i> L.	+	-
		<i>S. palustris</i> L.	-	+
		<i>Tanacetum achilleifolium</i> (Bieb.) Sch. Bip.	+	+
		<i>T. millefolium</i> (L.) Tzevel.	+	-
		<i>T. vulgare</i> L.	+	+
		<i>Taraxacum bessarabicum</i> (Hornem.) Hand.-Mazz.	+	+
		<i>T. erythrospermum</i> Andrz.	+	-
		<i>T. glaucanthum</i> (Ledeb.) DC.	+	-
		<i>T. monochlamydeum</i> Hand.-Mazz.	+	-
		<i>T. officinale</i> Wigg.	-	+
		<i>Tragopogon capitatus</i> S. Nikit.	+	-
		<i>T. ruthenicus</i> Bess.	-	+
		<i>Tripleurospermum perforatum</i> (Merat) M. Lainz	+	-
		<i>Tripolium vulgare</i> Nees	+	-
		<i>Trommsdorffia maculata</i> (L.) Bernh. (<i>Achyrophorus maculatus</i> (L.) Scop.)	-	+
		<i>Xanthium strumarium</i> L.	+	+

Table 4.) Summary of relict and endemic species for the small hills area in central and north Kazakhstan where the Natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“ is situated

Scientific name of the relict species	English name of the relict species	Description
Mammalia	Mammals	
<i>Hemiechinus auritus</i>	Long-eared Hedgehog	Relict from Pleistocene
<i>Ochotona pusilla</i>	Steppe Pika	Relict from Pleistocene
<i>Spermophilus pugmaes</i>	Little Souslik	Relict from Pleistocene
<i>Spermophilus fulvus</i>	Large-toothed Souslik	Relict from Pleistocene
<i>Allactaga major</i>	Great Jerboa	Relict from Pleistocene
<i>Allactaga elater</i>	Five-toed Jerboa	Relict from Pleistocene
<i>Cricetulus eversmanni</i>	Eversmann's Hamster	Relict from Pleistocene
<i>Vulpes corsac</i>	Corsac Fox	Relict from Pleistocene
<i>Saiga tatarica</i>	Saiga Antelope	Relict from Pleistocene
Aves	Birds	
<i>Phoenicopterus ruber</i>	<i>Greater Flamingo</i>	<i>Relict from Tertiar</i>
<i>Charadrius alexandrinus</i>	Kentish Plover	Relict from Tertiar
<i>Charadrius asiaticus</i>	Caspian Plover	Relict from Tertiar
<i>Chettusia gregaria</i>	Sociable Lapwing	Relict from Tertiar
<i>Larus genei</i>	Slender-billed Gull	Relict from Tertiar
<i>Larus ichthyaetus</i>	Pallas' Gull	Relict from Tertiar
<i>Sterna niloticaa</i>	Gull-billed Tern	Relict from Tertiar
<i>Sterna caspia</i>	Caspian Tern	Relict from Tertiar
<i>Melanocorypha yeltoniensis</i>	Black Lark	Relict from Tertiar
<i>Melanocorypha leucoptera</i>	White- winged Lark	Relict from Tertiar
Magnoliophyta	Plants	
<i>Nuphar lutea</i>	Yellow Pond-lily	Relict from Tertiar
<i>Nuphaea candida</i>	Small Pond-lily	Relict from Tertiar
<i>Nitraria schoberi</i>	Nitre bush	Relict from Tertiar
Scientific name of the endemic species	English name of the endemic species	Description
Mammalia	Mammals	
<i>Ochotona pusilla</i>	Steppe Pika	Endemic for Pontian Steppe Zone
<i>Spermophilus pygmaes</i>	Little Souslik	Endemic for Pontian Steppe Zone
<i>Spermophilus fulvus</i>	Large-toothed Souslik	Endemic for Pontian Steppe Zone
<i>Lagurus lagurus</i>	Steppe Lemming	Endemic for Eurasian Steppe Zones
<i>Sicista subtilis</i>	Southern Birch Mouse	Endemic for Eurasian Steppe Zones
<i>Cricetus cricetus</i>	Common Hamster	Endemic for Eurasian Steppe Zones
<i>Saiga tatarica</i>	Saiga Antelope	Endemic for Eurasian Steppe Zones
Aves	Birds	
<i>Chettusia gregaria</i>	Sociable Lapwing	Endemic for Pontian Steppe Zone
<i>Charadrius asiaticus</i>	<i>Caspian Plover</i>	Endemic for Pontian Steppe Zone
<i>Glareola nordmani</i>	Black-Winged Pratincole	Endemic for Pontian Steppe Zone
<i>Melanocorypha yeltoniensis</i>	Black Lark	Endemic for Pontian Steppe Zone
<i>Melanocorypha leucoptera</i>	White- winged Lark	Endemic for Pontian Steppe Zone
<i>Circus macrourus</i>	Pallid Harrier	Endemic for Pontian Steppe Zone
Magnoliophyta	Plants	
<i>Astragalus kasachstanicus</i>	Kazakh Milkvetch	Endemic for Kazakh Small Hills Area

Table 5.) Distribution of the different groups of birds on the three clusters of the natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“

KR: Korgalzhyn state nature reserve

NR: Naursum state nature reserve

Order	Family	Number of species		% of the birds of Kazakhstan	
		Total/Nesting		Total/Nesting	
		KR	NR	KR	NR
Gaviiformes	Gaviidae	1/1	1/0	50/50	50/0
Podicipediformes	Podicipedidae	4/4	4/4	80/80	80/80
Pelecaniformes	Pelecanidae	2/1	2/2	100/50	100/100
	Phalacrocoracidae	1/1	1/1	50/50	50/50
Ciconiiformes	Ardeidae	6/3-4	8/4	66.7/37.5-50	88.9/50
	Ciconiidae	1/0	0/0	50/0	0/0
	Threskiornithidae	2/1	2/1	100/50	100/50
Phoenicopteriformes	Phoenicopteridae	1/1	1/0	100/100	100/0
Anseriformes	Anatidae	31/15	30/16	81.6/60	78.9/64
Accipitriformes	Pandionidae	1/0	1/0	100/0	100/0
	Accipitridae	22/4	20/12	71/16.7	65.5/50
	Falconidae	8/4	8/6	80/50	80/75
Galliformes	Tetraonidae	1/0	2/2	20/0	40/40
	Phasianidae	2/2	2/2	25/25	25/25
Gruiformes	Rallidae	7/5-6	7/5-6	87.5/62.5-75	87.5/62.5-75
	Gruidae	3/2	3/2	100/100	100/100
	Otididae	3/0-2	2/2	100/0-66.7	66.7/66.7
Charadriiformes	Haematopodidae	1/1	1/1	50/50	50/50
	Recurvirostridae	2/2	2/2	100/100	100/100
	Burhinidae	1/0	1/1	100/0	100/100
	Glareolidae	2/1	1/1	66.7/50	33.3/50
	Charadriidae	10/5	11/6	66.7/71.4	73.3/85.7
	Scolopacidae	31/4	25/4	91.2/33.3	73.5/33.3
	Stercorariidae	2/0	1/0	100/0	50/0
	Laridae	14/11	12/11	77.8/73.3	66.7/73.3
Pteroclidiformes	Pteroclididae	3/1	2/1	100/33.3	66.7/33.3
	Columbidae	7/2	7/4	70/22.2	70/44.4
Cuculiformes	Cuculidae	2/1	2/1	100/50	100/50
Strigiformes	Strigidae	8/4	7/4	61.5/33.3	53.8/33.3
Caprimulgiformes	Caprimulgidae	1/0	1/1	50/0	50/50
Apodiformes	Apodidae	1/0	1/1	25/0	25/33.3
Coraciiformes	Upupidae	1/1	1/1	100/100	100/100
	Alcedinidae	1/0	1/1	50/0	50/100
	Meropidae	2/1	1/1	100/50	50/50
	Coraciidae	1/0-1	1/1	100/0-100	100/100
Piciformes	Picidae	2/0	4/1	25/0	50/12.5
Passeriformes	23 families	126/44-45	105/56	54.8/22.4-23.0	45.6/28.6
Total	59 families	314/120-126	281/158-159	64.2/30.9-32.5	57.6/40.7-40.9

Table 6.) List of Animals of the territory of the natural World Heritage Site „Saryarka - Steppe and Lakes of Northern Kazakhstan“ living at the border of their areal within the site

KR: Korgalzhyn state nature reserve

NR: Naursum state nature reserve

№	Scientific name of the species	English name of the species	Border of the areal	
			KR	NR
AMPHIBIA				
	<i>Pelobates fuscus</i>	Common Spadefoot	-	East
	<i>Bufo viridis</i>	Green Toad	North	North
	<i>Rana arvalis</i>	Moor Frog	South	-
REPTILIA				
	<i>Emys orbicularis</i>	European Pond Turtle	North-east	North
	<i>Elaphe dione</i>	Rat Snake	North	-
	<i>Eremias arguta</i>	Racerunner (Desert Lacertid)	North	North
AVES				
	<i>Gavia arctica</i>	Black-throated Loon	South	South
	<i>Podiceps auritus</i>	Horned Grebe	South	South
	<i>Pelicanus onocrotalus</i>	Great White Pelican	-	North
	<i>Ixobrychus minutus</i>	Little Bittern	North	North
	<i>Egretta alba</i>	Great White Egret	North	North
	<i>Platalea leucorodia</i>	Eurasian Spoonbill	North	North
	<i>Cygnus cygnus</i>	Whooper Swan	South	South
	<i>Anas cressa</i>	Common Teal	-	South
	<i>Netta rufina.</i>	Red-crested Rochard	North	North
	<i>Aythya nyroca</i>	Ferruginous Duck	North	North
	<i>Bucephala clangula</i>	Common Goldeneye	South	South
	<i>Accipiter nisus</i>	Sparrowhawk	-	South
	<i>Aquila nipalensis (A. nipalensis)</i>	Steppe Eagle	North	North
	<i>Buteo rufinus</i>	Long-Legged Ruzzard	-	North
	<i>Buteo buteo.</i>	Steppe Buzzard	-	South
	<i>Falco naumanni</i>	Lesser Kestrel	-	North
	<i>Tetrao tetrix (Lyrurus tetrix)</i>	Northern Black Grouse	-	South
	<i>Porzana parva</i>	Little Crake	North	South
	<i>Himantopus himantopus</i>	Black-winged Stilt	North	North
	<i>Burhinus oedicnemus</i>	Stone Curlew	North	North
	<i>Glareola nordmanni</i>	Black-winged Pratincole	South	-
	<i>Charadrius alexandrinus</i>	Kentish Plover	North	North
	<i>Charadrius asiaticus</i>	Caspian Plover	North	North
	<i>Tringa stagnatilis</i>	Marsh Sandpiper	South	-
	<i>Numenius arquata</i>	Eurasian Gurllew	South	-
	<i>Larus ichthyaetus</i>	Pallas' Gull	North	North
	<i>Larus minutus</i>	Little Gull	South	South
	<i>Sterna albifrons</i>	Little Tern	North	North
	<i>Gelochelidon nilotica</i>	Gull-billed Tern	North	North

	<i>Chlidonias leucoptera</i>	White-winged Black Tern	South	South
	<i>Syrrhaptes paradoxus.</i>	Pallas's Sandgrouse	North	North
	<i>Columba palumbus</i>	Common Wood Pigeon	-	East
	<i>Streptopelia orientalis</i>	Oriental Turtle Dove	South	South
	<i>Otus scops</i>	Scops Owl	-	South
	<i>Merops apiaster</i>	European Bee-eater	-	North
	<i>Dendrocopos major</i>	Great Spotted Woodpecker	-	South
	<i>Calandrella brachydactyla (C. cinerea)</i>	Greater Short-toed Lark	North	North
	<i>Anthus trivialis</i>	Meadow Pipit	-	South
	<i>Motacilla citreolla</i>	Citrine Wagtail	South	South
	<i>Phoenicurus phoenicurus</i>	Common Redstart	-	South
	<i>Luscinia megarhynchos</i>	Common Nightingale	-	North
	<i>Luscinia luscinia</i>	Thrush Nightingale	South	South
	<i>Oenanthe isabellina</i>	Isabelline Wheatear	North	North
	<i>Saxicola rubetra</i>	Whinchat	-	South
	<i>Sylvia communis</i>	Common Whitethroat	South	South
	<i>Locustella luscinioides</i>	Savi's Warbler	North	North
	<i>Cettia cetti.</i>	Cetti's Warbler	North	North
	<i>Acrocephalus scirpaceus</i>	European Reed Warbler	North	North
	<i>Parus major</i>	Great Tit	-	South
	<i>Parus cyanus</i>	Azure Tit	South	South
	<i>Panurus biarmicus</i>	Bearded Reedling	-	North
	<i>Lanius isabellinus</i>	Red-tailed Shrike	-	North
	<i>Sturnus roseus (Pastor roseus)</i>	Rose-coloured Starling	North	North
	<i>Oriolus oriolus</i>	Eurasian Golden Oriole	-	South
	<i>Carduelis flavirostris</i>	Twite	North	North
	<i>Carpodacus erythrinus</i>	Common Rosefinch	South	-
	<i>Emberiza buchanani</i>	Grey-necked Bunting	North	-
	<i>Emberiza hortulana</i>	Ortolan Bunting	South	South
	<i>Emberiza bruniceps</i>	Red-headed Bunting	North	North
MAMMALIA				
	<i>Erinaceus europaeus</i>	Common Hedgehog	South	South
	<i>Sorex minutus</i>	Pygmy Shrew	South	South
	<i>Sorex araneus</i>	Common Shrew	South	South
	<i>Sorex minutissimus</i>	Common Shrew	South	-
	<i>Myotis dasycneme</i>	Pond Bat	North	-
	<i>Lynx lynx</i>	Lynx	-	South
	<i>Saiga tatarica</i>	Saiga Antelope	North	северная
	<i>Capreolus pygargus.</i>	Roe Deer	-	South
	<i>Alces alces</i>	Moose	-	South
	<i>Spermophilus fulvus</i>	Large-toothed Souslik	North-east	North
	<i>Spermophilus major</i>	Russet Souslik	-	East
	<i>Marmota bobak</i>	Bobak Marmot	South	-
	<i>Pygerethmus pumilio</i>	Lesser Five-toed Jerboa	-	North
	<i>Allactaga elater</i>	Five-toed Jerboa	North	-
	<i>Spermophilus pygmaeus</i>	Little Souslik	East	-
	<i>Pygerethmus platiurus</i>	Fat-tailed Jerboa	-	North

	<i>Stylodipus telum</i>	Thick-tailed Three-toed Jerboa	North	North
	<i>Phodopus sungorus</i>	Striped Hairy-footed Hamster	South-west	South-west
	<i>Lagurus lagurus</i>	Steppe Lemming	South	South
	<i>Clethrionomys rutilus</i>	Northern Red-backed Vole	South	-
	<i>Microtus gregalis</i>	Narrow-skulled Vole	South	South
	<i>Microtus oeconomus</i>	Tundra Vole	South	South
	<i>Micromys minutus</i>	Harvest Mouse	South	South
	<i>Cricetulus migratorius</i>	Grey Hamster	North	-
	<i>Ochotona pusilla</i>	Steppe Pica	North	North

Table 7.) List of selected plant species reaching the territory of the World Heritage Site from different directions of their main areal - Plant Species within the territory listed in the Red Book of Kazakhstan growing on the territory of the Natural Heritage Site “Saryarka - Steppe and Lakes of Northern Kazakhstan“”

Western Species	Northern Species	Southern Species	Species of the Red Book of Kazakhstan
<i>Cytisus ruthenicus</i> *	<i>Dryopteris cristata</i> *	<i>Anabasis aphylla</i> *	<i>Betula kirghisorum</i> *
<i>Astragalus kustanaicus</i> *	<i>Matteucia struthiopteris</i> *	<i>Anabasis salsa</i>	<i>Ornithogalum fisherianum</i> *
<i>Asperula danilevskiana</i> *	<i>Thelypteris palustris</i> *	<i>Atriplex cana</i>	<i>Pulsatilla flavescens</i> *
<i>Artemisia lerchiana</i> *	<i>Marselia aegyptica</i> *	<i>Kalidium foliatum</i>	<i>Adonis wolgensis</i>
<i>Artemisia lessingiana</i>	<i>Marselia strigosa</i>	<i>Nitraria shoberi</i>	<i>Tulipa biebersteiniana</i> *
<i>Melilotus wolgicus</i>	<i>Pinus sylvestris</i> *	<i>Eleagnus oxycarpa</i> *	<i>Tulipa biflora</i>
<i>Astragalus macropus</i>	<i>Juniperus communis</i> *	<i>Limonium suffruticosum</i>	<i>Tulipa patens</i>
<i>Allium flavescens</i>	<i>Carex omskiana</i> *	<i>Artemisia terrae albae</i>	<i>Tulipa schrenkii</i>
<i>Tulipa schrenkii</i>	<i>Malaxis monophyllos</i> *	<i>Artemisia sublessingiana</i> **	<i>Stipa pennata</i> *
	<i>Dactylorhiza majalis</i> *	<i>Tauscheria lasiocarpa</i> **	
	<i>Rhamnus cathartica</i>	<i>Clematis orientalis</i> *	
	<i>Glechoma hederacea</i> *		

* - Species only to find in the Narzum Zapovednik

** - Species only to find in the Korgalzhyn Zapovednik

Table 8.) Overview Table for the Comparative Analyse for outstanding universal value of serial nomination „Saryarka – Steppe and Lakes of Northern Kazakhstan“

Reviewed and used web-pages and online databases:

- Source 1) <http://earth.google.com> (altitude of Kazakh Sites, Cordinates Confirmation) (Englisch)
- Source 2) Ramsar Sites: www.ramsar.org (Englisch)
- Source 3) <http://www.wetlands.org/RSIS/Default.htm> (Englisch)
- Source 4) http://www.wetlands.org/RDB/Ramsar_Dir/China/CN010D02.htm (Englisch)
- Source 5) Biosphere Reserves: www.unesco.org/mab (Englisch)
- Source 6) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=UKR+02> (Englisch)
- Source 7) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=UKR+01> (Englisch)
- Source 8) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=RUS+04> (Englisch)
- Source 9) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=RUS+05> (Englisch)
- Source 10) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=RUS+15> (Englisch)
- Source 11) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=RUS+18> (Englisch)
- Source 12) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=gen&code=RUS+17> (Englisch)
- Source 13) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=MON+03> (Englisch)
- Source 14) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=CPR+05> (Englisch)
- Source 15) <http://www2.unesco.org/mab/br/brdir/directory/biores.asp?mode=all&code=CPR+22> (Englisch)
- Source 16) World Heritage Sites: www.unesco.org/whc (Englisch)
- Source 17) Protected Areas in Romania: http://www.wcmc.org.uk/protected_areas/data/wh/danubed.html
- Source 18) http://whc.unesco.org/pg.cfm?cid=31&id_site=588
- Source 19) Protected Areas in Ukraine: <http://enrin.grida.no/biodiv/national/ukraine/prt/res.htm> (Englisch)
- Source 20) Protected Areas in Kazakhstan: <http://www.oopt.kz> (Russian)
- Source 21) Protected Areas in Russia <http://reserves.biodiversity.ru/> (Russian)
- Source 22) <http://www.rg.ru/2003/08/05/153.html>
- Source 23) http://www.unep-wcmc.org.uk/protected_areas/data/un_93.html
- Source 24) Protected Areas Mongolia: <http://www.mnec.org.mn/sgp/eprotarea.htm>
- Source 25) Protected areas world wide: <http://sea.unep-wcmc.org/wdbpa/>

Reviewed Literature:

- Source 26) Baisakov, T.B., Dudukalova, S. N. et. al.: Shema rasmeshenia Osobo Oxranamy Priodni Territorii (OOPT) do 2030 goda. Sceme of development of Nature Protected Areas till 2030. 399 Pages, Russian, unpublished Report, Almaty, TOO “Ekoprojekt”
- Source 27) Magin C. (2005): World Heritage Thematic Study for Central Asia: A Regional Overview, 78 Pages, English (digital under <http://www.iucn.org/themes/wcpa/pubs/pdfs/heritage/centralasia.pdf>)
- Source 28) Sokolova, V.E., Syroetshkovskovo E.E. (1990): Zapovedniks Central Asia and Kazakhstan (Zapovedniki Sredni Asii i Kasachstana), Moskau, Moskva "Mysl". Zapovedniki SSSR., Russian, 400 Pages
- Source 29) Voinstvensky, M.A. et al. (1987): Zapovedniki Ukraina i Moldavii, 270 Pages, Russian
- Source 30) Zabelina, N.M., Isaeva-Petrova, L.S., Kuleshova, L.V. (1998): Zapovedniks and National Pars of Russia, Moscow, 160 pages, Russian and English
- Source 31) Programme on the development of the network on nature protection areas in the Republic of Kazakhstan in the years 2006 till 2008. Committee for Forestry and Hunting Republic Kazakhstan, Unpublished Russian

Reviewed Maps

- Source 32) Kerteshev, T., Abiyeva, D., Ayapbergenova, L., Bibekin, N., Bragina, T., Izteleuova, A., Kurgalova, Zh., Seitkhozhaeva, G., Tazhamagambet, Ustimirov, K. (2004): Map of Protected Areas of the Republic of Kazakhstan, Scale 1:2000.000, Russian and English
- Source 33) Nasartsuk, M.K., Baisakov, T.B. et. al. (1998): Karta prirodno-zapovenovo fonda respublikii Kasachstan, Map of the Nature Protected Areas of Kazakhstan, Russian, Scale 1 : 3.500.000, Almaty, TOO “Ekoprojekt”

Personal Communications

- Source 34) Dr. Alexander Chibilyov, Director of the Steppe Institute at Orenburg Akademy of Science, Januar 2006-01-15

BIOGEOGRAPHICAL PROVINCE 2.29.11. PONTIAN STEPPE

Country	Site name	Name in Russian	Size in ha	National Status	Intern. Status	Ecosystem type(s)	IUCN Status	Values		Coordinates center of site (N/E Grades ^o Minutes, Seconds)	Situation above or under sealevel	Foundation Year	Short description of territory	Additional Info	Source
								Steppe	Wetland						
Romania	Danube Delta	---	679,222ha (52,980ha of core zone in 16 separate sites, 25,500 ha restoration zone, 230,200 ha buffer zone and 267,542 ha of development zone)	Nature Reserve	MAB Biosphere Reserve UNESCO Natural World Heritage Site (since 1990)	Wetlands, Delta, Marine habitat	1a, 4, 5	No	Yes	N 45 05 00 E 29 30 00	0-15 m a.s.l.	1938	<p>Physio-Geography: The waters of the Danube, which flow into the Black Sea, form the largest and best preserved of Europe's deltas. The Danube delta hosts over 300 species of birds as well as 45 freshwater fish species in its numerous lakes and marshes.</p> <p>The site lies on the coast of the Black Sea in the eastern part of the country in Tulcea County, and encompasses the area between the branch rivers Chilia, Sulina and Sfintu Gheorghe, the former creating the boundary between Romania and the Ukrainian SSR. The site also includes the Razelm-Sinoie complex of lakes Razelm, Sinoie, Zmeica and Golovita to the immediate south of the delt.</p> <p>The prevailing continental climate, with only 450mm of annual rainfall, is temporarily influenced by proximity to the sea and the humidity rising from countless inland lakes and small waterways.</p> <p>Flora: This is the largest continuous marshland in Europe which includes the greatest stretch of reedbeds probably in the world. The marsh vegetation is dominated by reeds <i>Phragmites australis</i> which form floating or fixed islands of decaying vegetation ('plaur') with some <i>Typha angustifolia</i> and <i>Scirpus</i> sp. Reeds cover some 1,700 sq. km and 'plaur' 1,000 sq. km, whilst the total area not included is only 148 sq. km (Ciocchia, n.d.). There are also water lilies <i>Nymphaea alba</i> and <i>Nuphar luteus</i> and <i>Stratiodes alloides</i>. The higher ground supports stands of <i>Salix</i>, <i>Populus</i>, <i>Alnus</i> and <i>Quercus</i>. Sandy areas are covered with feather grass <i>Stipa</i> sp. and other steppe species. Forest elements are best observed in Letea Forest, occurring in a series of bands along dunes up to 250m long and 10m wide, where trees reach 35m in height. The species present are <i>Quercus robur</i>, <i>Q. pedunculiflora</i>, <i>Populus alba</i>, <i>P. nigra</i>, <i>Fraxinus ornus</i>, <i>F. angustifolia</i>, <i>F. palisae</i>, <i>Pyrus pyraeaster</i>, <i>Tilia tomentosa</i>, <i>Ulmus</i> sp., and the occasional <i>Alnus glutinosa</i>. Among the shrubs are <i>Crataegus monogyna</i>, <i>Euonimus europea</i>, <i>Cornus mas</i>, <i>C. sanguinea</i>, <i>Rhamnus frangula</i>, <i>R. cathartica</i>, <i>Viburnum opulus</i>, <i>Berberis vulgaris</i>, <i>Hippophae rhamnoides</i>, <i>Tamarix</i> spp. and occasional <i>Corylus avellana</i>. The distinctive feature of the forest is the abundance of climbing plants including <i>Periploca graeca</i>, <i>Clematis vitalba</i>, <i>Vitis sylvestris</i> and <i>Humulus lupulus</i>. In spring, the ground is carpeted with <i>Convallaria majalis</i>. Particularly rare and threatened plants include <i>Convolvulus persica</i>, <i>Ephedra distachya</i>, <i>Merendera sobolifera</i>, <i>Plantago coronopus</i> and <i>Petunia parviflora</i>.</p> <p>Fauna: Over 300 species of bird have been recorded, of which over 176 species breed, the most important being: cormorant <i>Phalacrocorax carbo sinensis</i> (3,000 pairs), pygmy cormorant <i>P. pygmeus</i> (K) (2,500 pairs comprising 61% of the world's population), white pelican <i>Pelecanus onocrotalus</i> (2,500 pairs comprising 50% of the Palaearctic breeding population), Dalmatian pelican <i>P. crispus</i> (E) (estimated at 150 pairs, perhaps now only 25-40 pairs, on the floating islands on lake Hrecisca, which represents 5% of the world population), night heron <i>Nycticorax nycticorax</i> (2,100 pairs), squacco heron <i>Ardeola ralloides</i> (2,150 pairs), great white heron <i>Egretta alba</i> (700 pairs), little egret <i>E. garzetta</i> (1,400 pairs), purple heron <i>Ardea purpurea</i> (1,250 pairs), glossy ibis <i>Plegadis falcinellus</i> (1,500 pairs), white stork <i>Ciconia ciconia</i> (many), mute swan <i>Cygnus olor</i> (500 pairs), white-tailed eagle <i>Haliaeetus albicilla</i> (V) (8 pairs), marsh harrier <i>Circus aeruginosus</i> (300+ pairs), osprey <i>Pandion haliaetus</i> (3 pairs), Saker falcon <i>Falco cherrug</i> (1-2 pairs), red-footed falcon <i>F. vespertinus</i> (150 pairs), Sandwich tern <i>Sterna sandvicensis</i> (1,700 pairs), common tern <i>S. hirundo</i> (20,000+ pairs), whiskered tern <i>Chlidonias hybridus</i> (20,000+), and black tern <i>C. niger</i> (10,000-20,000 pairs). White-headed duck <i>Oxyura leucocephala</i> possibly still breeds. Slender-billed curlew <i>Numenius tenuirostris</i> (K) has occurred on passage (28 in 1971 and one or two in 1989). The Delta holds huge numbers of Anatidae in the winter with counts of 500,000 white-fronted goose <i>Anser albifrons</i> (but only 64,000-77,500 in 1982), up to 500 lesser white-fronted goose <i>A. erythropus</i>, 45,000 red-breasted goose <i>Branta ruficollis</i> (a globally threatened species with almost 95% of the world wintering population present here), 150,000 teal <i>Anas crecca</i>, 200,000 mallard <i>A. platyrhynchos</i>, 14,000 pintail <i>A. acuta</i>, 40,000 shoveler <i>A. clypeata</i>, 32,400 red-crested pochard <i>Netta rufina</i>, 970,000 pochard <i>A. ferina</i>, 13,000 ferruginous duck <i>A. nyroca</i>, and 1,500 red-breasted merganser <i>Mergus albellus</i>. In winter there is a concentration of some 30-40 <i>Haliaeetus albicilla</i> (R). The Delta is very important for fish with 45 fresh water species present including threatened representatives of the <i>Acipenseridae</i>.</p> <p>Otter <i>Lutra lutra</i>, stoat <i>Mustela erminea</i>, and European mink <i>Mustela lutreola</i> (E), as well as wild cat <i>Felis sylvestris</i> are to be found on the floating islands. It appears that little work has been done on mammals since 1970 largely as a result of lack of funding, but the mink population, although its size is unknown, is apparently significant in European terms.</p> <p>The forest areas contain several rare reptiles, including <i>Vipera ursini</i>, <i>Elaphe longissima</i>, and <i>Eremias arguta deserti</i>.</p>		Source 17) Source 18) Source 3)

MOL	MOL	MOL	MOL	MOL	MOL	MOL				MOL	MOL	MOL	MOL	MOL	MOL
Moldavia	Lower Dniester (Nistru de Jos)	---	60000	asumes several protected areas of different forms	Ramsar Site	Wetlands, Steppes and Forest	1b, 4, 5	Yes	Yes	N 46 34 00 E 29 49 00	-2 m - 193 m a.s.l.	2003 Ramsar inscription	<p>Biological/Ecological notes: The lowlands woods include native poplar fluvial forests, riparian forests with willow formations, alluvial ash-dominated forests and artificial mono-dominant plantings. The upland woods are composed of semi-arid oak curtain forests and stands, natural and artificial tree-shrubby thickets, compound forest plantings and robinian plantings for anti-erosion and production purposes. The native meadows and steppes include the rare and valuable dry native grasslands, weeded dry grasslands and pastures, tall-herbaceous lowland meadows, lowland pastures, wet meadows and fens, reedbeds. Talmaz Wetland is exceptional for its diversity of algae, phyto- and zooplankton and water vegetation. The combination of wetland and upland natural habitats, with agricultural lands create ideal conditions for high number and diversity of birds species. The wetland supports high faunal species diversity, including nationally threatened species.</p> <p>Importance: The site is a (near-)natural wetland of the northwestern Black Sea basin region. It contains rare ecosystems, such as the ash community Fraxineto-Populeta (albae), an unique old stand floodland poplar forests, communities with Trapa natans and Salvinia natans, and reed bogs. The site supports IUCN red-listed bird species, such as the nesting Crex crex and Phalacrocorax pygmaeus, the migratory Anser erythropus, Branta ruficollis, Aythya nyroca, Circus macrourus and Haliaeetus albicilla, and the regular visitor Pelecanus crispus. Other IUCN red-listed species include insects (e.g. Osmoderma eremita, Sago pedo), amphibians (e.g. Bombina bombina, Hyla arborea, Emys orbicularis), mammals (e.g. Myotis dasycneme, M. bechsteini, Nyctalus lasiopterus, Mustela lutreola, Lutra lutra), fishes (e.g. Hucho hucho, Umbra krameri), and various species of sturgeons. The wetland is an important site for freshwater migratory fish as it supports more than 90% of the species of the region and offers a high diversity of biotopes: riverbed spawning ground, areas of pelagic spawning and nursery.</p> <p>Conservation Measures: The site harbours several state-protected reserves: Nature Reserves of Copanca and Leuntna, Talmaz Wetland, Nature Reserves of Olanesti Forest and Togai Bog, and the Landscape Reserve Turkish Garden. There are also three paleontological Nature Monuments. The Law on Water Protection Zones and Bands of Rivers and Water Bodies (2001) provides strict and clear restrictions on land use. The RIS and the management plans of this site were prepared in 2001 during a Ramsar Small Grant Funds project. It has been adopted by local authorities and the Ministry of Ecology, Construction and Territorial Development. The creation of the Lower Dniester National Park (60,000 ha) is under discussion.</p>		Source 3)
Moldavia	Lower Prut Lakes	---	19152	State Nature Reserve (Zapovednik)	Ramsar Site	Lakes, Forest, Steppe	1b	Yes	Yes, low	N 45 42 00 E 28 11 00	2 m - 153 m a.s.l.	Ramsar Site in 2000	<p>Importance: The site contains the largest natural lakes in Moldova, Beleu and Manta. These lakes are unique ecosystems, described as the last natural floodplains in the lower Danube region. The site supports the globally vulnerable and endangered fish species Acipenser ruthenus, Umbra krameri and Cyprinus carpio, the birds Branta ruficollis, Anser erythropus, Aquila clanga, Crex crex and Oxyura leucocephala, and the mammals Rhinolophus hipposideros, Myotis dasycneme, Lutra lutra and Mustela lutreola. "At lower risk" species found at the site are the fish Carassius carassius, the reptile Emys orbicularis, the amphibians Triturus cristatus and Bombina bombina, and the birds Phalacrocorax pygmaeus, Pelecanus crispus, Aythya nyroca and Haliaeetus albicilla. In total, at least 39 mammal, 203 bird, 5 reptile, 9 amphibian and 41 fish species have been recorded at the site.</p> <p>Biological/Ecological notes: Main vegetation types at the site are grassland, forest and aquatic vegetation. The grasslands support about 200 species of plants. Main forest vegetation is represented by Salix spp. and Populus spp. Aquatic vegetation includes (unrooted) submerged, floating, and emergent vegetation (especially reed beds). In addition to the globally threatened species, quite a number of nationally rare and threatened floral and faunal species occur at the site. There are dry pastures on the slopes.</p> <p>Hydrological/Physical notes: Geologically, the Lower Prut area is underlain by unconsolidated bedrock that is unstable and geomorphically very active. The soils are mainly alluvial with chernozems in some places. The general landform is a relatively narrow river valley with adjoining river terraces and in some places, river-cliffs intersected by ravines. The Lower Prut floodplain may reach 6 km wide. The river channel is rather sinuous, with a width of about 60-80 m, and depth around 2-4 m. The banks are steep, about 1-2 m high, with an estimated erosion rate of 20-30 cm per year (10-12%). The upper floodplain terraces are strongly eroded and cut by numerous ravines. Lake Beleu was originally a Danubian lake, affected by floods in River Danube. Water from Prut River enters the lake via two canals. During years of low rainfall, the lake dries out. Lake Beleu covers about 1,700 ha and has an average depth of 1.5 m. Lake Manta was formed as a result of the conjunction of several former natural lakes interconnected by natural channels. In the 1970s, a fish farm was established by embanking and expanding Lake Fontana (116 ha). Now it consists of eight fishponds with a maximum depth of about 1.5 m. The overall length of the site is approximately 148 km, and it contains 14,400 ha of wetlands. The site is important for groundwater recharge, flood control and sediment trapping. The climate is moderate and comparatively mild due to the proximity of the Black Sea. The average annual temperature is 9-10°C. The average annual precipitation is 450 mm.</p>	Planned to round up as a Biosphere Reserve	Source 3)

U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Ukraina	Askania Nova Biosphere Reserve	Аскания-Нова Биосферный Резерват	Core: 11.054 Buffer: 6609 Transition: 15.345 Total 33.008	Biosphere Reserve	MAB Biosphere Reserve	feather grass steppe	1b, 4, 5	Yes	No	N 46 29 00 E 33 51 00	20-35 m a.s.l.	1984 (Biosphere Reserve) Origins from 1888	Physio-Geography: Askaniya-Nova Biosphere Reserve is a representative of the Black Sea southern-steppe biogeographic province, situated 60 km south-east of the town of Kakhova close to the Black Sea. Within this area, the Festuca and Stipa steppe ecosystem has been conserved like an island in the Dniiper-Molochnoe lowland, which has otherwise intensive land use practices. There are six villages and one settlement within the biosphere reserve, with a total of 10,000 people (1997) who are mainly engaged in the cultivation of cereals (wheat, barley, corn), vegetables and melons, as well as in animal husbandry (sheep, cattle, pig). Tourism is a major activity in the area with about 1,5 million national and 3,000 foreign tourists (1997). The biosphere reserve is also interesting from a cultural point of view. Created as the first steppe reserve in the Ukraine in 1888, it comprises a dendrological park of the 19th century and a zoological park with a breeding centre for Przewalski horse, ostriches, aboriginal ungulates and birds. The site has a long research and monitoring history. Fauna: But the place is famous not only for its grass. Askania's rich fauna is above all expectations. Bizons, buffalos, zebraz, Scottish ponies coexist peacefully in the feather-grass. Nevertheless, Askania's favorite is the Perzhevsky horse. There are some 100 Perzhevsky horses in Askania out of 1 300 left in the whole world. Ukraine is considered the second motherland for this rare Asian wild animal. The nature reserve not far from the Black Sea was founded by German colonist Friederich Pfaltz-Fein in 1856. The present-day collection of the Ascania Zoo includes 5000 heads of 110 species of unthreatened animals and birds from America and Africa, Asia and Europe, most of them coming from steppes, savannas and prairies. The Park is often called a Kingdom of Birds since it has lots of rare and heavenly beautiful swans, pheasants, ostriches, crown-billed cranes, peacocks - near 5 000 inhabitants in total. Travelers can go on a photo-safari around the Park to take home a piece of this Kingdom. Or in the Big Chapel Valley. Here the fans of ecological tourism can go horse-riding and enjoy with an utmost pleasure their stay amidst the virgin wilderness of nature. Flora: Feather grass steppe dominated by Stipa lessingiana, S. ucrainica and S. capillata together with fescue (Festuca sulcata) and crested hair grass (Koeleria cristata); fesucetae communities with Festuca valesiaca, Crinitaria villosa, Stipa ucrainica etc.; slopes with stipetae associations and species such as Stipa capillata, S. ucrainica, Festuca valesiaca etc.; dales with elytrigetae communities supporting Elytrigia pseudocaesia, Bromopsis inermis, Poa angustifolia etc.; wet meadows with Beckmannia eruciformis, Alopecurus pratensis, Juncus gerardii etc.	1 Area	Source 6) Source 19) Source 29) Source 34)
Ukraina	Ukrainian Steppe Zapovednik	Украинский Заповедник	2.756	Zapovednik	-	steppe	1b	Yes	No	N 47 10 00 E 37 05 00	220-325	1961	Physio-Geography: It's located within the Michailovskaya Tzelina (virgin meadow steppe), Homutovskaya steppe (plains) and stony fescue-feathergrass steppes, on the border of two forest-steppe provinces of the forest-steppe zone. Fauna: The main representatives of mammals here are rodents: Field Vole, Steppe Mouse, Great Jerboa Alactaga major, Mole-rat Spalax microphtalmus etc. Resident steppe species are Hares (Lepus europeausa, L. timidus) and Fox Vulpes vulpes. Moose Alces alces, Roe Deer Capreolus capreolus, Wild Boar Sus scropa and Wolf Lupus canis became more common. There are 70 bird species in the reserve. Many species of larks and singing birds are nesting here. Among birds of prey Hobbies Falco subbuteo and Pallid Harriers Circus macrourus are the most widespread. Flora: Vegetation mainly refers to the northern (meadow) grassland and graminia steppes. According to the last data there are about 500 species of vascular plants within the protected territory. As well, 7 tree species, 10 bush species and 8 semi-bush species are growing here.	5 Clusters	Source 19) Source 29) Source 34)

Ukraina	Luganskiy Zapovednik (includes "Striltsovski Step" reserve)	Луганский Заповедник	1607 ("Srtlrsovski Step 494, Provalski Step 587,5)	Zapovednik	-	pontian steppe	1b	Yes	No	N 48 10 00 E 39 45 00'	120-325	1968 (1947 Striltsovski Step)	<p>Physio-Geography: The reserve consists of three parts, located in the extreme south-east of Ukraine. Two of them – Strel'zovskaya and Proval'skaya steppes – represent typical virgin East European forbear-fescue-feathergrass steppes. The third territory – Stanichno-luganskii district – includes flood-lands ecosystems of the Seversky Donetz river valley</p> <p>Fauna: Fauna is characterized by presence of steppe and forest zones. The reserve contains great numbers of rodent species. Moose <i>Alces alces</i>, Roe-Deer <i>Capriolus capriolus</i> and Wild Boar <i>Sus scropa</i> become more common due to protection. Such birds as Quail <i>Coturnix coturnix</i>, Hobby <i>Falco subutteo</i>, Red-footed Falcon <i>Falco vespertinus</i>, Scops Owl <i>Otus scops</i>, Song Thrush <i>Turdus philomelos</i> and Black Thrush <i>Turdus merula</i> became very rare in the region. Such species as Sky Lark <i>Alauda arvensis</i>, Crested Lark <i>Galerida cristata</i>, Short-toed Lark <i>Calandrella brachydactyla</i>, Wheatear <i>Oenanthe oenanthe</i>, Pied Wheatear <i>Oenanthe pleschanka</i> and Bee-eater <i>Merops apiaster</i> are nesting here.</p> <p>Flora: Flora of the Strel'tzovskaya Steppe consists of 489 species of plants, 54 of which are endemic species and 13 species are included into the Ukrainian Red Data Book. Proval'skaya steppe district contains 684 plant species, out of these 27 species are listed in the Ukrainian Red Data Book. Stanichno-luganskoye district contains 531 species of flowering plants, 4 of which are listed in the Ukrainian Red Data Book.</p>	4 Clusters	Source 19) Source 23) Source 29) Source 34)
Ukraina	Chernomorski Biosphere Reserve	Черноморски Биосферный Резерват	Core:70.509 Buffer:18,620 Transition:9.278 Total:98.407	Biosphere Reserve	MAB Biosphere Reserve Ramsar Status (three sites)	Temperate grasslands with marine component and wetlands	1b, 4, 5	Yes	Yes	N 46 24 00 E 31 53 00	0-20	1984	<p>Physio-Geography: Chernomorskiy (Russian for Black Sea) Biosphere Reserve is situated on the northern coast of the Black Sea about 45 km south-west of the city of Kherson. It represents shallow coastal, estuarine and inland wetlands as well as marshes, shallow coastal bays, dune systems, halophytic seaside steppe and forest-steppe, which was once common in this region. However, due to agriculture, pine plantations and other economic developments in the surrounding area, the biosphere reserve has an important conservation function for these ecosystem relicts. The bird life of the area is particularly rich and includes three Ramsar sites.</p> <p>There are no settlements within the biosphere reserve, however about 12,000 people live on a permanent basis beside the biosphere reserve boundaries, (15,600 people in the summer, 1998). Fishing is the only economic activity carried out in the biosphere reserve (buffer zone). The important kinds of economic activities outside the biosphere reserve borders are cattle breeding, forestry, salt extraction and irrigation farming. A nature museum provides environmental education activities to children and the general public. The biosphere reserve also coordinates a Children's Ecological Society.</p> <p>Fauna: Yagorlytska Bay is important for 300,000 moulting, migrating and wintering waterbirds (45 species), including <i>Cygnus cygnus</i>, <i>C. olor</i> (10,000 birds), <i>Anser anser</i>, <i>A. albifrons</i>, <i>Anas platyrhynchos</i> (about 80,000), <i>A. penelope</i>, <i>A. crecca</i>, <i>Aythya ferina</i> (25,000-40,000), <i>A. nyroca</i>, divers <i>Gavia</i> sp., grebes <i>Podiceps</i> sp., the coot <i>Fulica atra</i> (30,000-50,000), waders <i>Calidris alpina</i> (3,000-5,000), <i>Gallinago gallinago</i>, <i>Scolopax rusticola</i>, <i>Philomachus pugnax</i> (4,000-6,000), <i>Numenius arquata</i>, <i>N. phaeopus</i> and <i>Limosa limosa</i>, and the threatened species <i>Branta ruficollis</i>, <i>Tetrax tetrax</i>, <i>Otis tarda</i> and <i>Numenius tenuirostris</i>. The 3,500-6,000 breeding pairs of waterbirds include threatened species, such as the gull <i>Larus cachinnans</i> (4,000), the tern <i>Sterna hirundo</i> (1,500), and waders <i>Himantopus himantopus</i> and <i>Tringa totanus</i>. Other breeding birds are the duck <i>Somateria mollissima</i>, the cormorant <i>Phalacrocorax carbo</i> and the wader <i>Vanellus vanellus</i>. Ukrainian Red Data Book fish species include the salmon <i>Salmo trutta labrax</i>, <i>Callionymus belenus</i>, <i>Huso huso ponticus</i> (relic), and sturgeons <i>Acipenser sturio</i>, <i>A. nudiventris</i>, and the relic <i>A. stellatus</i> (a sturgeon of commercial interest).</p> <p>Flora: Temperate grasslands with marine component and wetlands. Forest steppe on alluvial sands with oak (<i>Quercus robur</i>), birch (<i>Betula borysthenica</i>), <i>Prunus stepposa</i> etc.; seaside halophyte bunchgrass steppe supporting <i>Festuca valesiaca</i>, <i>Puccinellia fominii</i> and <i>Elytrigia pseudocaesia</i>; coasts of sea bays with reed (<i>Phragmites australis</i>), <i>Leymus sabulosus</i>, <i>Puccinellia gigantea</i> etc.; islands of continental or accumulative genesis, sand spites with same species as precedent habitat; shallow water sea bays with <i>Zostera marina</i>, <i>Z. minor</i>, <i>Phyllophora nervosa sphaerica</i> etc.</p>	1 Area	Source 3) Source 7) Source 27) Source 29) Source 34)

K	K	K	K	K	K	K	K	K	K	K	K	K	K	K	K
Kazakhstan	Korgalzhin Zapovednik, Kazakhstan	Коргалжынский Заповедник	258920	Zapovednik (Strict protected Area)	Ramsar Site, Member of Living Lakes Network	Wetland and Steppe	1b	Yes	Yes	N 50 26 00 E 69 11 20	300 - 330 m a.s.l.	1968	<p>Physio-Geography: The site is situated in the Kazakh Rolling Hill region and is characterized by its vast fresh, salt and brackish lakes surrounded by steppe on rolling hills.</p> <p>Fauna. Fauna consists of 358 species of vertebrates, including 41 species of mammals, 299 species of birds, 14 fish species, 2 species of amphibian and 2 species of reptiles. About 300 species of bugs are found here as well. The most diverse are the birds, 120 of which are nesting here (swans, gees, ducks, coots, white egrets, gulls, greater flamingos), the rest are passage migrants (ducks, waders, passerines). Reeds are inhabited by rails, moorhens, marsh harriers). Along the rivers one can find large numbers of warblers, blue throats, pipits, nightingales and stonechats. In the steppe zone of the region one can still find breeding Great Bustard <i>Otis tarda</i>, Sociable Lapwing <i>Vanellus gregarius</i>, Demoiselle Crane <i>Anthropoides virgo</i> – listed in the Red Data Book of Kazakhstan. A total of 12 bird species is in the Red Data Book of Kazakhstan. There are high numbers of Black Lark <i>Melanocorypha yeltoniensis</i> and White-winged Lark <i>Melanocorypha leucoptera</i>, Caspian Plover <i>Charadrius asiaticus</i> and Sociable Lapwing <i>Vanellus gregarius</i> nesting here – all are endemic species for the Eurasian steppe zone. Lake Tengiz is the northernmost place for breeding colonies of Greater Flamingo <i>Phoenicopterus ruber</i>. Half of the mammals are rodents, the rest are: Wolf <i>Canis lupus</i>, Fox <i>Vulpes vulpes</i>, Corsac Fox <i>Vulpes corsac</i>, Badger <i>Meles meles</i>, Marten <i>Mustella nivalis</i>, Steppe Polecat <i>Mustella eversmanni</i>, Wild Boar <i>Sus scropa</i> etc. Ichthyofauna is represented by 14 species of fish, among which are <i>Carassius carassius</i>, <i>Carassius auratus</i>, <i>Esox lucius</i> and Amphibians: <i>Lucioperca lucioperca</i>, <i>Rana ridibunda</i>, <i>Emys orbicularis</i>. Reptiles: <i>Lacerta agilis</i>, <i>Vipera ursinii</i></p> <p>Flora: Northern part of the reserve – dry steppes – is covered by xerophyte-fescue-feather motley grass. To the south of Tengiz Lake alternation of white wormwood-fescue-feather associations with black wormwoods and sea lavender is noted. In total on the territory of the reserve 300 species of plants are found, 16 species of bushes (6 species of willows, a honeysuckle, dog-rose, karagan and meadow-sweet). The grassy vegetation is presented by xerophytes (a feather grass, fescue, <i>Koeleria</i>, wormwood). On saline soils grows halophytes or succulents. The wood vegetation is absent. Rare and endemic plants include 45 species: Schrenk tulip <i>Tulipa schrenkii</i>, black wormwood <i>Artemisia pauciflora</i>, Lessing feather grass <i>Stipa lessingiana</i> and others.</p>	Conservation of rare morphology of lake landscapes biodiversity of the unique natural complex, the birds occupied by valuable kinds, using the international protection	Source 32)
Kazakhstan	Atbasarsky Zakasnik	Атбасарский Заказник	75100	Zakasnik (Wildlife Reserve)	no	Steppe together with Korgalzhyn	4	Yes	Yes	N 51 19 07 E 68 23 13	270 – 310 m a.s.l.	1986	<p>Physio-Geography: Situated in the dry steppes which suffer from increasing anthropogenic influence. The landscape is slight undulating and covered by short grass steppes and small water bodies.</p> <p>Fauna. Mammals: European Hare <i>Lepus europeaus</i>, Wolf <i>Canis lupus</i>, Fox <i>Vulpes vulpes</i>, Corsac Fox <i>Vulpes corsac</i>. On migration flocks of Saiga Antelope <i>Saiga tatarica</i> is passing through. Bobak marmot is a rare species, which needs protection. Bird species: Black and White-winged Lark <i>Melanocorypha yeltoniensis</i> and <i>Melanocorypha leucoptera</i>, Sociable Lapwing <i>Vanellus gregarius</i>, Pallid Harrier <i>Circus macrourus</i>, Common and Demoiselle Cranes <i>Grus grus</i>, <i>Anthropoides virgo</i>, Great Bustard <i>Otis tarda</i> and others. On migration different species of waterfowl use the region as a stop-over.</p> <p>Flora: The vegetation is presented by steppe species of feather-grass-fescue vegetation: feather grass, fescue, wormwood, sedge.</p>	together with Korgalzhyn	Source 32)

Kazakhstan	Naurzum Zapovednik, Kazakhstan	Наурызумский Заповедник	191381	Zapovednik (Strict protected Area)	no	Steppe, Forest Steppe, Lake	1b, 4	Yes	Yes	N 51 29 10 E 64 18 13	250 – 350 m a.s.l.	1931	<p>Physio-Geography: Situated in the Turgai depression with some lakes, sand dunes and undulating steppes.</p> <p>Fauna: Fauna of vertebrates includes 35 species of mammals, 260 bird species, 10 species of reptiles, 6 species of fish. Mammals are represented by Suslik Cittalus pigmeus, Corsak Fox Vulpis corsac, Fox Vulpis vulpis, Wolf Canis lupus, Jerboa Allactaga major, Eared Hedgehog Erinaceus auritus, Moose Alces alces, Roe deer Capreolus capreolus, Lynx Linx linx, Hare Lepus timidus and Wild Boar Sus scrofa. Fauna of birds consists of forest, steppe and waterfowl species, such as Black Lark Melanocorytha yeltoniensis and White-winged Lark Melanocorytha leucoptera, Turtle Dove Streptopelia turtur, Great Spotted Woodpecker dendrocopus major, Grey Partridge Perdix perdix, Demoiselle Crane Anthropoides virgo and Little Bustard Tetrax tetrax. Rare species of birds of the region include Imperial Eagle Aquila heliaca, Saker Falcon Falco cherrug, Golden Eagle aquila chrysaetus, Osprey Pandeon haliaetus, Black Stork Ciconia nigra, Great Black-headed Gull Larus ichtyaetus and Siberian Crane Grus leucogeranus. Number of invertebrates is up to 420 species.</p> <p>Flora: The steppe vegetation occupies 2/3 of the reserve's territory, including feather grass steppes. The forests are presented by Naurzumsky, Terseksy and Sypsyn. They represent the most southern pine, birch and aspen stands in the steppes of Kazakhstan. As a whole, the flora of higher plants of the reserve counts 687 species.</p>		Source 32)
Kazakhstan	Sarykopinsky Zakasnik	Сарыкопинский Заказник	85200	Zakasnik (Wildlife Reserve)	no potential Ramsar Site	together with Naurzum Zapovednik	4	Yes	Yes	N 50° 13 37 E 64° 07 16	100 - 115 m a.s.l.	1986	<p>Physio-Geography: The lake system is situated in the Turgai depression in a flat steppe landscape.</p> <p>Fauna. Fauna mainly consists of waterfowl and mammals – Wild Boar Sus scropa, European Hare Lepus europeaus, Steppe Polecat Mustella eversmanni, Badger Meles meles and etc.- species rare for this territory</p> <p>Flora: In the steppes of Sarykopa fescue-feather-grass, wormwood and halophytic vegetation is common. Locally there are sites with rich meadow motley grass communities.</p>	It is planned to enlarge this territory to a Natural reservation with about 600.000 ha in size. The proposed core zone will cover 50% of the site.	Source 32) Source 31)
Kazakhstan	Tounsorsky Zakasnik	Тоунсорский Заказник	35000	Zakasnik (Wildlife Reserve)	no	together with Naurzum	4	Yes	Yes	N 51 14 59 E 62 21 58	220 – 240 m a.s.l.	1974	<p>Physio-Geography: Steppe landscape zone of the temperate zone, northern subzone of steppes, the country the Kazakh plateau and Ubagan-Chaglinsky district, the Kustanay region.</p> <p>Flora: The vegetative cover is presented by fescue-feather-grass or feather-grass-fescue steppes on the increased sites and fescue, fescue-wormwood, Camphorosma species and other halophytic species on solonetz and saline soils.</p> <p>Fauna: Mammal fauna is typical for Central Asian steppe zone: Hamster Cricetus cricetus, Eversmann's Hamster Allocricetulus eversmanni, Steppe Polecat Mustella eversmanni, Corsac Fox Vulpes corsac, Field Mole Microtus arvalis etc. Birds: Mute Swan, Red-breasted Goose, Brent Goose, Dalmatian Pelican and etc.</p>		Source 32)
Kazakhstan	Koktshetau National Park	Кокшетау Национальный Парк	101148	National Park	no	Steppe, Forrest Steppe	2	Yes	No	N 52 51 49 E 68 55 08	400 – 500 m a.s.l.	1996	<p>Physio-Geography: Situated in the temperate steppe zone, in the Northern subzone with some forest formations building the forest-steppe. It is part of the Rolling Hill Area in North Kazakhstan Ubagan-Chaglinsky okrug, Chiglinsky district.</p> <p>Flora: Forest is formed by pine, birch and aspen. Slopes of hills are covered herb-motley-grass and motley-cereal meadow steppes, and at the tops of the hills stony steppes are found. The flora counts more than 500 species of the higher plants. Therefore a large amount of species of mosses is found. The list of rare plants compiles 109 species, 12 from them are including in the Red Data Book of Kazakhstan.</p> <p>Fauna: Fauna of vertebrates includes 305 species and consists of 54 mammal species, 223 bird species, 22 fish species and subspecies, 1 amphibian species, 5 reptile species. The main mammal species are: Wild Boar, elk, hare, Teleut-squirrel, Bobak marmot etc. Birds are represented by partridges, grouses, geese, quails, larks, kestrels etc. Rare species, with declining population is the Capercaillie. There are 87 rare species which need urgent protection, including 49 species of birds, 17 mammal species and 21 invertebrates. 41 species is in Red Data Book of Kazakhstan.</p>		Source 32)

Kazakhstan	Burabai Nationalpark	Бурабай Национальный Парк	87510	National Park	no	Forest, Steppe, Forest Steppes, Lakes, low mountains	2	Yes	Yes	N 53 00 25 E 70 25 16	300 – 500 m a.s.l.	2000	<p>Physio-Geography: Situated in the temperate steppe zone, in the Southern subzone (fescue-feathergras) steppes on the Kazakh plateau and Rolling Hill Area.</p> <p>Flora: Forest is formed by pine, birch and aspen. Three types of meadows are noted: marshy (reed meadows prevail), the presents and some steppe like. More dominant are fescue-feather grass steppes. The flora counts more than 364 species. Therefore a plenty of species of mosses is revealed. As a whole the biodiversity of flora on the territory it is very high.</p> <p>Fauna: Fauna of vertebrates includes 305 species and consists of 54 mammal species, 223 bird species, 22 fish species and subspecies, 1 amphibian species, 5 reptile species. The main mammal species are: wild boar, roe deer, hare, teleut-squirrel, bobak marmot etc. Birds are represented by partridges, grouses, geese, quails, larks, kestrels etc. Rare species, with declining population, is Capercaillie. There are 87 rare species which need urgent protection, including 49 species of birds, 17 mammal species and 21 invertebrates. 41 species is in Red Data Book of Kazakhstan.</p>		Source 32)
Kazakhstan	Vostochny Zakasnik	Восточный Заказник	100000	Zakasnik (Wildlife Reserve)	no	together with Burabai NP	4	Yes	Yes	N 52 44 34 E 70 59 26	280 – 380 m a.s.l.	1986	<p>Physio-Geography: Situated in the temperate steppe zone, in the Southern sub zone (fescue-feather gras) steppes on the Kazakh plateau and Rolling Hill Area.</p> <p>Flora: Flora is presented by shrubs and also motley-grass-fescue, red feather-grass associations. Tree species are presented by birch, elm and some rose bushes.</p> <p>Fauna: Mammals represented by moose Alces alces, Roe deer, polecat, Ermine Mustella erminea, suslik, jerboa, Field Vole Microtus arvalis etc. The main protected species is bobak marmot, listed in the red data book of Kazakhstan. Fauna of birds includes Saker Falcon Falco cherrug, Golden Eagle Aquila chrysaetus, Osprey, Mute Swan Cygnus olor, Velvet Scooter Mellanita fusca, Little Scooter Tetrax tetrax, Sparrowhawk Accipiter nisus, Great Bustard Otis tarda. Some species use the territory of the sanctuary during migration. Among them are: Red-breasted Goose Branta ruficollis, White-headed Duck Oxyura leucocephala, Curlew Numenius arquata etc.</p>	Conservation of habitats of rare species of mammals and waterbirds.	Source 32)
Kazakhstan	Bayanaulsky National Park	Баянаулский Национальный Парк	50688	National Park	no	Forrest Steppe, Lakes, low mountains	2	Yes	Yes	N 50 38 46 E 75 34 33	350 – 500 m a.s.l. (max. 1027)	1985	<p>Physio-Geography: Situated in the temperate steppe zone, in the Southern subzone (fescue-feathergras) steppes on the Kazakh plateau and Rolling Hill Area, Bayanaul-Karkaralinsky district, Bajanaulsky region.</p> <p>Flora: Steppe is predominant on the site i.e. red-feather-grass, oats and fescue formations. In the mountain zone forest - mainly pine - are widely presented. The flora of the park consists of 270 plant species. In the forest zone of the park pine, black alder, birch, aspen and willow are present.</p> <p>Fauna: Within the parks territory one can find 40 species of mammals, typical for the steppe zone: Mustella eversmanni, Corsac Fox Vulpes corsac, Bobac Marmot Marmota bobac, Cittelus erythrognus, Great Jerboa Allactaga major, Lagurus lagurus, Ochotona pusilla and Eared Hedgehog Erinaceus auritus. On the highlands one can see Ovis ammon, Roe Capreolus capreolus, Badger Meles meles, Marten Mustella nivalis, Arvicola amphibius, Clethrionomys rutilus etc. Lynx Felis lynx becomes quite rare in the region. Birds: the most widespread here are Common Cuckoo Cuculus canorus, Grey-necked Bunting Emberiza buhanani, Grey Partridge Perdix perdix, Black Grouse Tetrao tetrix, Tree Pipit Anthus trivialis, Yellowhammer Emberiza citrinella, Rose-coloured Starling Sturnus roseus, Great Spotted Woodpecker Dendrocopus major. Among waterfowl there are grebes, Mallard Anas platyrhynchos, Gadwall Anas strepera and Ruddy Shelduck Tadorna ferruginea etc. Summer passage species are: Black Kite Milvus migrans, Common Buzzard Buteo buteo, Golden Eagle Aquila chrysaetus, Montagu's Harrier Circus pigargus and Kestrel Falco tinnunculus. Kazakhstan Red Data Book species are Golden Eagle Aquila chrysaetus, Black Grouse Tetrao tetrix and Grey Partridge Perdix perdix.</p>		Source 32)
Kazakhstan	Kyzyltau Zakasnik	Кызылтау Заказник	60000	Zakasnik (Wildlife Reserve)	no	together with Bayanaulsky NP	4	Yes	No	N 50 25 55 E 76 11 50	500 – 700 m a.s.l.	1986	<p>Physio-Geography: Situated in the temperate steppe zone, in the Southern subzone (fescue-feathergras) steppes on the Kazakh plateau and Rolling Hill Area, Bajanaul-Karkaralinsky district, Bajanaulsky region.</p> <p>Flora: It is presented by a bushy Caragana-fescue and Caragana-oat grass steppes, with some birch and aspen woods. Juniper grows at tops of mountains.</p> <p>Fauna: Mammals: Badger Meles meles, Wolf Canis lupus, Bobac Marmot Marmota bobac, Lepus europeus, Fox Vulpes vulpes etc. The main protected animal here is Argali Sheep Ovis ammon. In 1978 there were only 30 individuals on the territory of the sanctuary. The most interesting bird species for the region Golden Eagle Aquila chrysaetus, Black Grouse Tetrao tetrix and Grey Partridge Perdix perdix</p>		Source 32)

Kazakhstan	Karkaralinsky National Park	Каркаралинский Национальный Парк	95202	National Park	no	Forrest Steppe, Lakes, low mountains	2	Yes	Yes	N 49 17 06 E 75 34 54	500 – 600 m a.s.l. (max. 1403)	1998	<p>Physio-geographic: Situated in the temperate steppe zone, in the Southern subzone (fescue feather-grass) steppes on the Kazakh plateau and Rolling Hill Area, Bajanaul-Karkaralinsky district, Bajanaulsky region.</p> <p>Flora: The steppe vegetation is typical for mountain slopes and rolling hills. On the hills the steppe vegetation is combined with some pine woods.</p> <p>Fauna: Fauna. Fauna is quite diverse. Mammals are represented by typical forest species: Squirrel <i>Sciurus vulgaris</i>, Cletrionomys <i>rutilus</i>, Roe Deer <i>Capreolus capreolus</i>; steppe species: Great Jerboa <i>Alactaga major</i>, Mongolian Five-toed Jerboa <i>Alactaga sibirica</i>, Little Ground-Squirrel <i>Citellus pigmeus</i>, Steppe Polecats <i>Mustella eversmanni</i>; meadow-steppe species: Wild Sheep <i>Ovis amon</i>, <i>Marmota bobak</i>, <i>Ochotona pusilla</i>. Birds: alongside with the typical steppe species, one can meet such birds as Rock Thrush <i>Monticola saxatilis</i>, Black Redstart <i>Phoenicurus ochruros</i>. Along the rivers Common Crane <i>Grus grus</i> is nesting, quite often Golden Eagle <i>Aquila chrysaetus</i>, Eagle Owl <i>Bubo bubo</i>, Saker Falcon <i>Falco cherrug</i>, Black Grouse <i>Tetrao tetrix</i>, Yellow-breasted Bunting <i>Emberiza aureola</i> are seen.</p>	Source 32) Source 20)
Kazakhstan	Karkaralinsky Zakasnik	Каркаралинский Заказник	80000	Zakasnik (Wildlife Reserve)	no	together with same named NP	4	Yes	No	N 49 09 45 E 76 07 52	1000 – 1200 m a.s.l.	1986	<p>Physio-geography: Situated in the temperate steppe zone, of the Southern subzone (fescue feather-grass) steppes, on the Kazakh plateau and Rolling Hill Area, Priuralsko-Turgaiskij region, Southern-Kazakh-Rolling Hill Area, Bajanaul-Karkaralinsky district, Karasorsky region.</p> <p>Fauna. Mammals: Agali sheep, Roe Deer <i>Capreolus capreolus</i>, Lynx <i>Lynx lynx</i>, Hare, Black Grouse <i>Tetrao tetrix</i>, Black Stork <i>Ciconia nigra</i>, Demoiselle Crane <i>Anthropoides virgo</i> etc. A reintroduction project for Red Deer <i>Cervus elaphus</i> is now carried out.</p> <p>Flora: Flora presented, on slopes of mountains, pine woods, aspen forests, birch forests, motley feather grass with some typical other grass species. In lowlands Sphagnum bogs are located - relicts of a glacial age.</p>	Source 32)
Kazakhstan	Kursky Zakasnik	Кувский Заказник	33500	Zakasnik (Wildlife Reserve)	no	together with Karkaralinsky	4	Yes	No	N 49 38 18 E 76 23 10	700 – 750 m a.s.l.	1986	<p>Physico-geography: Located in the steppe landscape zone of the temperate zone, Southern subzone (fescue feather-grass) steppes, on the Kazakh plateau and Rolling Hill Area, Priuralsko-Turgaiskij region, Southern-Kazakh Rolling Hill province, Bajanaul-Karkaralinsky district, Karasorsky region.</p> <p>Fauna. Fauna is represented by mammals: Agali Sheep <i>Ovis amon</i>, Roe Deer <i>Capreolus capreolus</i>, Wild Boar <i>Sus scrofa</i>; birds: Grey Partridge <i>Perdix perdix</i>, Willow Grouse <i>Lagopus lagopus</i> and other species.</p> <p>Flora: The vegetative cover is presented by pine sparse growth of trees on slopes of mountains, on lowlands - birch and aspen sparse growth of trees.</p>	Source 32)
Kazakhstan	Buyratausky National Park (planned)	Буйратауский национальный природный парк	170366	no	no	Steppe, Forest Steppe	no (potential 2)	Yes	No	N 51 17 46 E 73 16 23	300 – 600 m a.s.l.	1986	see below at Yereimtausky Zakasnik	Source 32)

Kazakhstan	Yereimентаускy Zakasnik	Ерейментауский Заказник	35000	Zakasnik (Wildlife Reserve)	no	would be part of the future Буыратаускy NP	4	Yes	No	N 51 25 10 E 73 16 04	300 – 600 m a.s.l.	no	<p>Physico-geography: Located in the steppe landscape zone of the temperate zone, Southern sub zone (fescue feather-grass) steppes, on the Kazakh plateau and Rolling Hill Area, Priyuralsko-Turgaiskaya oblast, Southern-Kazakh Rolling Hill province, Tengiz-Nurinsky okrug, Ladyzhensky region.</p> <p>Fauna. Fauna of invertebrates of the region consists of 45 species of mammals, 127 species of birds, 1434 species of insects. The main mammal species are the following: Wolf <i>Canis lupus</i>, Fox <i>Vulpes vulpes</i>, Corsac Fox <i>Vulpes corsac</i>, Marten, Great Eared Hedgehog, Red Cheek Suslik, Brown Hare and Arctic Hare, etc. Agali Sheep <i>Ovis ammon</i> is in the Red Data Book of Kazakhstan. Ornythofauna is represented by 16 of 18 classes of birds of Kazakhstan. The most widespread are the following: Short-toed Lark <i>Calandrella bracydactyla</i>, Sky Lark <i>Alauda arvensis</i>, Black Lark <i>Melanocorypha yeltoniensis</i>, White-winged Lark <i>Melanocorypha leucoptera</i>, Wheatear <i>Oenanthe oenanthe</i>, Pied Wheatear <i>Oenanthe pleshanka</i>, Tawny Pipit <i>Anthus campestris</i> etc. Waterfowl species are less represented. 13 species are in the Red Data Book of Kazakhstan, including some migrating species: Spoonbill <i>Platalea leucorodia</i>, Ferruginous Duck <i>Aythya nyroca</i>, Velvet Scooter <i>Melanitta fusca</i>, Steppe Eagle <i>Aquila nipalensis</i>, Common Crane <i>Grus grus</i>, Demoiselle Crane <i>Anthropoides virgo</i>, Houbara Bustard <i>Chlamydotis undulate</i>, Little Bustard <i>Tetrao tetrix</i>, Eagle Owl <i>Bubo bubo</i>, White Pelican <i>Pelicanus onocrotalus</i>, Dalmatian Pelican <i>Pelicanus crispus</i>, Saker Falcon <i>Falco cherrug</i> and other species. Amphibians are represented by <i>Rana arvalis</i> and <i>Bufo viridis</i>. Reptiles: <i>Eremias arguta</i>, <i>Lacerta agilis</i>, <i>Vipera renardi</i>, <i>Vipera berus</i>, <i>Agkistrodon halys</i>. Fish species: <i>Rutilus rutilus</i>, <i>Carassius auratus</i>, <i>Carassius carassius</i> etc.</p> <p>Flora: Flora of the sanctuary consists of 306 species. It is presented by vegetation of dry steppes, droughty feather-grass steppes and meadow vegetation. Wood vegetation - birch, pine, black alder. Relic species alder, feather grass, Zalesky narrow-leaved feather grass</p>	Source 32)
Kazakhstan	Turgaisky Zakasnik	Тургайский Заказник	348000	Zakasnik (Wildlife Reserve)	Ramsar Site	Steppe, Wetlands	4	Yes	Yes	N 48 43 27 E 62 06 08	70 – 80 m a.s.l.	1967	<p>Physico-geography: The semi-desert landscape zone of the temperate zone, Turgaisko-Centralasiatskaya oblast, Lower-Turgaiskaja province, Western-Turgaisky okrug, Turgajsky region.</p> <p>Fauna. For mammals diversity of species is typical: Wild Boar, Fox, Corsac Fox, Steppe Polecat, Badger, Muskrat. Birds are represented by multiple waterfowl and wader species. Mute Swan <i>Cygnus olor</i>, Lesser White-fronted Goose <i>Anser erythropus</i> and different species of river and diving ducks are nesting here. On migration one can meet Red-breasted Goose <i>Branta ruficollis</i>, Spoonbill <i>Platalea leucorodia</i> and Siberian Crane <i>Grus leucogeranus</i>. Rare and threatened species, listed in Red Data Book of Kazakhstan and IUCN are the following: Dalmatian Pelican <i>Pelicanus crispus</i>, White Pelican <i>Pelicanus onocrotalus</i>, Spoonbill <i>Platalea leucorodia</i>, Greater Flamingo <i>Phoenicopus ruber</i>, Whooper Swan <i>Cygnus cygnus</i>, Red-breasted Goose <i>Branta ruficollis</i>, Velvet Scooter <i>Melanitta fusca</i>, Great Bustard <i>Otis tarda</i>, White-headed Duck <i>Oxyura leucocephala</i> etc.</p> <p>Flora: Flora consist 430 species, sedge is prevailing. The last form significant thickets of reed on numerous lakes. Rare species of flora: ferule, onions, <i>astrogalus</i> species</p>	Source 32)

Kazakhstan	Sorgowsky Zakasnik	Согровский Заказник	134100	Zakasnik (Wildlife Reserve)	no	Forest Steppe and Lakes goes together with following two	4	Yes	Yes	N 55 8 31 E 69 39 45	80 – 140 m a.s.l.	1986	Physio-geography: Situated in the forest-steppe zone, , Tobol-Irtushskaya oblast, Pryishim province, Petropavlovsko-Sergeevsky okrug, Sergeevsky region. Fauna. Represented by mammals: Moose, Roe Deer, Fox, Badger, Marten, Polecat, Muskrat, Siberian Weasel etc. Birds: Black Grouse Tetrao tetrrix, Common Crane Grus grus, goose and duck species, etc. Flora: The territory is covered by deciduous woods in which the birch and an aspen prevail. Birch and aspen are caustic are closed in big massive with bogs and brooms	Source 32)
Kazakhstan	Smirnovsky Zakasnik	Смирновский Заказник	240000	Zakasnik (Wildlife Reserve)	no	Forrest Steppe and Lakes goes together with upper and lower	4	Yes	Yes	N 54 25 36 E 69 7 54	120 - 140 m a.s.l.	1986	Physio-geography: It is situated in the forest-steppe landscape zone, Western-Siberian plateau, Tobol-Irtyskaya oblast, Pryishimsky province, Petropavlovsko-Sergeevsky okrug, Sergeevsky region. Fauna. Mammals: Roe Deer, Moose, Badger, Siberian Hare, Muskrat, etc. Birds: On wetland Whooper Swan Cygnus cygnus, Grey-lag Goose Anser anser, Lesser White-fronted Goose Anser erythropus and different species of waders are nesting. In the forests there are many Black Grouses Tetrao tetrrix, Gray Partridges Perdix perdix and Willow Ptarmigans Lagopus lagopus. Some of the birds found here are listed in the Red Data Book of Kazakhstan: Sociable Lapwing Vanellus gregarius, Whooper Swan Cygnus cygnus and Lesser White-fronted Goose Anser erythropus. Flora: Vegetation is presented by the pine and birch-aspen woods growing in depressions of the relief. Forest underbush consists of dog-rose, meadow-sweet, and willow shrub community.	Source 32)
Kazakhstan	Lepsinski Zakasnik	Лепсинский Заказник	25800	Zakasnik (Wildlife Reserve)	no	Forrest Steppe and Lakes goes together with upper two	4	Yes	Yes	N 55 03 43 E 68 38 40	100 - 130 m a.s.l.	Year	Physio-geography: Mountains. A desert landscape zone, northern sub zone (wormwood-halophytic) deserts, Dzhungarskaya oblast, Western-Dhungarsky province, okrug of the northern slope of Dzungarian Alatau, Aksu-Tenteksky region. Fauna. Mammals: Roe Deer, Brown Bear, Lynx, Squirrel Sciurus vulgaris, Maral Deer, Wild Boar, Siberian Mountain Goat, Badger, Siberian Hare, Stone Marten etc. Snow Leopard, Red Wolf and Agali Sheep are in the Red Data Book of Kazakhstan Ornithofauna: Keklik, Snowcock, Gray Partridge Perdix perdix, Black Grouse Tetrao tetrrix. Flora: The foothill part of the protected zone is presented by meadow-steppe species of vegetation, middle hill – wild apple trees, and with increased height - pine-fir wood in a combination to thickets with bushes (dog-roses, spiraea). High-mountainous zone is presented by the Alpine and sub alpine meadows. The meadow vegetation includes: akonitum, horseheal, delphinium, rubarbuk, shepherd's bag and other species.	Source 32)
Kazakhstan	Mikhailowsky Zakasnik	Михайловский Заказник	76800	Zakasnik (Wildlife Reserve)	no	Forest Steppe, Lakes	4	Yes	Yes	N 53 25 45 E 61 39 10	210 – 230 m a.s.l.	1967	Physio-geography: Situated on the Kazakh plateau and Rolling Hill area in the Aral-Turgai region. 'Степная ландшафтная зона умеренного пояса, южная подзона (типчакково-ковильных) степей, страна Казахское плато и мелкосопочник, Приуральско-Тургайская область, Приуральская провинция, округ юго-восточной части Приуральского плато, Тогузакский район. Fauna: The following animals are characteristic for the territory: elk, roe deer, wolf, lyncs, corsac fox, steppe polecat, musk rat, badger and hares. Flora: The flora is characteriset with fescue-feathergrass steppes with some birch and aspen wood patches. From the ornithofauna grouse, gray patridge, white patrige, wild widgeons, geese, ducks and waters are pesent.	Source 32)
Kazakhstan	Mikhailowsky Zakasnik	Михайловский Заказник	76800	Zakasnik (Wildlife Reserve)	no	Forest Steppe, Lakes	4	Yes	Yes	N 53 25 45 E 61 39 10	210 – 230 m a.s.l.	1967	Physio-geography: The steppe landscape zone of the temperate zone, southern subzone (fescue-feather-grass) steppes, the country the Kazakh plateau and little hill, Pryuralsko-Turgaisky region, Pryuralsky province, okrug of southeast part of Priuralsky plateau, Toguzaksky district. Fauna. Mammals: Moose, Roe Deer, Wolf Canis lupus, Lynx Linx linx, Badger Meles meles, Fox , Corsac Fox, Svetlyi Polecat, Squirrel, Muskrat, Siberian and Common hares. Ornithofauna: Black Grouse Terao tetrrix, Willow Grouse Lagopus lagopus, Gray Partridge Perdix perdix, Rock Dove Columba livia and different species waterfowl and waders. Protected rare species are: Moose, Roe Deer, Siberian Hare, Badger and some species of waterfowl. Flora: The flat parts of the territory are covered with birch and aspen willows, with underbush of a cherry steppe, dog-rose and Siberian willow.	Source 32)

Kazakhstan	Novinsky Zakasnik	Новинский Заказник	45000	Zakasnik (Wildlife Reserve)	no potential Ramsar Site	together with Wolga and Ural Deltas	4	Yes	No	N 46 18 07 E 49 42 59	-2 – 0 a.s.l.	1967	<p>Physio-Geography: It is located in the desert landscape zone, northern (wormwood-halophytic) deserts, Prikaspijsko-Turanskaja Depression, South-near-Caspian area, the Guryev province, Ryn-Hakinsky district, Zhangalyksky region.</p> <p>Flora: Vegetation is presented by following species of vegetation: a water nut, lotus and white water-lily.</p> <p>Fauna. Mammals: Desman, River Beaver and Hedgehog. There are 27 species of birds: White Pelican <i>Pelicanus onocrotalus</i>, Dalmatian Pelican <i>Pelicanus crispus</i>, Greater Flamingo <i>Phoenicopterus ruber</i>, Whooper Swan <i>Cygnus cygnus</i>, Little Egret <i>Egretta garzetta</i>, Cattle Egret <i>Bubulcus ibis</i>, Spoonbill <i>Platalea leucorodia</i>, Ferruginous Duck <i>Aythya nyroka</i>, etc</p>	Source 32)
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R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Russia	Orenburg-ski Zapovednik, Russia	Оренбургский Заповедник	21.653	Zapovednik	No	Steppe, Forest	1b	Yes	No	N 51 46 00 E 62 57 00	180-430 m a.s.l.	1989	<p>Physio-Geography: Situated on the southern edge of the Orenburg Oblast. The relief is hilly with undulating upland mountain elements.</p> <p>Fauna: The wildlife consists of representatives of steppes, semi-deserts and forests. Over 150 bird species have been recorded including European Bee Eater <i>Merops apiaster</i>, Demosille Crane <i>Anthropoides virgo</i>, Steppe Eagle <i>Aquila nipalensis</i>, Whooper Swan <i>Cygnus olor</i> and Mute Swan <i>C. cygnus</i>, Ruddy Shelduck <i>Tadorna ferruginea</i>, Coot <i>Fulica atra</i>, Mallard <i>Anas platyrinchos</i>. Rare species are: Great Bustard <i>Otis tarda</i>, Little Bustard <i>Tetrax tetrax</i>, Sociable Lapwing <i>Vahellus gregarius</i>, Imperial Eagle <i>Aquila heliaca</i>, Saker Falcon <i>Falco cherrug</i>.</p> <p>Flora: The flora consist over 500 vascular plants. Rare species are (Russian Red Book): <i>Tulipa schrenkii</i>, <i>Orchis militaris</i>, <i>Stipa zaleskii</i>, etc. More than 95% of the territory is covered by meadow and steppe vegetation. Feather grass, wormwood, sagebush, sheep fescue and <i>Galatella villosa</i> formations are most common. Solonez salt formations with Siberian and Caspian sea lavender, as well as small shrubs as <i>Caragana</i>, <i>Spirea</i> and Russian almond (<i>Amygdalus nana</i>) occur frequent.</p>	Consists of 4 clusters which are situated on one latitude within a transect of 600 km.	Source 29) Source 34)
Russia	Central Chernozem Zapovednik	Центрально-черноземный Заповедник	Core: 6.287 Buffer 10.280 Transition: no Total: 16.567	Zapovednik	MAB Biosphere Reserve Status	Steppe	1b	Yes	No	N 51 50 00 E 37 15 00	150-200 m a.s.l.	1935 (Zapovednik) 1978 Biosphere Reserve	<p>Physio-Geography: The reserve is situated the Mid-Russian highland in forest-steppe zone. The relief is erosious, with the land deeply cut with gullies and ravines. In the soil cover typical fertile black earth, that has never been tilled, is present.</p> <p>Fauna: Fauna combines species typical both for forest and steppe. About 184 bird species have been recorded. They are of the European fauna subset. Rare species (Russian Red Book) are: Long-legged Buzzard <i>Buteo rufinus</i>, White-tailed Eagle <i>Haliaeetus albicilla</i>, Golden Eagle <i>Aquila chrysaetus</i>, Peregrine Falcon <i>Falco peregrinus</i>, Steppe Eagle <i>Aquila nipalensis</i>, Saker Falcon <i>Falco cherrug</i>, Lewant Sparrow Hawk <i>Accipiter brevipes</i> are nesting. Rodents are numerous, Wolf <i>Canis lupus</i>, Badger <i>Meles meles</i>, Fox <i>Vulpes vulpes</i>, Wild Boar <i>Sus scropa</i> and Roe Deer <i>Capriolus capriolus</i> are found.</p> <p>Flora: Virgin meadow steppes are distinguished by their unique floristic richness, high number of herbal flower plants (up to 80 species per square meter). Rare species are (Russian Red Book): <i>Bulbocodium versicolor</i>, <i>Fritillaria ruthenica</i>, <i>Daohne cneorum</i>, <i>Orchis Millitaris</i>, <i>Stipa pennata</i>, <i>Stipa pulcherrima</i>, and <i>Cotoneaster alaunicus</i>. The territory is partly forested with park like oakeries. Some lowland reed-sedge bogs can be found, too.</p>	Consists on 6 Clusters which are situated on one latitude within a transect of about 150 km, now deviated in two Zapovedniks (Belogorie Zapovednik in the south, with two clusters)	Source 1) Source 8) Source 29) Source 34)
Russia	Tobol-Ishim Ramsar Site	Тобол-Ишим Водоворотных Угоде	1.217.000	Ramsar Site	Ramsar Site	forest-steppe, wetlands, lakes	No	Yes	Yes	N 55 27 00 E 69 00 00	100 m a.s.l. (max. 158)	1994	<p>Physio-Geography: The site is located in the Ishim province of the forest-steppe zone on the Western Siberian Plain. The wetland is a flat plain with enclosed lakes, linear formations such as gently sloping ridges or old dry river-beds, suffusion depressions and wide river valleys.</p> <p>Fauna: The area is important for migrating and breeding populations of wildfowl and colonial shore birds. It lies at the northern edge of the breeding area of a number of species such as Dalmatian Pelican <i>Pelicanus crispus</i>, Cormorant <i>Phalacrocorax carbo</i>, White-headed Duck <i>Oxyura leucocephala</i>, Avocet <i>Avocetta avocetta</i> and Black-winged Pratincole <i>Glareola nordmanni</i>. Mammals are characterized by Wild Boar, Roe Deer <i>Capriolus capriolus</i>, Lynx <i>Lynx lynx</i>, Wolf <i>Canis lupus</i>, Fox <i>Vulpes vulpes</i>, Muskrat <i>Ondra zibethica</i>, Steppe Polecat <i>Mustella eversmanni</i>, and Great Jerboa <i>Alactaga major</i>. Fishes include inigenous populations of <i>Carassius carassius</i>, <i>C. auratus gibelio</i> and <i>Phosinus sp.</i>.</p> <p>Flora: The vegetation is forest-steppe with birch and aspen interspersed with areas of meadow and steppe, most of which are ploughed, as well as solonchak meadows, floating and submerged aquatic plants (<i>Phragmites</i>, <i>Typha</i>, <i>Vares</i>, <i>Scirpus</i>, etc.)</p>	Consists of 3 Clusters	Source 27)

Russia	Chany Lakes Ramsar Site	Чаны Водоворотных Угоде	Lake Chany: 357.600 Shchuchy Lakes: 7.246	Ramsar Site	Ramsar Site	lakes, forest-steppe	no (Ramsar Site)	Yes	No	Chany N 54 48 00 E 77 36 00 Shchuchy N 55 16 30 E 77 42 30	106-120 m a.s.l.	1994	<p>Physio-Geography: These wetlands are situated in the Barabinskaya lowland of the southern portion of Western Siberia and present a large lacustrine system, characteristic of the Western Siberian forest-steppe. Lake Chany is an enclosed water body with a very high fluctuation due to climate. It is partly fresh- and brackish water with a mean depth of 1,5 m.</p> <p>Fauna: Breeding species are present: Avocet <i>Avocetta avocetta</i>, Black-winged Stilt <i>Himantopus himantopus</i>, Great Black-Headed Gull <i>Larus ichthyæetus</i>, Caspian Tern <i>Sterna caspia</i>, White-tailed Eagle <i>Haliaeetus albicilla</i>. On migration one can meet White-headed Duck <i>Oxyura leucocephala</i>, Red-breasted Goose <i>Branta ruficollis</i>, Snipe-billed Godwit <i>Limnodromus semipalmatus</i>, Sociable Lapwing <i>Vanellus gregarius</i> etc.. In summer-autumn 150.000 water birds have been recorded for the site.</p> <p>Flora: The flora of the area is dominated by reed beeds and small insular groves of aspen and birches and some meadows and solonchak meadows (<i>Populus tremula</i>, <i>Betula patula</i>, <i>Artemisia</i>, <i>Achillea</i>, <i>Phragmites</i>, <i>Thypa</i>, <i>Ceratophyllum</i> species, <i>Potamogeton</i> species).</p>	2 Clusters	Source 27)
Russia	Chernie Zemli Zapovednik	Черные земли Заповедник	Total Zapovednik (1b) 121900 Total Biosphere Reserve (5): 532901	Zapovednik , Biosphere Reserve	MAB Biosphere Status	dessert, steppe, wetlands	1b, 5	Yes	Yes	N 46 20 00 E 45 50 00	about 0 m a.s.l.	1990 Zapovednik, 1993 Biosphere Reserve	<p>Physio-Geography: The Zapovednik is situated in the Republic of Kalmykia, on the North-West of the Caspian lowland. The relief shows some valleys orientated South-West, with massifs of small and moderate sized mounds of sand.</p> <p>Fauna: The fauna consists of typical desert and semi-desert species i.e. reptiles <i>Eremias velox</i>, <i>Eremias arguta</i>, Russian Sand Boa <i>Eryx tataricus</i>, <i>Vipera ursine</i>; mammals: Saiga Antelope <i>Saiga tatarica</i>, Corsac Fox <i>Vulpes corsac</i> and Eared Hedgehog <i>Hemiechinus auritus</i>, Ground Squirrel <i>Citellus pygmaeus</i>, Jeroba species. On the lakes mute swan, gray gees and ducks can be met; Demoiselle Crane <i>Anthropoides virgo</i> (and different species of larks are common. Rare birds are Little Bustard <i>Tetrax tetrax</i>, Great Bustard <i>Otis tarda</i>, White Pelicanus <i>onochrotalus</i> and Dalmatian Pelican <i>P. crispus</i>.</p> <p>Flora: The plant cover is sagebush-cornel steppe of <i>Stipa capillata</i>, <i>Artemisia pauciflora</i>, <i>Artemisia lerchiana</i>, <i>Artemisia austriaca</i>, <i>Kochia prostata</i> and <i>Tanacetum achilleifolium</i>. On sands <i>Leymus</i>, <i>Alhagi pseudalhagi</i>, <i>Salsola kali</i>, <i>Artemisia marschalliana</i> and <i>Artemisia scoparia</i> are characteristic. Communities of steppe meadows and salt-marshes are met. Rare plantes are <i>Tulipa schrenkii</i>, <i>Stipa zalesskii</i>, <i>Stipa pulcherima</i> etc..</p>	3 Clusters of the Zapovednik Biosphere Reserve includes following clustures Zapovednik Chernyy Zemli and Oz Manych-Guilo lake Core: 121,901 (Zapovednik) + 94,301 + 27,600 Buffer: 201,000 (Zapovednik)+ 156,000 + 45,000 Transition: 210,000 + 210,000 Total: 532,901	Source 10) Source 29) Source 34)
Russia	Samarskaja Luka National Park	Самарская Лука Национальный Парк	128000	National Park	No	forest, forest steppe	2	Yes	No	N 53 12 00 E 49 31 00	40-120	1984	<p>Physio-Geography: The park occupies the eastern part of the Zhigulevskaya highland and plateau, bordered by Volga and Usinsky Bay of the Kuibyshevskoye water reservoir.</p> <p>Fauna: The fauna is rich with 160 bird and 54 mammal species. Moose <i>Alces alces</i>, Wild Boar <i>Sus scropa</i>, Alpine and European Hare (<i>Lepus europeus</i>, <i>L. timidus</i>), Badger <i>Meles meles</i>, Fox <i>Vulpes vulpes</i> and Marten <i>Mustela nivalis</i> are common.</p> <p>Flora: The valleys of the highlands are forested with oak-lime and lime. The steppe parts are ploughed. In flood zones wet meadows, small lakes and canals are interspersed with oak groves and willow thickets. Over 1000 vascular plants grow in the park.</p>	1 Area	Source 29) Source 34)

Russia	Privolzhskaya Lesostep Zapovednik	Приволжская лесостепь Заповедник	8300	Zapovednik		forest, forest steppe	1b	Yes	No	N 53 10 00 E 45 15 00	160-220	1989	Physio-Geography: The Zapovednik is situated in the north of the Penzenskaya Region on the Privozhaskaya highlands on the main water shed between the Volga and Don basin. Fauna: Fauna consists of steppe and forest elements. Steppe elements find here their northern most range i.e. Bustard Otis tarda, Little Bustard Tetrax tetrax, Crested Lark Galerida cristata, Isabelline Wheater Oenanthe isabellina; mammals: Bobak Marmot Marmota bobak, Great Jerboa Alactaga major and Dwarf Hamster Phodopus sungorus. Forest species are Moose Alces alces, Wild Boar Sus scropa, Marten Mustela nivalis and Squirrel Sciurus vulgaris. Flora: The pant cover shows steppe and pine forest vegetation. Formation of Stipa tirsia and Stipa pennata prevail and ther are as well other formations of Stipa dasyphylla and Helictotrichon desertorum with bushes (Chamaecysisus ruthenicus, Russian almond, Cerasus fruticosa and slowe. Forrest occupying small areas. Flora accounts over 1000 vascular species.	5 Clusters	Source 29) Source 34)
Russia	Rostovski Zapovednik	Ростовсктй Заповедник	9500	Zapovednik	Ramsar Site	steppe, shore wetlands	1b	Yes	Yes	N 46 28 00 E 42 42 00	about 120 m a.s.l.	1995	Physio-Geography: The Zapovednik is situated in the Orlovsky and Remontnentsky Districts of Rostovskaja Oblast. Fauna: Ornitofauna consists mostly of nesting waterfowl. Rare species met during their migration: Red-breasted Goose, Dalmatian Pelican and White Pelican, Laughing Owl; Bustard and Little Bustard are also sometimes noted. Flora: Soddy-gramineous and sagebrush-soddy-gramineous steppes are spread; sites of virgin steppe remain. Rare plant species (Russian Red Book): Tulipa schrenkii, Stipa zalesskii, Colchicum laetum, etc.	Site is divided 4 Clusters separated by 5-25 km.	Source 29) Source 34)
Russia	Svetlinski Zakasnik	Светлинский заказник	28500	Zakaznik	No	steppe, lakes wetland	4	Yes	Yes	N 51 02 00 E 60 55 00	300-330	2005	Physio-Geography: Situated south Orenburg Oblast next to the Kazakh Border at the West end of the Sypsynagash lowland. Fauna: The fauna is characterized by steppe and wetland species. Migratory water birds such as White-headed Duck Oxyura leucocephala, Red-breasted Goose Branta ruficollis and Greater Flamingo Phoenicopterus ruber can be met. Steppe mammals as Corsac Fox Vulpes corsac, Bobak Marmot Marmota bobak and Jerboa Alactuga major species can be found. Flora: Nest to reeds (Phragmites, Thypha) also steppe (Stipa, Fescue) can be found.	1 Area	Source 22) Source 34)
Russia	Lower Bagan Area Ramsar Site	Нижний Бaган Водоворотных Угоде	26880	none	Ramsar Site	Wetland along River	No	No	Yes	N 54 09 00 E 78 23 00	106 – 107 m a.s.l.	propose d for Zakasnik	Physio-Geography: The site is located in Novosibirsk Region, 35 km from the village of Bagan, 50 km from the town of Karasuk, and 50 km from the village of Krasnozerskoye. The site encompasses freshwater and brackish lakes with variable water levels, and parts of the Bagan steppe river. Fauna: Breeding species listed in the Russian Red Data Book include Avocet Recurvirostra avosetta (10-50 pairs), Black-tailed Godwit Himantopus himantopus and White-headed Duck Oxyura leucocephala (the population reached 100-150 pairs in favorable years, in 1970 and 1971). The site supports large populations of water birds. Species that occur during migrations include Grey-lag Goose Anser anser (5,000-6,000), ducks (10,000-12,000), Fulica atra (up to 15,000), waders (10,000-15,000), gulls (20,000-40,000), Avocet Recurvirostra avosetta (100-150 individuals), White-tailed Eagle Haliaeetus albicilla and sometimes Common Crane Grus grus (up to 100-200). Flora: The area is situated within the biogeographical zone of herb and feather grass steppes, most of which has been ploughed. In the depressions, halophyte steppe communities dominate at dry places. These include Festuca valesiaca, Stipa capillata and Koeleria cristata. Sagebrush species (such as Artemisia frigida, A. glauca and A. campestris) dominate the herbs. Halophytes (Galatella spp. and Polygonum patulum) occur widely. The lakes are overgrown with reed Phragmites australis. Meadows with Limonium sp. and Plantago sp. also occur widely. At higher places, meadows with Calamagrostis epigeios and Artemisia sp. are found. Aquatic vegetation is dominated by Ceratophyllum sp. and Potamogeton sp. Reeds Typha angustifolia, T. latifolia and Calamagrostis sp. occur at the edge of the water.	1 Area	Source 3) Source 34)

Russia	Bogodinsko-Baskunchansky Zapovednik	Богдинско.Баскунчакский Заповедник	18480	Zapovednik	No	Semi-Dessert, Karst, Dry Steppe,	No	Yes	No	N 48 11 00 E 46 54 50	150 m a.s.l.	1997	Physio-Geography: Is situated at the west bank of the Wolga River Fauna: During the migration large numbers of water birds gather in the area. Rare nesting birds are: black-winged stilt, black caped and demoiselle crane. Near the mountain Bolshy Bogdo steppe eagle, saker falcon, golden eagle and osprey are breeding. Saiga antelope also occurs. Flora: The plant cover is typical of semi-deserts. White wormwood, black wormwood and salt grass communities with grasses and ephemerals are common. The dominant plants are: black wormwood, White wormwood, Bulbous bluegrass, drooping brome, European feather grass, salt grasses. Rare species include rare plant species as: Tulipa schrenkii, Tulipa bibersteiniana etc.	Source 21)
Russia	Khvalynsky Nationalpark	Хвальинский Заповедник	25500	Zapovednik	No	Forest Steppe, Forest	No	Yes	No	B 52 28 01 E 47 56 02	370 m a.s.l.	1994	Physio-Geography: The Park includes highlands of the Khvalynskye range with absolute heights up to 370 m a.s.l. Fauna: Elk, Wild Boar, European Roe, Bobak Marmot, European hare and marten are found in the park. Rare and in the Red Data book of Russia are the muskrat, Bobak Marmot and ermine. Flora: Complexes of small areas of pine forest with forest-steppe are to be found. On the mountain tops and slopes grow pine forests with lime, oak, maple, aspen, undergrowth of Euonymus and walnut. There are sites of meadow-steppes and feathergrass steppes. Rare plants are: yellow lady's slipper, Cephalanthera longifolia, C. rubra, Artemisia trochiana, Calophaca wolgarica, Hesperis matronalis, Scrophularia cretacea, Matthiola frangula, Stipa pulcherrima, Stipa dasyphylla and Stipa pennata.	Source 21)
Russia	Voronezhskiy Zapovednik	Воронинский Заповедник	10800	Zapovednik	No	forest-steppe, forest, wetlands	No	Yes	Yes	N 51 56 54 E 39 36 47	90 – 70 m a.s.l.	1994	Physio-Geography: The Zapovednik is located in the valley of the Vorona River, the right tributary of Koper, in the forest-steppe zone. Fauna: The Vorona river is the habitat of the beaver and the rare desman (IUCN Red Book). At Lake Ramza numerous waterbirds nest and stop over on the glacial. Rare birds are Golden Eagle, Saker Falcon, Osprey, White-tailed Eagle, Short-toed Eagle. Flora: The plant cover comprises upland and lowland oak forests, pine forests, alder forests, meadows, steppe communities, shore and aquatic groupings and wetland complexes. Among the species listed in the Red Data Book of Russia are found: dwarf iris, dark-winged orchid etc..	Source 21)
Russia	Kurganskiy Zapovednik	Курганский федеральный заказник	31846	Zapovednik	int	River, Wetland	4	No	Yes	---	---	1985	Physio-Geography: The sanctuary is located in the valley of Tobol River and in the mouth of Ural River, on the territory of the Tselinnyi Rajon, Kurganskij oblast. Fauna: The aim of the creation of the protected territory is protection and reproduction of hunting wild mammals and birds, valuable scientifically, culturally and economically, as well as those threatened and. The main objects of the protection are: Desman Desmana moschata, Little Bustard Tetrax tetrax, White-headed Duck Oxyura leucocephala, Ruddy Shelduck Tadorna feruginea, Red-breasted Goose Branta ruficollis, Lesser White-fronted Goose Anser erythropus and different species of birds of prey. Flora: Forest Steppe, forest and wetland vegetation present.	Source 21)
Russia	Starokulatkinskiy Federal'ny Zakaznik	Старокулаткинский федеральный заказник	20166		int	steppe, wetlands	4	Yes	No	---	---	1985	Physio-Geography: The sanctuary is located on the territory of the Pavlovskiy and Starokulatkinskiy regions, Uljanov oblast, on the Volga Height, which forms a thick stripe along the right river bank from north to south. Fauna: The aims of the creation of the sanctuary is to protect and reproduce hunting wild animals, economically and scientifically valuable, as well as to protect rare and threatened species, listed in the Red Data Book of Russian Federation and species protected by different international agreements, their habitat. The main objects of protection here are: Bobak Marmot Marmota bobak, Ground Squirrel Citellus pygmaeus, Mole-rat Spalax microphthalmus, Great Bustard Otis tarda and Little Bustard Tetrax tetrax Flora: Steppe and wetlands vegetation present.	Source 21)
Russia	Saratovskiy Federal'ny Zakaznik	Саратовский федеральный заказник	44302	Wildlife Reserve (Zakaznik)	no	Steppes and Wetlands	4	Yes	Yes	---	---	1983	Physio-Geography: The sanctuary is situated on the territory of the Fedorovskiy region, Saratov oblast' in the Upper Eruslan River region. Fauna: The main aim of the sanctuary's establishment was to protect, reproduce and restore habitats and populations of valuable hunting species, first of all of Great Bustard Otis tarda and Little Bustard Tetrax tetrax, as well as nesting swans, crane's colonies, migrating waterfowl, conservation of their habitat, migration routes and support of the general ecological balance. Flora: no data	Source 21)

Russia	Sarpinsky Federal'ny Zakaznik	Сарпинский Федеральный Заказник	195925	Wildlife Reserve (Zakasnik)	no	Dry-Steppe, Semi Dessert	4	Yes	No	---	---	1987	<p>Physio-Geography: The sanctuary is located on the territory of the Ketchenerov, Ustin and Yashkyl' regions, republic of Kalmykia, on a vast plain named Sarpine Depression.</p> <p>Fauna: The main aim of the sanctuary's establishment was to protect, reproduce and restore habitats and populations of valuable hunting species, threatened herbs and their habitats. The main objects of protection are: endemic species of the Eurasian steppes- Saiga Antelope Saiga tatarica, Steppe Eagle Aquila nipalensis, Demoiselle Crane Anthropoides virgo, Little Bustard Tetrax tetrax, Great Bustard Otis tarda, Long-legged Buzzard Buteo rufinus, as well as semi desert plant communities.</p> <p>Flora: Dry steppe and semidesert vegetation present.</p>	Source 21)
Russia	Harbinsky Federal'ny Zakaznik	Харбинский Федеральный Заказник	163900	Wildlife Reserve (Zakasnik)	no	Dry Steppe, Semi-Dessert	4	Yes	No	---	---	1987	<p>Physio-Geography: The sanctuary is located on the territory of Yashkul' and Ustin regions of the Republic of Kalmykia.</p> <p>Fauna. The aims of the establishment are: to protect habitats of valuable in economic, scientific and cultural respect species, as well as rare and threatened animals; protection and reproduction of the population of Saiga Antelope. The main objects of protection are: Saiga Antelope Saiga tatarica, Demoiselle Crane Anthropoides virgo, Steppe Eagle Aquila nipalensis, Long-legged Buzzard Buteo rufinus, Imperial Eagle Aquila heliaca, Little Bustard Tetrax tetrax and Great Bustard Otis tarda.</p> <p>Flora: Dry steppe and semidesert vegetation present.</p>	Source 21)
Russia	Mekletinsky Federal'ny Zakaznik	Меклетинский Федеральный Заказник	102500	Wildlife Reserve (Zakasnik)	no	Dry Steppe, Semi-Dessert	4	Yes	No	---	---	1988	<p>Physio-geography: The sanctuary is located in the Eastern part of the Caspian Lowland, on the territory of the Chernozemelny region, Republic of Kalmykia.</p> <p>Fauna: The main aim of the sanctuary's creation was conservation of the unique European population of Saiga Antelope, as well as animals, listed in the Red Data Book of Russia, such as: Demoiselle Crane Anthropoides virgo, Steppe Eagle Aquila nipalensis, Long-legged Buzzard Buteo rufinus, Imperial Eagle Aquila heliaca, Little Bustard Tetrax tetrax and Great Bustard Otis tarda.</p> <p>Flora: Dry steppe and semidesert vegetation present.</p>	Source 21)

BIOGEOGRAPHICAL PROVINCE 2.30.10. MONGOLIAN-MANCHURAN STEPPE

Russia	Daursky Zapovednik	Даурский Заповедник	Zapovednik 44800 plus Zakasnik 57.900 Biosphere Reserve: Core: 45,700 Buffer: 92,000 Transition: 90,000 Total: 227,700 Ramsar site 172.500	Zapovednik	MAB Biosphere Reserve Ramsar Site	central Asian steppe, wetlands	1b	Yes	Yes	N 50 05 00 E 115 34 00	600 – 770 m a.s.l.	1987 since 1997 BR Status with different areas	<p>Physio-Geography: The Zapovednik is situated in the South of the Chitinskaya Region. It is part of a flat valley and made up of ecosystems of the Central Asian Steppes and contains some lakes important for migratory waterbirds.</p> <p>Fauna: The Toreiskiye Lakes a important migration route of waterbirds is crossing. About 20 bird species are listed in the Red Book of Russia i.e. White-Naped Crane, Swan Goose, etc. Rare mammals are the Pallas Cat and Erinacaus dauricus.</p> <p>Flora: Among steppe plants forbs associaton prevail; in lowlandds near mounds and the lake shores teather steppes can be met; in river mouths and along bays meadow-bog plants grow.</p>	1 Area, to see as a cluster together with Daguur Strictly protected area and the Chinese Dalai Lake Biosphere Reserve. It controls also a the Zakasnik Tsasucheichkiy bor with 57.900 ha size.	Source 3) Source 11) Source 29) Source 32) Source 34)
Russia	Ubsunurskaya Kotlovina Biosphere Reserve	Убсунурская Котловина Заповедник	Core: 55,800 Buffer: 228,500 Total: 284,300 Transition: Undefined surrounding area	Zapovedniks	MAB Biosphere Reserve, UNESCO World Heritage Site (Together with Uvs Nuur Basin, Mongolia)	Mixed mountain and highland systems, Steppe	1b, 5	Yes	No	N 51 05 00 E 92 31 00	1000 – 2300 m a.s.l.	1993 Zapovednik 1997 Biosphere Reserve	<p>Physio-Geography: The Zapovednik is situated in the south of Tyva on the border to Mongolia. It consists out of 5 clusters out of which 3 are more covered by steppe vegetation an two with forests.</p> <p>Fauna: The fauna is characterized by a unique combination of desert (Chlamycotis undulata, Desert Wheatear, Midday Gerbil, Hairy-Footed Jerboa), steppe (Melanocorypha mongolica, Cricetulus barbarensis, Ochotona daurica) and taiga (Three-toed Woodpecker, Nutchcracker, Flying Spuirrel)</p> <p>Flora: The range of the plant cover goes over mountain tundra, alpine meadows,(mountain) steppes, mountain-taiga forests and semi-desert formations.</p>	5 Clusters	Source 27) Source 29) Source 34)

M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Mongolia	Uvs Nuur Basin	---	Total Area 771,700	Biosphere Reserve	MAB Biosphere Reserve, Natural World Heritage Site of UNESCO	Steppe, Lakes, low mountains	1b, 4	Yes	Yes	759 m	N 50 20 00 E 92 45 00	1997	<p>Physio-Geography: The Uvs Nuur Basin (10,689 km²) is the northern-most of the enclosed basins of Central Asia. It takes its name from the Uvs Nuur Lake, a large, shallow and very saline lake, important for migrating birds, waterfowl, and seabirds. The site is made up of 12 clusters 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 important refuges for the globally endangered snow leopard, mountain sheep (argali) and the Asiatic ibex.</p> <p>Importance: The site hosts unique wetlands in the Great Lakes Depression. The lake basin is singular by representing the country's entire natural zones and geographical belts from wetlands to high mountain glaciers. Furthermore, it is very important for the Euro-Asian biodiversity. The site is the largest Eurasian cool zone with a unique nature and geology combining desert-like steppe landscape with wetlands. Lake Uvs, the northern boundary of the Great Lakes Basin, hosts diverse habitats such as large wetlands, reed belts, river deltas with forests, steppe and sand dunes. It provides significant nesting and resting areas for 215 migratory waterbird species, e.g. White-headed Duck (<i>Oxyura leucocephala</i>), and Swan Goose (<i>Anser cygnoides</i>), both endangered in the Red List of IUCN. In addition, 15 waterbird species are listed in the Mongolian Red Book, 16 in the Asian Red Book, 41 in CITES, and 41 in CMS. Nationally redlisted birds are <i>Pelecanus crispus</i>, <i>Egretta alba</i>, <i>Platalea leucorodia</i>, <i>Ciconia nigra</i>, <i>Anser indica</i>, <i>A. cygnoides</i>, <i>Cygnus cygnus</i>, <i>Oxyura leucocephala</i>, <i>Pandion haliaetus</i>, <i>Haliaeetus albicilla</i>, <i>Grus vipio</i>, <i>Larus ichthyaeus</i>, and <i>L. relicus</i>. The waterbirds spend the warm season in the Siberian tundra and taiga. In 1983 and 1985, surveys counted ca. 50,000 birds just in small parts of the lake. The site regularly supports more than 20,000 waterbirds, as well as more than 1% of the biogeographical population of the following waterbird species: <i>Podiceps cristatus</i> (2,000), <i>Pelecanus crispus</i> (2), <i>Phalacrocorax carbo</i> (3,610), <i>Platalea leucorodia</i> (620), <i>Ciconia nigra</i> (14), <i>Anser anser</i> (1,500), <i>Pluvialis squatarola</i> (2,513), and <i>Sterna hirundo</i> (5,986). Endemic fish inhabit the lake, e.g. <i>Oreoleuciscus potanini</i>, <i>O. pewzowi</i>, <i>O. humilis</i>, and <i>Thymallus brevirostris</i>.</p> <p>Biological/Ecological notes: The basin holds a typical vegetation of the moderate zone: steppes and swamps, meadows and solonchak soils, bushes and agricultural lands, salt-tolerant and xerophilous plants of clay, stony and sandy deserts, forest-steppes on mountain slopes, various forests, and mountainous tundras and bare rocks. The lake itself is surrounded by desert steppe landscape. Some river deltas are dominated by willow and reeds. The beaver <i>Castor fiber</i> and wild boar <i>Ondatra zibethicus</i> have been reintroduced. Further mammals include <i>Capreolus pygargus</i>, <i>Sus scrofa</i>, and <i>Canis lupus</i>. In total 261 birds species are recorded, amongst them 52 endangered ones: 46 species are resident and 215 are migratory, of which 144 species breed, 25 pass through, and 10 winter.</p>	4 Clusters Core: 366,080 (Uvs Nuur unit: 338,840 (of which Uvs Nuur Lake: 335,000); Turgen Uul unit: 5,200; Altan Els unit: 16,800; and Tsaagan Shovod unit: 5,240) Buffer: 405,620 (Uvs Nuur unit: 88,160; Turgen Uul unit: 139,900; Altan Els unit: 160,800; and Tsaagan Shovod unit: 16,760) Transition: Undefined surrounding area	Source 13) Source 27)	
Mongolia	Eastern Mongolian Steppe (Dornod National Park)	---	570374	National Park		Steppe	1b	Yes	No	N 46 33 29 E 117 03 41	about 860 m a.s.l.	1992	<p>General description: The area was established in part to protect the habitat of the white gazelle. The Eastern Steppe Protected Area covers a representative part of the last of the great plain ecosystem. It was protected in 1992 by Parliament Resolution No 26. Gently rolling steppe is a characteristic of the protected area, which extends for over 200 kilometers along the Chinese border.</p> <p>This area is located in Matad, Khalkh gol, of Dornod aimag and Erdenetsagaan soum of Sulhbaatar aimag and is the only representative of the steppe land region which has not been impacted by economic activities. It encompasses 570,374 hectares of area around Mene steppe and Lagyn khooloi. The Eastern Steppe Protected Area is a home to 25 species of mammal, dominated by herds of gazelle (over 70% of the white gazelle population of Mongolia inhabit this area).</p> <p>The protected area is only small part of eastern Mongolia's vast steppe.</p>		Source 27) Source 24)	
Mongolia	Nomrog Strict Protected Area	---	31205	Protected Area	No	Steppe	1b	Yes	No	N 46 55 00 E 119 33 00	about 1025 m a.s.l.	1992	General description: Nomrog Strict Protected Area in Mongolia lies much in the "Eastern Steppes" which come under the influence of the Asian monsoon rainfall in summer. Main purpose is the protection of typical Steppe fauna and flora.		Source 27)	

Mongolia	Lake Buir	---	104.000	No	Ramsar Site	Steppe, Lake	no	Yes	Yes	N 47 48 00 E 117 40 00	581 m	no	<p>Importance: This transitional habitat between Daguur and Stipa steppes features flora and fauna characteristic of the arid steppe. It regulates the Khalk gol River, the Buir lake's water regime and protects the origin of many small rivers, lakes, streams, and springs. The site is a main grazing land for the Mongolian gazelle <i>Procapra gutturosa</i>. Many present animals and plants are listed by IUCN, CITES, and CMS, emphasizing its importance for the biogeographical biodiversity. Internationally red-listed is the eagle <i>Haliaeetus albicilla</i>. Nationally endangered birds include <i>Egretta alba</i>, <i>Platalea leucorodia</i>, <i>Ciconia boyciana</i>, <i>C. nigra</i>, <i>Anser cygnoides</i>, <i>Cygnus cygnus</i>, <i>C. olor</i>, <i>Anas formosa</i>, <i>Grus leucogeranus</i>, <i>G. vipio</i> Pall., <i>Limnodromus semipalmatus</i> and <i>Larus relicrus</i>. Furthermore, the area supports a large number of wildlife species typical for the Central Asian steppe and Eastern Asia. Rivers form meanders and wet or marshy areas which offer favorable breeding grounds for birds. Large congregations of waterbirds with more than 236 bird species are attracted for breeding (at least 20,000), moulting and staging. Numbers are known for Bayan Lake and the Khalkh River delta: e.g. <i>Phalacrocorax carbo</i> >5,000, <i>Aythya ferina</i> >5,000, <i>Ardea cinerea</i> >1,000, <i>Anser cygnoides</i> 1,803, <i>Anas strepera</i> >1,500 etc. The site supports more than 1% of the individuals in the biogeographic population of the following waterbird species: the grebe <i>Podiceps cristatus</i> (380), cormorant <i>Phalacrocorax carbo</i> (5,000), stork <i>Ciconia nigra</i> (5), goose <i>Anser cygnoides</i> (1,803), and lapwing <i>Vanellus vanellus</i> (1,260).</p> <p>Biological/Ecological notes: Steppe plant communities surround the wetland. Bushy plants (<i>Papirus</i> etc.) are found abundantly in the Khalkh River delta. The surroundings of Lake Buir, as a migration route for endangered species, contain diverse animals and plants. The steppe vegetation system dominates formed by Daguur type from the north, Mongolian type from the south and Manjurian (China) vegetation type from the east. The wetlands contain 100 species of humid-arid plants, 102 of humid favoured-, 19 water-, 28 wetland-, and 64 salt favoured plants. Nationally redlisted are <i>Paeonia lactiflora</i>, <i>Sorbaria sorbifolia</i>, <i>Dictamnus dasycarpus</i>, <i>Valeriana officinalis</i>, <i>Anemarrhena asphodeloides</i>, and <i>Lilium dahuricum</i>. The lake's surroundings support 25 mammal species. In total 199 migratory birds are recorded of which 115 species breed, 59 species pass through, 7 are wintering, and 9 are occasionally seen. Lake Buir is the most nourishing lake in Mongolia supporting 29 fish species, e.g. <i>Hucho taimen</i>, <i>Brachymystax lenok</i>, <i>Thymallus grubei</i>, <i>Esox reicherti</i>, <i>Leuciscus waleckii</i>, <i>Pseudaspius leptocephalus</i>, <i>Erythroculter mongolicus</i>, <i>Culter alburnus</i>, <i>Carassius auratus</i>, <i>Cyprinus carpio haematopterus</i>, and <i>Parasilurus asotus</i>. Furthermore, 63 algae and plankton species inhabit the lake: 25 species of diatom, as well as 18 green-, 14 blue green-, 3 golden- and 2 pirofite-algae species.</p>	no	Source 3)
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Mongolia	Ganga Lakes	---	3.280	National Monument	Ramsar Site	Steppe, Dessert, Lakes	3	Yes	Yes	N 45 15 00 E 114 00 00	1294 m	1993	<p>Importance: The site lies within a unique landscape combining wetlands, steppe, sand dunes, and Khangai (hilly and wooded country with cool climate), located in the strip between the south steppe and Gobi zones. Ganga Lake is the only group of lakes located in desert and steppe mid-zones of Dariganga county. Many present animals are listed by IUCN, CITES appendix II (16 species), and CMS. This group of lakes is unique by hosting many vulnerable breeding and staging waterbirds, e.g. White-naped Crane (<i>Grus vipio</i>), Swan Goose (<i>Anser cygnoides</i>), and Great Bustard (<i>Otis tarda</i>), all vulnerable or endangered in the IUCN Red Book. Noteworthy are also the swan <i>Cygnus cygnus</i> (nationally red-listed), as well as the curlew <i>Numenius minutus</i>. The site supports shorebirds as well as migrating waterbirds which are important for the region's biodiversity. Migrants are from the Amur River of East Siberian-Chinese populations. In autumn, it is a stopover area for migrating birds such as <i>Tadorna ferruginea</i> and <i>T. tadorna</i>, as well as a wintering place. The site supports 1% of the individuals in the South Asia population of the Great Crested Grebe <i>Podiceps cristatus</i> (250), in the South-South East Asia population of Ruddy Shelduck <i>Tadorna ferruginea</i> (500), and over 1% of the individuals in the Caspian-Central Asia population of Whooper Swan <i>Cygnus cygnus</i> (300).</p> <p>Biological/Ecological notes: The area belongs to the Moltsoy-Ongon Sand province. Steppe plant communities surround the wetland. The area's vegetation is classified in arid steppe, meadow and desert steppe vegetation. The arid steppe is dominated by grasses such as needle-, and couch-grass, <i>Cleistogenes songorica</i>, <i>Agropyron cristatum</i> and forbs, e.g. sagebrush, <i>Cymbaria daurica</i>, <i>Allium lineare</i>, <i>Potentilla bifurca</i>, <i>P. acaulis</i>, <i>Haplophyllum dahuricum</i>, and <i>Bergenia crassifolia</i>. The steppe vegetation ground coverage is 40 to 50% with a height of 15-18 cm, and a summer yield of 780 kg/ha (ideal for all livestock throughout the year). Meadow vegetation is dominated by grasses, e.g. couch-, meadow-, bent- and other grasses including <i>Carex duriuscula</i>, <i>C. caespitosa</i>, <i>C. coriophora</i>, cinquefoil, snakeweed, and plantain. The meadow vegetation ground coverage is 60 to 70%; its summer production is 500-600 kg/ha. Scattered sand dunes belong to the desert steppe vegetation type. Their dominant species are grasses such as lyme-, and couch-grass, <i>Cleistogenes songorica</i>, <i>Köleria</i> sp., and forbs including sagebrush, <i>Haplophyllum dahuricum</i>, milk vetch, <i>Oxytropis</i>, and snakeweed. Solitary elms grow in the sand and elm-willow patches occur. Many animals inhabit the Lake Ganga area: pika <i>Ochotona daurica</i>, marmot <i>Marmota sibirica</i>, squirrel <i>Citellus dauricus</i>, hamsters <i>Phodopus sungorus</i>, <i>Cricetulus pseudolgriseus</i>, voles <i>Microtus gregalis</i>, <i>Lasiopodomys brandtii</i>, gerbil <i>Meriones unguiculatus</i>, fox <i>Vulpes corsac</i>, <i>V. vulpes</i>, hare <i>Lepus tolai</i>, gazelle <i>Procapra gutturosa</i>, hedgehog <i>Erinaceus anritus</i>, badger <i>Meles meles</i>, wolf <i>Canis lupus</i> etc. Furthermore, 111 bird species inhabit the site, amongst them 12 residents and 99 migrants of which 32 are nesting. The following amphibians and reptiles live in the region: toad <i>Bufo raddei</i>, frog <i>Rana chensinensis</i>, agama <i>Phrynocephalus versicolor</i>, racerunner <i>Eremias argus</i>, coluber <i>Elaphe dione</i>, the snakes <i>Psammopis lineolatus</i>, and <i>Akistrodon halys</i>. The Asiatic Grass Frog fauna is diverse. The small fish <i>Cobitis taenia</i> inhabits Lake Ganga. Reintroduced fish species include the carps <i>Carassius auritus</i>, <i>Cyprinus carpio</i> and <i>Parasilurus asotus</i>.</p>	1 Area	Source 3)
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Mongolia	Daguur Strictly Protected Area	---	103,000 (Ramsar Site 210,000)	Strictly Protected Area	Ramsar Site	Steppe, Wetlands, Lakes	Ib	Yes	Yes	49°42'N 115°06'E	596 m - 821 m	1992	<p>Importance: The Ramsar site provides important habitats for a number of rare and endangered waterbird species. There are 17 bird species included in the International and Mongolian Red Data Books. These include <i>Grus vipio</i>, <i>Anser cygnoides</i>, <i>Cygnus cygnus</i>, <i>Ciconia nigra</i> and <i>Limnodromus semipalmatus</i>. Among the other rare species breeding on the lake are <i>Aquila rapax</i>, <i>Bubo bubo</i> and <i>Pyrgilauda davidiana</i>. There are many Daurian endemic plant species including <i>Caragana spinosa</i>, <i>Sophora</i> spp., <i>Hypericum</i> spp., <i>Iris</i> spp., <i>Paeonia albiflora</i> and others, which are being threatened. The site is an important staging area for migratory waterbirds including 2,000 <i>Anser anser</i>, <i>A. fabalis serratirostris</i> and <i>A. f. middendorfi</i>. There are 4,000 <i>Tadorna ferruginea</i> and <i>T. tadorna</i>, 20,000 <i>Anas platyrhynchos</i>, <i>A. poecilorhyncha</i>, <i>A. crecca</i>, <i>A. formosa</i>, <i>A. falcata</i>, <i>A. strepera</i>, <i>A. penelope</i>, <i>A. acuta</i>, <i>A. clypeata</i> and <i>Aythya ferina</i>, 7,000 <i>Fulica atra</i>, 5,000 <i>Grus grus</i>, <i>G. vipio</i>, <i>G. monachus</i> and <i>Anthropoides virgo</i>; and over 10,000 <i>Larus ridibundus</i>, <i>L. cachinnans</i>, etc. Many waders migrate through the area such as <i>Pluvialis squatarola</i>, <i>P. fulva</i>, <i>Charadrius dubius</i>, approximately 10,000 <i>C. alexandrinus</i>, <i>Tringa ochropus</i>, <i>T. stagnatilis</i>, <i>T. glareola</i>, <i>Actitis hypoleucos</i>, <i>Calidris ferruginea</i>, <i>C. minuta</i>, <i>C. ruficollis</i>, approximately 6,000 <i>C. temminckii</i>, <i>Gallinago gallinago</i>, <i>G. stenura</i>, <i>Numenius minutus</i>, <i>N. arquata</i> and <i>N. madagascariensis</i>.</p> <p>Biological/Ecological notes: Over 300 plant species have been found here including several endemics to the region. East Mongolian dominant species are <i>Caragana microphylla</i>, <i>C. stenophylla</i>, <i>Leymus chinensis</i>, <i>Stipa krylovii</i>, <i>Filifolium sibiricum</i>, <i>Polygonum divaricatum</i>, <i>Iris</i> sp., <i>Hemerocallis minor</i>, <i>Clematis</i> sp., <i>Stipa baicalensis</i> and <i>Helictotrichon schellianum</i>. East Mongolian and Daurian representative species are characterised by <i>Stipa baicalensis</i>, <i>S. krylovii</i>, <i>Leymus chinensis</i>, <i>Bupleurum scorzonerifolium</i>, <i>Galium verum</i>, <i>Astragalus melilotoides</i>. Over 100 plant species including <i>Clycyrrhiza uralensis</i> and <i>Thermopsis lanceolata</i> are used for traditional medicines and the majority of them are rare. The fauna of the Mongol Daguur area consists of the elements of different biogeographical zones such as taiga, broad-leaved forest and steppe. The Mongol Daguur Ramsar site includes 39 species of mammals belonging to 6 orders, 16 families and 29 genera. So far 260 bird, 3 reptile, 2 amphibian and 7 fish species have been recorded.</p>	1 Area to see as a cluster together with Daursky Zapovednik and the Chinese Dalai Lake Biosphere Reserve	Source 3)	
C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
China	Xilin Gol Biosphere Reserve	---	Core: 1,850 Buffer: 5,600 Transition area: 1,070,000 Total 1,077,450	Biosphere Reserve (?)	MAB Biosphere Reserve	Steppes	Ib, V	Yes	No	N 43 10 00 E 115 50 00	+950 to +1,506	1987	<p>General Description: Xilin Gol Biosphere Reserve is situated in the Inner Mongolia Autonomous Region, about 600 km north of Beijing. It was established as China's first grassland biosphere reserve in 1987 to protect the biodiversity of a typical steppe ecosystem and to develop models of sustainable grassland resource use for improved well-being of the local people. The area is extensively grazed by wild herbivores and domestic livestock managed mainly by sedentary herders.</p> <p>Before 1950, the area was used by nomadic Mongols as pasture land. After the establishment of four state-run livestock farms for breeding fine-wool sheep, 13% of the inhabitants of the biosphere reserve (in total 125,850 people in 1999) live on these farms whereas 87% in the town of Xilinhot. The population of this city has rapidly expanded with increased investments in mining and oil industry. People are mainly ethnic Han, but there are also about 28% Mongols in the biosphere reserve. Several development projects have been set up to meet the multiple objectives of the biosphere reserve. For example, a demonstration farm, raising traditional animals of the grassland such as horses, sheep and goats, has been established to present alternative practices and means of animal husbandry to local herders.</p> <p>Flora: Steppe with <i>Aneurolepidium chinense</i>, <i>Stipa grandis</i>, <i>S. krylovii</i>, <i>Filifolium sibiricum</i> and <i>Cleistogenes squarrosa</i>; meadow steppe; forest of <i>Populus davidiana</i> and <i>Betula platyphylla</i>; <i>Picea meyeri</i> forest; <i>Ulmus pumila</i> woodland; freshwater wetland meadows and marshes; livestock farms; residential areas.</p>	1 Area	Source 14)	

China	Eerduosi National Nature Reserve	---	7,680	Nature Reserve	Ramsar Site	Steppe, Lakes	1b	Yes	Yes	N 39 48 00 E 109 35 00	1440 m	2000	<p>Importance: The site is a unique wetland type located in the transitional area of Eerduosi Plateau, evolving from typical highland to desertified grassland. The site supports some 15,000 breeding relic gulls <i>Larus relictus</i> and is a staging area for 60% of the world population of that species. Some 83 other species of waterbirds are also present, with 18 of these breeding there. Around 30,000 migratory birds pass through the site annually.</p> <p>Biological/Ecological notes: The site is an Euro-Asian grassland and Asian desert with high ecological fragility. The grassland is mainly covered by <i>Echinochloa caudata</i>, <i>Juncellus limosus</i>, <i>Artemisia ordosica</i>, <i>A. frigida</i> and <i>Cleistogenes songorica</i>. On the more sandy soils, there are <i>Caragana intermedia</i> vegetation groups. <i>Salix psammophila</i>, <i>S. microstachia</i> and <i>Suaeda glauca</i> occur as well. On the lacustrine mudflats, pioneer vegetation such as <i>Achnatherum splendens</i> and <i>Suaeda microphylla</i> occur. In the water, one can find <i>Potamogeton maackianus</i>, <i>Typha laxmannii</i> and <i>Phragmites australis</i>. The main bird species on the site are <i>Phalacrocorax carbo</i>, <i>Cygnus cygnus</i>, <i>Larus brunicephalus</i>, <i>Anser cygnoides</i> and <i>Tadorna ferruginea</i>.</p>		
China	Dalai Lake Biosphere Reserve	---	Core: 45,082 Buffer: 22,816 Transition: 672,102 Total 740,000	Biosphere Reserve (?)	MAB Biosphere Reserve, Ramsar Site	Lakes, Steppe	1b, 5	Yes	Yes	N 48 33 00 E 117 30 00	545 m - 784 m	2002	<p>Importance: A staging area in the East Asian-Australasian Shorebird flyway, the site is important for some 284 bird species, particularly Anatidae and shorebird species. The site exceeds the 20,000 individuals and 1% population thresholds for the species <i>Vanellus vanellus</i>, <i>Anser cygnoides</i> and <i>Platalea leucorodia</i>. More than 20,000 common cormorant <i>Phalacrocorax carbo</i> were recorded in the Wulannur area in spring 2000. Some 30 fish species occur, of both Siberian and northeast China types, and some are economically important. National First Class Protected birds occurring include <i>Grus leucogeranus</i>, <i>G. japonensis</i>, <i>G. monacha</i>, <i>Aquila chrysaetos daphanea</i>, <i>A. heliaca</i>, <i>Haliaeetus leucoryphus</i>, <i>Larus relictus</i>, <i>Otis tarda dybowskii</i> and <i>Ciconia nigra</i>. Fish species of both Siberia and northeast China co-exist here. Species include <i>Culter erythropterus</i>, <i>Erythroculter mongolicus</i>, while the species <i>Carassius auratus</i> and <i>Cyprinus carpio</i> spawn here as well.</p> <p>Biological/Ecological notes: Waterbirds, especially Anatidae and shorebirds constitute a major portion of the 284 bird species, manifested both in individual numbers and in total (more than 100,000 individuals of these two groups stage or breed here). Marsh vegetation types are the most important in the Dalai Lake. They are distributed in river channels and seasonally or permanently inundated areas. Dominant marsh species are <i>Phragmites</i> sp., <i>Carex</i> sp., <i>Calamagrostis angustifolia</i>, <i>Scirpus fluviatilis</i> and willow shrubs. Areas with marsh vegetation provide important breeding areas for birds and spawning areas for fish.</p>	1 Area, to see as a cluster together with Daursky Zapovednik and the Mongol Daguur Strictly Protected Area	Source 4) Source 15)

7e. Form and date of most recent records or inventory of property

Korgalzhin and Naurzum Nature Reserves see Section 8.

7f. Address where inventory, records and archives are held.

Korgalzhin and Naurzum Nature Reserves See Section 8.

7g. Bibliography

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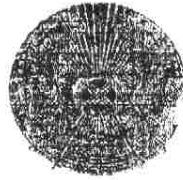
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На № _____ от _____

**Центр Всемирного наследия
ЮНЕСКО
г. Париж, Франция**

Комитет лесного и охотничьего хозяйства Министерства сельского хозяйства Республики Казахстан (далее - Комитет) выражает свою признательность за высокую оценку номинируемой территории «Сары-Арка - степи и озера Северного Казахстана» (Казахстан), для включения в Список Всемирного наследия ЮНЕСКО, проведенной в период с 30 сентября по 8 октября 2007 года.

По указанным в письме Международного союза охраны природы вопросам Комитет сообщает следующее.

1. По уточнению площади номинируемой территории

В настоящее время площадь Коргалжынского государственного природного заповедника составляет 258 963 га, включает Коргалжынскую систему озер и озеро Тенгиз, а также степные и полупустынные территории. Площадь охранной (буферной) зоны Коргалжынского государственного природного заповедника составляет 67 915 га.

Площадь Наурзумского государственного природного заповедника составляет 191 381 га, площадь охранной (буферной) зоны 116 726,5 га.

Так как номинируемая территория включает только территории Коргалжынского и Наурзумского заповедников, то общая площадь номинируемой территории составит 450 344 га.

2. По Плану управления Наурзумского государственного природного заповедника

План управления Наурзумского государственного природного заповедника получил положительное заключение государственной экологической экспертизы Министерства охраны окружающей среды Республики Казахстан и утвержден приказом Комитета от 27 ноября 2007 года № 339.

3. По вопросу удаления или выравнивания неэстетичных руин бывшей деревни Наурзум на территории Наурзумского заповедника

В настоящее время администрацией Наурзумского заповедника прорабатывается вопрос о сносе оставшихся построек на территории Наурзумского заповедника.

4. По расширению территории Коргалжынского государственного природного заповедника

Комитетом в рамках проекта ГЭФ/ПРООН «Комплексное сохранение приоритетных глобально значимых водно-болотных угодий как мест обитания

05.09.08

мигрирующих птиц» разработаны естественно-научное и технико-экономическое обоснования расширения территории Коргалжынского заповедника.

Естественно-научное обоснование расширения территории Коргалжынского заповедника получило положительное заключение государственной экологической экспертизы и утверждено приказом Комитета от 17 августа 2007 года № 252. Рассмотрение технико-экономического обоснования расширения территории заповедника запланировано на заседании Научно-технического совета Комитета, которое состоится 6 декабря 2007 года.

В территорию Коргалжынского заповедника планируется включить обширный степной участок с запада от озера Тенгиз, имеющий высокий международный статус, как место обитания редких степных видов млекопитающих и птиц (сайгак, саджа, журавль-красавка, степной орел), а также с восточной стороны участок с небольшими горько-солеными озерами, генетически связанных с Малым Тенгизом. Общая площадь расширения составит 284 208 га.

В настоящее время в Акмолинской и Карагандинской областях завершены работы по резервированию земель под расширение территории заповедника, а также мероприятия по подготовке и согласованию землеустроительного проекта отвода земель со всеми заинтересованными сторонами.

Мероприятие по расширению территории, а в частности принятие постановления Правительства Республики Казахстан запланировано на IV квартал 2008 года.

Комитет как уполномоченный государственный орган в области особо охраняемых природных территорий будет продолжать работу по сохранению особо важных природных объектов и выполнению международных обязательств конвенций по сохранению биологического разнообразия, сохранению водно-болотных угодий международного значения.

В свою очередь, Комитет искренне надеется на положительное решение экспертной комиссии Центра Всемирного наследия ЮНЕСКО о включении казахстанской номинации «Сары-Арка - степи и озера Северного Казахстана» в Список Всемирного природного наследия ЮНЕСКО.

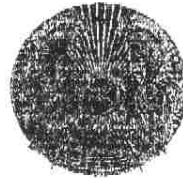
с уважением

Председатель Комитета


Н. Хадыркеев

Исп: Агажаева А. К.
743316

ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
 АУЫЛ ШАРУАШЫЛЫҒЫ МИНИСТРЛІГІ
 ОРМАН ЖӘНЕ Аңшылық
 ШАРУАШЫЛЫҒЫ
 КОМИТЕТІ



РЕСПУБЛИКА КАЗАХСТАН
 МИНИСТЕРСТВО СЕЛЬСКОГО ХОЗЯЙСТВА
 КОМИТЕТ
 ЛЕСНОГО И ОХОТНИЧЬЕГО
 ХОЗЯЙСТВА

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 3. подъезд, Дом Министерства
 тел/факс: 8 (7172) 74 32 88

28.11.07 № 25-11-23/4436
 На № _____ от _____

UNESCO
 World Heritage Center

The Committee for Forestry and Hunting of the Ministry of Agriculture of the Republic of Kazakhstan (further - Committee) expresses assurances of consideration to the UNESCO World Heritage Center and its gratitude for a high estimation of the nomination "Sary Arka - steppe and lakes of Northern Kazakhstan" (Kazakhstan) for inclusion in the List of the UNESCO World heritage which took place within the period of September, 30th - October, 8, 2007.

On the issues specified in the letter from the International Union for the Conservation of Nature the Committee informs the following:

1. *Specification of area of the nominated site*

At present the area of Korgalzhyn State Nature Reserve makes 258 963 hectares, including Korgalzhyn Lakes System and the Tengiz Lake, as well as steppe and semi desert areas. The area of the buffer zone of the Korgalzhyn State Nature Reserve makes 67 915 hectares. The area of Naurzum State Nature Reserve is 191 381 hectares, the area of the buffer zone of 116 726,5 hectares.

Taking into consideration that the nominated area includes territory of Korgalzhyn and Naurzum Reserves only, the total area of the nominated site makes 450 344 hectares.

2. *Management Plan of the Naurzum State Nature Reserve*

The Management Plan of the Naurzum State Nature Reserve has received positive appraisal of the State Environmental Examination Board of the Ministry of Environmental Protection of the Republic of Kazakhstan and approved by the Decree of the Committee # 339 as of November, 27, 2007.

3. *Removal or grading of unaesthetic ruins of former Naurzum village on the territory of Naurzum Reserve*

Administration of the Naurzum Reserve considers possibilities of clearance of the remained constructions on the territory of the Naurzum Reserve.

4. *Expansion of the territory of the Korgalzhyn State Nature Reserve*

Within GEF/UNDP project "Integrated conservation of priority globally significant migratory bird wetland habitat" the Committee developed Scientific and Feasibility Studies for justification of expansion of territory of the Korgalzhyn Reserve.

2

The Scientific Study of expansion of the territory of the Korgalzhyn Reserve was positively appraised by the State Environmental Examination Board and approved by the Decree of the Committee # 252 as of August, 17, 2007. Consideration of the Feasibility Study on expansion of the territory of the Reserve is planned at the meeting of Scientific and Technical Council of the Committee to take place on December, 6, 2007.

The expanded area of the Korgalzhyn Reserve is planned to include an extensive steppe site of the Tengiz Lake (west part) of high international status as the habitat of rare species of steppe mammals and birds (Saiga, Pallas Sandgrouse, Demoiselle, Steppe Eagle), as well as east part with the small bitter-salty lakes, genetically connected with the Small Tengiz. The total expanded area will make 284 208 hectares.

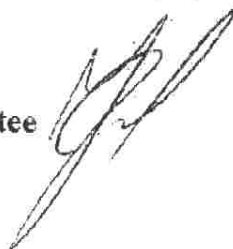
At present in Akmola and Karaganda oblasts the works on lands reservation for expansion of the territory of the Reserve, as well as activities on preparation and agreement of land surveying project for lands allotment with all interested parties are completed. Activity on expansion of the territory and acceptance of the governmental Decree of the Republic of Kazakhstan in particular is planned for IV quarter 2008.

Being an authorized state body on protected areas the Committee will continue works on conservation of important natural objects and performance of the international obligations of conventions on biodiversity conservation, preservation of wetlands of international importance.

In its turn the Committee sincerely hopes for positive appraisal of the Experts Commission of the UNESCO World Heritage Center the inclusion of the kazakhstani nomination "Sary Arka - steppes and lakes of northern Kazakhstan" in the List of UNESCO World Natural Heritage.

Sincerely yours,

Nauryzbay Khadyrkeyev
Chairman of the Committee



Contact person:
Akmaral Agazhayeva
+ 7 7172 743316

Astana, “ 29 ” November 2007

***Re: Nomination of a natural site of the Republic of Kazakhstan
for inclusion on the UNESCO list of the
World Cultural and Natural Heritage***

Dear Mr. Sheppard,

With reference to Your letter of 15 November, 2007 concerning IUCN evaluation of “Saryarka - Steppe and Lakes of Northern Kazakhstan” (consisting of the two clusters Korgalzhyn and Naurzum State Nature Reserve) for inclusion on the World Heritage List I have the honor to forward the supplementary information on this natural site.

I would appreciate Your careful consideration and support of the proposed nomination as well as the assistance of the WHC experts in this regard.

Yours sincerely,

Dyussen Kasseinov
Secretary-General

To Mr. David Sheppard
Head, Programme on Protected Areas
The World Conservation Union IUCN

1a. Area of proposed property and proposed buffer zone

The total area of the proposed property amounts to **450344 ha** resembled by the core zones of Naurzum and Korgalzhyn State Nature Reserve (see maps in sections **Error! Reference source not found.** and **Error! Reference source not found.**) including:

No.	Name	Province	Coordinates	Size (ha)		Map No.
				Core Area	Buffer Zone	
1.a	Naurzum State Nature Reserve – NSNR Main Area Naurzum–Kargay Cluster	Kostanai Province	North 51°12' 171'' - 51°44' 410'' East 64°05' 227'' - 64°45' 104'' Center of the cluster: North 51 29 10, East 64 18 13	139 714*	36 287,7	Map 1.) Map 2.) Map 3.) Map 35.)
1.b	Naurzum State Nature Reserve – NSNR Sypsyn–Aebu Cluster	Kostanai Province	North 51°17' 348'' - 51°34' 310'' East 63°42' 324'' - 63°58' 499'' Center of the Cluster: N 51°23' 255'' E 63°49' 215''	38 720*	11 624	Map 1.) Map 2.) Map 3.) Map 35.)
1.c	Naurzum State Nature Reserve – NSNR Tersek-Karagay Cluster	Kostanai Province	North 51°38' 383'' - 51°52' 403'' East 63°46' 407'' - 64°00' 547'' Center: N 51°47' 331'' E 63°48' 955''	12 947*	37 655,8	Map 1.) Map 2.) Map 3.) Map 35.)
1.d	Narzum State Nature reserve – NSNR Eco- Corridor linking the upper clusters	Kostanai Province	North 51°25' 339'' - 51°41' 137'' East 63°47' 144'' - 64°08' 551'' Center of the Cluster: N 51°37' 381'' E 63°59' 015''	no	31 159	Map 1.) Map 2.) Map 3.) Map 35.)
2	Korgalzhyn State Nature Reserve – KSNR Cluster	Akmolinsk, Karaganda Provinces	North 50°10'00'' - 50°43'00'' East 68°38'00'' - 69°41'00'' Center of the Cluster: North 50°26'00''; East 69°11'20''	258 963	94 421	Map 1.) Map 2.) Map 4.) Map 38.)
	Total managed area of the site			Core 450 344	Buffer 211147.5	

Total Core Area of Naurzum Zapovednik adds up to 191381 ha.