World Heritage Thematic Study
for
Central Asia

A Regional Overview

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Photo: Steppe, Tersek, Kazakhstan by Dr Leslie F. Molloy/IUCN 2002

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Executive Summary

The five Central Asian countries, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, are all States Parties to the World Heritage Convention. To date (August 2005) no World Heritage sites have been inscribed for their natural values in this region.

This report was commissioned by IUCN's Programme on Protected Areas and financed by the World Heritage Fund in response to a request from the World Heritage Committee (27th session, 2003). A literature review was carried out and consultation with regional experts and members of IUCN's World Commission on Protected Areas (WCPA) to identify a limited number of sites which may have potential for natural World Heritage status from among almost three hundred protected areas in Central Asia.

A number of potential sites had been suggested by various experts and from a review of the literature. These sites were objectively considered and subject of a desk review evaluation based on available information at the time of this study. The six areas considered having potential for nomination as natural World Heritage sites (Badkhyz, Tigrovaya Balka, Saryarka, Golden Mountains of Altai in Kazakhstan, Western Tien Shan and Northern Tien Shan) are described and provisional justifications are outlined. It is important to note however that issues associated to the Conditions of Integrity have not been assessed in this report and would need to be the subject of further review in line with the Operational Guidelinesof the World Heritage Committee. It is also important to stress that results and recommendations from this study will not compromise the outcomes of IUCN Secretariat's independent technical evaluation of nominations of any future nominations from the region.

1. Introduction

1.1 Background to the Review

In 1994 the World Heritage (WH) Committee adopted a Global Strategy for a balanced and representative WH List, with the aim of ensuring that the List reflected the world's cultural and natural diversity of "Outstanding Universal Value". Various conferences and workshops to develop and refine the overall strategy on a regional basis have since been held in Africa, the Pacific, the Middle East and Arabia, the Andes, the Caribbean, Central Asia and South-East Asia. In addition since 1996 IUCN - in collaboration with the WH Centre, UNEP-WCMC and the Ramsar Secretariat - have produced a series of thematic studies, providing overview assessments of major themes relating to natural sites. These have included the following:

- The Earth's Geological History (Wells 1996)***1**
- Wetland and Marine Areas (Thorsell *et al.* 1997)***2**
- Tropical Forests (CIFOR *et al.* 1999)
- Forests (Thorsell and Sigaty 1997a)***3**
- Human Use of World Heritage Natural Sites (Thorsell and Sigaty 1997b)***4**
- Biodiversity (Gillet *et al.* 1998)***5**
- A Global Overview of Protected Areas on the World Heritage List of Particular Importance for Biodiversity (Smith, Jakubowska and May 2000)
- Karst Sites in the Asia-Pacific (Wong *et al.* 2001)
- Tropical Marine, Coastal and Small Island Ecosystems (Green *et al.* 2001)
- Review of Natural Sites included in the World Heritage List and Tentative Lists (Thorsell 2002).
- Mountain Ecosystems (Thorsell and Hamilton 2002)***6**
- Review of the World Heritage Network: Biogeography, Habitats and Biodiversity (Magin and Chape 2004).

Note: Papers marked * and numbered 1-6 are part of a series entitled "Contributions to the Global Theme Study of World Heritage Natural Sites".

A UNESCO regional workshop on "Possibilities of Nominations on World Natural and Mixed Heritage in Central Asia" was held at the National Academy of Sciences, Almaty, Kazakhstan from 16-18 December 2002. The 40 participants included experts from the five Central Asian countries and international experts. One of the recommendations from the workshop was the need for an independent review of potential natural WH sites in Central Asia. Subsequently, Decision 27 COM 8C.6 of the 27th meeting of the WH Committee in Paris in June / July 2003 noted, as requested by IUCN, the need to undertake a thematic study for Central Asia, partly to address the question of the OUV of the proposed Saryarka - Steppes and Lakes of Northern Kazakhstan WH site (WHC 2003). This review was subsequently contracted by IUCN.

1.2 Criteria for Listing Natural WH Sites

For a site to be included on the WH List, the WH Committee must find that it is of "Outstanding Universal Value". For sites nominated as natural or mixed sites, this means that the site must meet one or more of the following criteria (Operational Guidelines, February 2005):

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance;

(viii) be outstanding examples representing major stages of the Earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features;

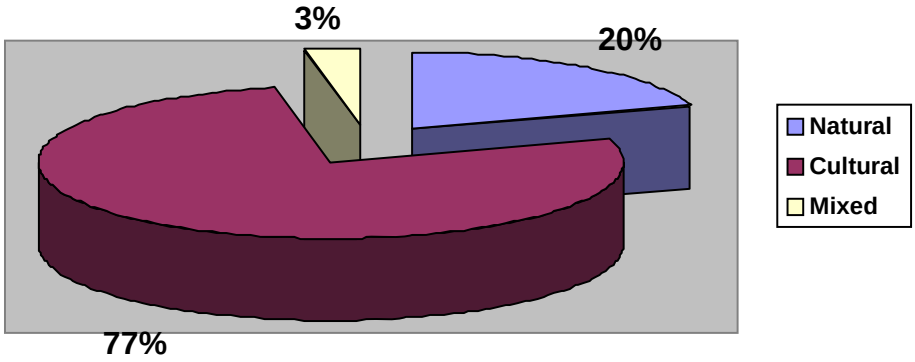
(ix) be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems and communities of plants and animals;

(x) contain 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.

In addition to fulfilling one or more of these criteria, the protection, management and integrity of a site, known as the “Conditions of Integrity”, must be met. The criteria under which a site may be inscribed for its cultural and natural values are given in Appendix I, together with an outline of the conditions of integrity that a site should satisfy.

Mixed sites are those that have both outstanding natural and cultural value. In addition, since 1992 sites which represent significant interactions between people and the natural environment have been recognised as cultural landscapes. As of August 2005, the WH List consisted of a total of 812 properties in 137 States Parties, out of the total of 180 States that have signed the Convention. Of these, 628 were inscribed as cultural properties, 160 as natural sites and 24 as mixed properties.

Figure 1: Types of Properties in the World Heritage List (as of August 2005)



1.3 The Current Natural and Mixed WH Network

The world’s natural resources and outstanding natural heritage are not uniformly distributed across the planet, and so all countries will not necessarily have a natural or mixed site of outstanding universal value within their territory (IUCN, 2004).

Several recent studies (Magin and Chape, 2004; IUCN 2004) have examined the biogeographic coverage of the current WH network, using Udvardy’s (1975) system of Biogeographic Realms, Biomes and Provinces, a unifying system of biogeographic delimitations that has been widely used by biologists for the past 30 years. Udvardy’s scheme divides the world into eight large Biogeographical Realms, which are continent or sub-continent sized areas with unifying features of geography and fauna / flora / vegetation. The Palearctic Realm, to which the five Central Asian countries belong, has the most WH sites (53) and the largest area in WH sites (Table 1) but a relatively low percentage cover (0.72%) since it is by far the largest realm.

The Udvardy Biogeographic system further classifies the world into 14 ecosystem types, which are referred to as Biomes. All of Udvardy’s Biomes contain WH sites except for one, Cold Winter Deserts (Table 2). Mixed Mountain Systems (with 32 WH sites), Tropical Humid Forests (26), and Tropical Dry Forests (25) are the three most common biome classifications found in existing natural and mixed WH sites, while Tundra and Polar Systems (4) and Temperate Grasslands (4) are the least common biome classifications occurring. In a recent strategy paper on the development of the WH network, IUCN (2004) concluded that there were still major gaps in the following Udvardy Biomes: Tropical Grassland / Savannah; Tundra and Polar Systems; Freshwater Lake Systems / Rivers; Temperate Grasslands; and Cold Winter Deserts. The last three of these five biomes are present in Central Asia.

Udvardy’s Biogeographic Realms are subdivided into 193 Biogeographical Provinces, which approximately correspond to floristic regions of botanists and the faunal provinces of zoologists. A recent UNEP-WCMC analysis of the coverage of WH sites within the 186 Biogeographic Provinces for which data were available, found that WH sites occur within 98 (52.7%) of these provinces (Magin and Chape 2004).

Table 1: Distribution of natural and mixed WH sites by Udvardy Biogeographic Realm. Source: Magin and Chape (2004)

Udvardy Realm	No. of WH Sites	Land Area (km2)	Area of WH sites (km2)	% Realm in WH sites
Afrotropical	32	22,156,119.20	285,454.01	1.29
Antarctic	6	285,805.65	25,021.04	8.75
Australian	12	7,704,908.69	69,786.06	0.91
Indomalayan	16	7,533,958.05	12,051.90	0.16
Nearctic	18	22,895,770.40	210,068.41	0.92
Neotropical	33	18,975,799.20	243,531.11	1.28
Oceanian	5	1,035,302.22	16,934.21	1.64
Palearctic	53	54,137,006.84	387,626.64	0.72
TOTAL	**175**	**135,195,853.37**	**1,250,473.40**	**0.92**

Note: The table does not include the five natural sites inscribed on the WH List in July 2004. Three WH sites (Aïr-Ténéré, Everglades and Manas) overlap two realms so the total number of sites is inflated from 172 to 175.

Table 2: Number of natural and mixed WH sites by Udvardy Biomes. Source: IUCN (2004)

Biome (Udvardy Biome No.)	No. of WH Sites
Mixed Mountain Systems (12)	32
Humid Tropical Forests (1)	26
Tropical Dry / Deciduous Forests (4)	25
Mixed Island Systems (13)	22
Subtropical / Temperate Rainforest (2)	14
Warm Desert / Semi-deserts (7)	13
Temperate Broad-leaf Forests (5)	12
Temperate Needle-leaf Forests (3)	10
Evergreen Sclerophyll Forest / Scrub (6)	9
Tropical Grassland / Savannas (10)	8
Lake Systems (14)	5
Tundra / Polar Desert (9)	4
Temperate Grasslands (11)	4
Cold Winter Deserts (8)	0
Total	**184**

Note: The table does not include natural sites inscribed on the WH List after July 2003. Some sites incorporate more than one biome, so the total number of sites is inflated from 172 to 184.

2. Overview of Natural World Heritage in Central Asia

2.1 Current situation of WH Sites

In the five countries of the Central Asian region (consisting of Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan) there were eight inscribed cultural WH sites as of July 2005:

- the Mausoleum of Khoja Ahmed Yasawi in Kazakhstan
- Petroglyphs within the Archaelogical Landscape of Tamgaly in Kazakhstan
- the State Historical and Cultural Park "Ancient Merv" in Turkmenistan
- Kunya-Urgench in Turkmenistan
- Itchan Kala (= the old centre of Khiva) in Uzbekistan
- the Historic Centre of Bukhara in Uzbekistan
- the Historic Centre of Shakhrisyabz in Uzbekistan
- Samarkand, Crossroads of Cultures in Uzbekistan.

Tajikistan has no WH sites at this point in time. Neither does Kyrgyzstan, but Issyk-Kul is currently (November 2004) under evaluation as a mixed serial nomination. This site will not therefore be considered further in this report.

The Almaty workshop convened by UNESCO in 2002 came up with a number of recommendations for potential WH sites in the region (see Appendix VI). However, different reports of the meeting often mention different names for suggested sites, or vary in the sites suggested. Furthermore, the outcomes of the meeting have not yet been officially incorporated into the national Tentative Lists of sites by the relevant States Parties. One of the aims of this review is to assess the eighteen potential WH sites suggested by various experts and meetings in relation to their potential to meet WH natural criteria.

2.2 Outstanding Universal Value in Central Asia

Potential WH sites should be of Outstanding Universal Value (OUV) according to one or more of the natural criteria (vii-x). It is beyond the scope of this report to comment on natural criterion (viii), which essentially deals with geological value (the subject of a separate IUCN Thematic Study) but a synopsis of OUV in Central Asia in terms of ecosystems - criterion (ix); natural phenomena and aesthetic importance – criterion (vii); and biodiversity – criterion (x) is presented below.

2.2.1 Natural phenomena and aesthetic importance

The Central Asian region is a vast area of some 4,000,000 km^2 stretching 3,000 km from the trans-Volga steppes in the west to the Altai Mountains in the east, and 2,000 km from the forest-steppe of the West Siberian plain in the north to the edge of the Iranian Plateau and the mountains of Parapamiz and the Hindu Kush in the south. It varies in altitude from -132 m in a depression in western Kazakhstan to 7,495 m at the summit of Samani (formerly known as Pik Kommunizma) in the Pamir Mountains in Tajikistan. It spans ecological zones from desert to taiga, fringed by many discrete and distinctive mountain ranges, and has a great variety of landscapes ranging from snow fields and glaciers to steppes, plains, marshes and sand dunes. Much of the north and west is, however, relatively flat and uniform topographically, with little scenery that could be described as of OUV under natural criteria (vii). The most impressive landscapes are undoubtedly the spectacular mountainous regions situated on the southern and eastern edges of the five Central Asian countries, but it should be born in mind that Mixed Mountain Systems are already well-covered in the WH List.

2.2.2 Ecosystems

Various authors have identified different Central Asian ecosystems as being of global significance (Table 3). Biomes and habitats of greatest interest within Central Asia include the following, all of which are transboundary:

- Sandy Deserts, shared between Kazakhstan, Turkmenistan and Uzbekistan, for example the Karakum Desert. Noted for their high endemicity and diversity, particularly in the herpetofauna, and considered "the richest deserts in Asia" (Krever *et al.* 1998). The deserts include highly distinctive thickets of woody *Haloxylon* shrubs called saxaul.

- Steppes, shared between Kazakhstan, Turkmenistan and Uzbekistan, which support migratory ungulates such as saiga antelope and kulan, and were the origin of a number of bulb plants such as daffodils and tulips now cultivated throughout the world.
- Montane Temperate Forests (all five countries) which are part of the "Mountains of Middle Asia" Centre of Plant Diversity and contain the wild forebears of many domesticated fruit and nut species such as apples, pears, apricots, almonds, pistachios and walnuts.
- Montane Coniferous Forests, chiefly in Kazakhstan, including juniper and spruce forests.
- Alpine and Sub-alpine Meadows, in all five countries, harbouring diverse flora and larger fauna such as pikas, marmots, wild goat, wild sheep and snow leopard.
- River Deltas and Riparian Forests, in Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan. The "Tugai" riparian forests of poplars, *Elaeagnus* and *Tamarix* along the Amu Darya and Syr Darya rivers were once home to the now extinct Caspian tiger and still support small populations of Bukhara deer; the Volga Delta in Kazakhstan and Russia is one of Eurasia's largest and most productive delta systems and is the key to the long-term functioning of the Caspian Sea; the Ural Delta in Kazakhstan is an important sturgeon spawning area.
- Freshwater Wetlands in Kazakhstan, Kyrgyzstan, Turkmenistan and Uzbekistan, including lakes and marshes which harbour millions of migrating waterfowl on trans-continental flyways, including the Caspian-Nile, North Kazakhstan, West Siberian and Pakistan-Indian-North Kazakhstan-West Siberian routes.

Table 3: Central Asian Ecosystems identified as being of global significance by different authors and reports

Ecosystem	IUCN 2003b	WWF Global Ecoregions	Karpowicz and Reap (2002)
Steppes	x		
Wetlands, lakes and deltas	x	x	x
Forests (incl. mountain forests w. high levels of endemism)*	x	x	x
Cold winter deserts	x	x	x
Coastal ecosystems	x		
Mountains	x	x	x
Internal water basins	x		

Note: *In a global analysis of forest sites with potential for WH status, Thorsell and Sigaty (1997) only included one forest from the whole Palearctic realm: the Carpathian Forest Reserve and National Park, Ukraine. They did not claim that their analysis was exhaustive, but nonetheless the absence of any forest from Central Asia suggests that the forests of the region may be of relatively less significance.

The shrinking Aral Sea should be mentioned in passing as a special case. Although formerly a remarkable ecosystem, allocated its own special Biogeographical Province by Udvardy (1975), see below, its ecological value has been slashed by ill-considered water abstraction projects on its tributaries. Krever *et al.* (1998) describe it as "a global ecological catastrophe occurring at ..... an astronomical scale."

Biogeographical Provinces

The five Central Asian countries all lie entirely within the Palearctic Biogeographic Realm, and span seven Biogeographical Provinces (Table 4). Four out of seven (57.1%) of the BPs present in Central Asia are already represented in WH Sites in other countries, but three provinces, namely the Turanian, Pamir-Tian-Shan Highlands and the Aral Sea are not.

Table 4: Udvardy Biogeographical Provinces in Central Asia and existing WH Sites

Udvardy Biogeographical Province		No. of WH Sites	Names of WH Sites
Number	Name		
2.3.3	West Eurasian Taiga	3	Laponian Area (S) The High Coast (S) Virgin Komi Forests (Ru)
2.21.8	Turanian	0	
2.29.11	Pontian Steppe	1	Danube Delta (Ro)
2.34.12	Caucaso-Iranian Highlands	1	Western Caucasus (Ru)
2.35.12	Altai Highlands	2	Golden Mountains of Altai (Ru) Uvs Nuur Basin (Ru / M)
2.36.12	Pamir-Tian-Shan Highlands	0	
2.43.14	Aral Sea	0	

Note: Ro = Romania, Ru=Russia, Ru / M = Russia / Mongolia, S = Sweden

Although representation of all Udvardy BPs in WH sites is not an objective of the WH Convention, potential sites are more likely to be considered if the BP is not currently represented in the WH network.

WWF's Global 200 Ecoregions

WWF's Global Ecoregions scheme, based on a combination of biogeographical realms, floristic and zoogeographic provinces, divides the world's habitats into 867 different "ecoregions". Each is given a name and an alphanumeric code, which starts with the two letters designating the biogeographic realm the ecoregion belongs to (e.g. PA = Palearctic). The ecoregions are generally large and span a variety of habitats.

The most biologically outstanding of WWF's 867 ecoregions that deserve the most urgent conservation attention and are therefore considered priorities for conservation action are referred to as the "Global 200", so-called because initially WWF aimed to identify 200 priority ecoregions. In the end a total of 238 Global 200 ecoregions were identified, of which 195 are terrestrial (including 53 freshwater) and 43 are marine. Each Global 200 ecoregion can consist of several of the 867 ecoregions grouped together, and is also given a different name (often consisting of a hyphenated but shortened version of its constituent parts) and numbering system by WWF. The Central Asian countries encompass parts or all of the following five Global 200 Ecoregions.

(i) *Caucasus-Anatolian-Hyrcanian Temperate Forest (Global 200 Ecoregion 78)*

This Global 200 ecoregion covers approximately 520,000 km^2, stretches from the Black Sea and the Caucasus to north-east Iran and includes parts of the Kopet Dag mountain range in southern and western Turkmenistan along the Iranian border. These are some of the richest temperate forests in Europe and western Asia, with many endemic life forms. The ecoregion is made up of the following terrestrial ecoregions: Kopet Dag woodlands and forest steppe; Caucasus mixed forests; Euxine-Colchic deciduous forests; Northern Anatolian conifer and deciduous forests; Caspian Hyrcanian mixed forests; and Elburz Range forest steppe. The section of this Global 200 ecoregion occurring in Central Asia is the Kopet Dag woodlands and forest steppe (PA1008), an ecoregion comprised of mountainous shrub-like Mediterranean xeric woodlands. It is located on the slopes of the Kopet Dag mountain ranges and includes riparian forests found in the river valleys. The Kopet Dag woodlands are well-studied and high endemism is exhibited among many groups of organisms, up to 18% in flowering plants. Key endangered fauna include leopard, wild sheep, bezoar (bearded) goat, hyena, Indian porcupine, and a number of other rare species of mammals, birds, snakes, and lizards. The ecoregion represents the centre of origin and genetic diversity for wild relatives of cultivated plants such as grapes, pomegranates, figs, almonds, walnuts, wheat, barley and many others. These areas of woodland habitat continue to experience heavy logging and overgrazing. While certain areas are currently under protection, enforcement is not always sufficient to promote forest regeneration. There is currently only one WH Site in this ecoregion (Table 5).

Table 5: Number and extent of existing WH Sites in Global 200 Ecoregions present in Central Asia

WWF Global 200 Ecoregion	No. of existing WH Sites	WH Sites (area km2)
Caucasus-Anatolian-Hyrcanian Temperate Forest (78)	1	Western Caucasus (3,577 km2)
Altai-Sayan Montane Forests (79)	3	Golden Mountains of Altai (17,005 km2) Lake Baikal (11,493 km2) Uvs Nuur Basin (12,548 km2)
Middle Asian Montane Steppe and Woodlands (111)	0	
Central Asian Deserts (134)	0	
Volga River Delta (157)	0	

Note: All sites named are in Russia and Mongolia.

(ii) Altai-Sayan Montane Forests (Global 200 Ecoregion 79)

Although this huge 862,000 km^2 ecoregion primarily covers parts of Russia, China and Mongolia, it also includes small areas of north-eastern Kazakhstan. The forests are some of the most outstanding and intact examples of montane conifer ecosystems in Central Asia. The Global 200 ecoregion is made up of the following terrestrial ecoregions: Sayan Alpine meadows and tundra; Great Lakes Basin desert steppe; Altai montane forest and forest steppe; Sayan montane conifer forests; Sayan intermontane steppe; Altai alpine meadow and tundra. This ecoregion, rich in plant species including wild onions and crocuses, comprises an amazing diversity of landscapes, which are the result of several factors: Altai-Sayan's central location in Asia, its high mountains, and the range of climates in the area. Montane habitats cover more than half the region. Those areas east of the mountains receive ample rainfall; those to the west, in the "rain shadow" of the mountains, are semi-desert. Fauna includes snow leopards, Altai mountain sheep (argali), marmots, cinerous vultures, golden eagle and Altai snowcock. Landscapes in the northern region of the Altai-Sayan Montane Forests are largely inaccessible, so the forests here are mostly intact. In the southern steppe portions of the region, intensive sheep grazing, logging, mining, and hunting threaten the integrity of the habitat and the survival of some species. There are already three WH Sites covering some 41,000 km^2 in this ecoregion (Table 5).

(iii) Middle Asian Montane Steppe and Woodlands (Global 200 Ecoregion 111)

The Middle Asian Montane Steppe and Woodlands ecoregion covers approximately 878,500 km^2 and extends through all five Central Asian countries and into neighbouring Afghanistan, China and Pakistan. It is made up of the following terrestrial ecoregions: Gissaro-Alai open woodlands; Pamir alpine desert and tundra; Tian Shan montane conifer forests; Alai-Western Tian Shan steppe; Hindu Kush alpine meadow; Tian Shan montane steppe and meadows; and Tian Shan foothill arid steppe. The ecoregion is basically an enormous grassy plain that includes several snow-capped mountain ranges with tree-covered slopes. The longest range of all, the Tian Shan, stretches more than 2,500 km, while the highest point, Victory Peak, is about 7,400 m high. [N.b. certain high altitude parts of the Pamirs, including Samani (formerly known as Pik Kommunizma) in Tajikistan, are excluded from the Global 200 ecoregion]. Several big rivers run through the area, and glaciers are common. There are also some large, deep depressions in the ground that lie below sea level. Because it connects many isolated habitats, the ecoregion contains a huge diversity of endemic native grasses and shrubs. Woody species include walnut and fruit trees, pistachio and juniper. A wide diversity of bulbs, especially wild tulips also occurs. There are currently no WH sites in this ecoregion.

(iv) Central Asian Deserts (Global 200 Ecoregion 134)

The Central Asian Deserts support the richest desert life in all of Asia and are classed as Globally Outstanding by WWF. They have unique ecological qualities and support numerous endemic species. The Global 200 ecoregion includes three ecoregions; the Central Asian Northern Desert; the Central Asian Riparian Lands and Oases and the Central Asian Southern Desert; and is the only Global 200 ecoregion to be wholly contained within the five Central Asian countries. The ecoregion is composed of a mosaic of clay, stone, salt, and sandy deserts. In general the sandy deserts support the greatest biodiversity, in particular the Karakum ("Black Sands") and the Kyzylkum ("Red Sands") of Turkmenistan and Uzbekistan. The Karakum is bordered by mountain ranges and varies in character from a high plateau to a wide plain to a chain of salt marshes. Most

of the Kyzylkum is a vast plain of sand dotted with high, rocky mountains and a few water basins. Strong winds in these hot deserts create sand dunes and ridges, some of which can be as much as 90m high. The Amu Darya and Syr Darya Rivers cross through the deserts on their way to the Aral Sea, providing moisture to an area where rainfall is sparse and unpredictable. Many unusual species are well adapted to the combination of extremely cold winters and blistering hot summers. The forested river valleys were once the habitat for the now extinct Caspian tiger, and sand (or goitred) gazelle and kulan lived in the surrounding deserts. There are no WH sites in this ecoregion.

(v) Volga River Delta (Global 200 Ecoregion 157)

The Volga River flows some 3,700 km from the Valday Hills of north-western Russia before creating its delta as it enters the northern Caspian Sea. The river splits into more than 500 channels and spreads out into the surrounding floodlplain forming many shallow lakes. Covering around 86,000 km^2 this is one of the largest and most productive deltas in Eastern Europe. About 400 vertebrates have been recorded, including 127 species of fish and 260 species of birds, as well as 850 aquatic invertebrates, 430 different plants, and more than a thousand species of insects. The Volga River Delta supports millions of waterbirds such as swans, ducks, geese, herons and terns, many of which rely on the productive delta to rest and feed during migrations. Key unusual species include the Dalmatian pelican, great white egret, and penduline tit. The delta is considered one of the world's most productive areas for fish, particularly the Russian, beluga, sterlet, and stellate sturgeons (all of them internationally threatened). Other threatened fish include the rare white-eyed bream and the endemic Volga lamprey, whilst other migratory fish include whitefish (Salmonidae) and herrings (Clupeidae). Though still largely intact, the delta is threatened by dam construction for electricity and irrigation (dams reduce the flow of water and nutrients into the delta and destroy habitat for many species); and pollution from both industry and agriculture harming the health of fish and birds. Algal blooms and deoxygenation have increased in recent years.

2.2.3 Biodiversity

The topographic and climatic variety of Central Asia has resulted in highly diverse fauna and flora. The angiosperm flora comprises some 7,000 species; there are more than 900 species of vertebrates, including 172 mammals, 540 birds, 106 species of reptiles, 14 species of amphibians and approximately 150 species of fish; and more than 20,000 invertebrate species have been recorded (Krever *et al.* 1998). Endemism among these groups is high, particularly among higher plants. In some areas 18-20% of higher plants are species with narrow ranges. Central Asia can be considered a "crossroads" for species where representatives of Asian and Mediterranean flora meet, whilst certain areas within it can be considered as centres of speciation.

Hotspots

The distribution of biodiversity around the globe is uneven, with some areas having far greater diversity of living organisms than others. British ecologist Norman Myers first formulated and popularised the idea that areas rich in species, which he described as "hotspots", should be the focus for conservation efforts on the grounds that more species could be conserved for a given investment (Myers 1988). The identification of such biodiversity hotspots has become a widely accepted method of prioritising and targeting conservation activities and investments in order to have the greatest impact. Conservation International (CI) has created the most well known system of "biodiversity hotspots", identifying 25 priority hotspots representing a variety of global ecosystems. Selection of these hotspots was based on three criteria: the number of species present, the number of endemic species in an ecosystem and the degree of threat faced. Hotspot areas cover less than 2% of global terrestrial ecosystems, yet account for 44% of all vascular plant species and 38% of birds, mammals, reptiles and amphibian vertebrate groups. The five Central Asian countries do not however coincide with any of these hotspots. The closest geographically is the Caucasus hotspot, which lies to the west of Kazakhstan and is separated from it by the Volga delta.

Endemic Bird Areas

In a major conservation priority setting exercise, BirdLife International has designated approximately 2% of the world's land surface as Endemic Bird Areas or EBAs (Stattersfield *et al.* 1998). These are defined as areas that encompass the breeding ranges of two or more birds whose total breeding ranges are restricted to 50,000 km^2 or less. Globally 218 different EBAs were identified, covering the ranges of 93% of restricted range birds (2,451 species or roughly 25% of all known bird species). These restricted range species included 816 species classed as internationally threatened by IUCN, that is 74% of all threatened bird species (1998 data). The effective conservation of these EBAs is evidently critical for the maintenance of global avian diversity: however, Central Asia contains no areas designated as EBAs.

Centres of Plant Diversity

In the 1990s, concern about the rapid loss and degeneration of natural ecosystems and the urgent need to highlight those areas of prime botanical importance, botanical hotspots, was the rational behind an IUCN / WWF initiative to identify Centres of Plant Diversity (CPD). CPDs are concerned with first order sites that are of global botanical importance. Such areas must either have high species diversity, even if the number of species is not accurately known, or contain a large number of endemic species, or both. CPDs are also likely to be:

- important genepools of plants of known value to humans or that are potentially useful;
- areas with a diverse range of habitat types;
- areas with a significant proportion of species adapted to special edaphic conditions;
- threatened or under imminent threat of large-scale devastation.

The Centres of Plant Diversity project eventually identified almost 250 major areas for the conservation of global plant diversity using factors such as floristic statistics, alongside inputs from experts familiar with particular geographical areas. In the entire Central and Northern Asian region (which stretches from the Black Sea to the Pacific) only seven CPDs were identified. Three of these occur in Central Asia, and one (CA7) lies entirely within Tajikistan and Uzbekistan. These CPDs can be considered to have OUV for plant diversity.

CA1. Altai-Sayan (Russia and Kazakhstan)

A huge CPD covering approximately 1,100,000 km^2, mainly in Russia but overlapping into north-eastern Kazakhstan. It includes the Altai and Sayan mountain ranges and several others, and extends from 300 - 4,506m in altitude. The vegetation mainly consists of mixed coniferous forests, steppe and forest-steppe, with some subalpine and alpine vegetation and tundra. There are an estimated 2,500 vascular plants of which 120 are endemic. One of these is a monotypic endemic genus. Around 200 species are threatened or rare.

CA3. Mountains of Middle Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan)

This CPD includes the mountain ranges of the Kopet Dag, Tien Shan, Pamiro-Altai, Pamir and Dzhungarian Alatau along the southern and eastern fringes of Central Asia. It covers approximately 550,000 km^2, and varies from 100 - 7,495 m in altitude. The vegetation consists of semi-desert scrub, montane and sub-tropical steppe, broadleaved and coniferous forest, juniper and pistachio woodlands, alpine and subalpine meadows and nival (snow-adapted) vegetation. There are 1,500 endemic vascular plants amongst a total vascular flora of around 5,500 species. Over 1,000 species are utlized by man, including timber trees, medicinal plants, fruit and nut trees and ornamental plants. There are currently no WH sites within this CPD.

CA7. Zeravshan River basin and the Samarkand Mountains (Tajikistan and Uzbekistan)

Although only 20,000 km^2 in area, this CPD has a wide range of altitude and habitats. Situated to the west of the Pamir mountains it includes various types of steppe with ephemeral species and wormwood *Artemisia* scrub, with alpine meadows above 3,000m. Unfortunately no map of the extent of the area of the CPD is available. The flora includes 1,900 vascular plants, of which around 90 are (5%) are endemic. About 200 species have economic uses. The CPD includes Zeravshanskiy Zapovednik. There are currently no WH sites within this CPD.

Threatened animals and plants

Suggested points to bear in mind when assessing the Outstanding Universal Value (OUV) of threatened taxa are:

- Globally threatened (IUCN Red Listed) taxa have OUV. Nationally threatened taxa do not, since they may be common elsewhere in their range.
- Globally threatened species have a higher OUV than globally threatened subspecies, populations or varieties since the latter may be part of more widely distributed, non-threatened species. For example, although the Bactrian red deer (also known as the Bukhara deer) *Cervus elaphus bactrianus* of Central Asia is listed by IUCN (2003a) as Vulnerable, it is only one of a dozen or more subspecies of the abundant red deer, wapiti or elk *Cervus elaphus* which is found throughout Europe, Asia Minor, the Caucasus, southern Siberia, Mongolia, Manchuria, Korea, northern and western China, Himalayan region, north-western Africa, southern Canada, most of the conterminous United States, and northern Mexico, and is a managed game species / controlled pest in much of its range. The Bactrian red deer thus has high regional conservation value, but little potential for meeting criteria of OUV.
- Globally threatened taxa that are not so far represented in other WH sites should have a higher OUV than those that are.

- Taxa in higher categories of threat have greater potential for OUV than those in lower, categories since their conservation is of greater immediate priority.
- Globally threatened taxa that can act as keystone or flagship species, whose effective conservation would ensure the survival of many other species occupying the same habitats, have a higher potential for OUV. In Central Asia these would include ungulates and larger carnivores, sturgeon and some waterfowl and raptors.

Central Asia contains 167 taxa (species, subspecies and populations) of animals and plants listed in the 2003 IUCN Red List of Threatened Species (Appendix III). Of these, 93 taxa are considered globally threatened, i.e. they are listed on the basis of quantitative criteria as Critically Endangered (10 taxa), Endangered (22 taxa) or Vulnerable (61 taxa). Key globally threatened species of OUV in Central Asia include saiga, slender-billed curlew, Syr-Darya and small Amu-Dar shovelnose sturgeons (all Critically Endangered); markhor, snow leopard, European mink, white-headed duck, meadow viper, Semirechensk salamander, and the Russian, ship, Persian and stellate sturgeons and beluga (all Endangered). Key threatened subspecies / populations include Tadjik markhor, Kara Tau argali, kulan, Aral Sea trout (all Critically Endangered); Svertsov's urial, Bukhara urial and the North Persian leopard.

The saiga is undoubtedly the key threatened species for the conservation of steppe ecosystems, giving them potential to meet OUV under natural criteria (x). However, a workshop held in early 2004 in Almaty, Kazakhstan, which gathered the world's leading saiga experts - including members of SSC's Antelope Specialist Group and others concerned with securing a future for the species such as SSC's European and Central Asia Sustainable Use Specialist Groups - concluded that its future is bleak. Saiga numbers have plummeted 95% from about one million in 1990 to less than 50,000 today. The main cause of this catastrophic decline is poaching, both for horn and meat. Poaching is fuelled by widespread poverty resulting from major changes in the rural economies of the saiga's main range states, Kazakhstan, the Republic of Kalmykia of the Russian Federation, Uzbekistan and Turkmenistan.

Unless current conservation measures are dramatically strengthened, poaching will continue and rapidly lead to extinction or near-extinction of the main remaining populations. The experts considered that the Betpak-Dala population of saiga antelope was particularly threatened. (Nb: Betpak-Dala is a region of Kazakhstan located between the Syr Darya River and Lake Balkash, also known as the Golodnaia Steppe). There do not appear to be any potential Central Asian WH sites that could definitely secure the future of this flagship steppe species because it migrates over huge distances. However, the proposed Steppes and Lakes of Northern Kazakhstan WH site does protect some habitat and calving grounds that are regularly used by the Betpak-Dala population.

2.3 Central Asia's Protected Area network

2.3.1 Nationally Designated PAs

There are currently 286 protected areas in Central Asia (Table 6), of which the overwhelming majority have been established in montane ecosystems. The most suitable types of protected area as potential candidates for WH nominations are National Nature Parks, National Parks and State (or Strict) Nature Reserves or Zapovedniks. These tend to be larger and enjoy stricter protection than the other types of protected area, and are thus more likely to satisfy the Conditions of Integrity for WH sites. Major existing protected areas are shown in individual country maps (Appendix II).

Table 6: Protected areas in Central Asia

Type of Protected Area	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	Total
National Nature Park	4	4				8
National Park	1	2	3		2	8
State Nature Reserve (= Zapovednik)	32	6	5	8	9	60
Zakaznik	64	61	23	22	14	184
Natural Monument		18		2	2	22
Breeding Reserve					2	2
Entomological Micro-reserve		2				2
Total	**101**	**93**	**31**	**32***	**29**	**286**

Note: Figures compiled from UNEP-WCMC searchable on-line database of protected areas 2004 (http://sea.unep-wcmc.org/wdbpa/index.htm) except for Turkmenistan, taken from MNP (2002). Many countries give slightly different definitions or translations of PA types, so similar categories have been grouped. For example, “zakaznik” includes Nature Sanctuaries, Partial Reserves and Wildlife Refuges.

2.3.2 Internationally Designated PAs

It is important to note that WH status is not the only international designation available for protected areas. Two alternative and extremely important designations are the UNESCO Man and the Biosphere (MAB) Reserves and Ramsar wetlands. Biosphere Reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They are internationally recognized, nominated by national governments and remain under sovereign jurisdiction of the states in which they are located. Biosphere reserves serve in some ways as ‘living laboratories’ for testing out and demonstrating integrated management of land, water and biodiversity. Each biosphere reserve is intended to fulfill three basic functions, which are complementary and mutually reinforcing:

- A conservation function: to contribute to the conservation of landscapes, ecosystems and genetic variation;
- A development function: to foster economic and human development which is socio-culturally and ecologically sustainable;
- A logistic function: to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

Biosphere Reserves are not covered by an international convention but must simply meet a set of criteria allowing them properly to fulfill their three functions. Collectively Biosphere Reserves form a world network, within which research, exchanges of data and information, and training of staff are promoted. Biosphere Reserves are organized into three inter-related zones, known as the core area, the buffer zone and the transition area. Only the core area requires legal protection. A number of Biosphere Reserves simultaneously encompass areas protected under other systems (such as national parks or nature reserves) and other internationally recognized sites (such as WH or Ramsar wetland sites). Approximately 60 of the 172 natural and mixed WH Sites currently make up the core areas of Man and the Biosphere Reserves, which are often much larger in extent. As of July 2003, worldwide there were 440 MAB Reserves in 97 countries, an average of over four per country. Currently (November 2004) there are four MAB sites in the five Central Asian countries (Table 7).

Table 7: MAB sites in Central Asia

Country	MAB Site Name	Date Designated	Size (ha)
Kyrgyzstan	Sary-Chelek	1978	23,868
	Issyk-Kul	2001	4,311,588
Turkmenistan	Repetek	1978	34,600
Uzbekistan	Mount Chatkal	1978	57,360

As of November 2004 there were 1,364 wetlands designated as of International Importance under the Ramsar Convention, and 138 contracting States Parties, an average of almost 10 Ramsar sites per State Party. In Central Asia there are 10 sites in the five countries, an average of only two per country (Table 8). All five countries thus appear to be currently "under-represented" with sites designated under these Conventions.

Table 8: Ramsar sites in Central Asia

Country	Ramsar Site Name	Date Designated	Size
Kazakhstan	Kourgaldzhin and Tengiz Lakes	11/10/1976	260,500 ha
	Lakes of the Lower Turgay and Irgiz	11/10/1976	348,000 ha
Krygystan	Isyk-Kul State Reserve with the Lake Isyk-Kul	12/11/2002	623,600 ha
Tajikistan	Karakul Lake	18/07/2001	36,400 ha
	Kayrakum Reservoir	18/07/2001	52,000 ha
	Lower part of Pyandj River	18/07/2001	?
	Shorkul and Rangkul Lakes	18/07/2001	2,400 ha
	Zorkul Lake	18/07/2001	3,800 ha
Turkmenistan	Krasnovodsk & North Cheleken Bays	11/10/1976	188,700 ha
Uzbekistan	Lake Dengizkul	08/10/2001	31,300 ha

An alternative internationally-recognised designation that may be suitable in the future for some Central Asian protected areas (e.g. for Kitab in Uzbekistan) is the Geoparks initiative of UNESCO. A "Geopark" is usually understood to be an area designated for its geological and / or geomorphological (i.e. landscape) interest. The scheme started with a European programme under which 17 sites were designated as "European Geoparks". Since February 2004 a new worldwide designation has been created, and the 17 European Geoparks have been joined by eight of China's 42 Geoparks as "UNESCO Geoparks". There are currently no Geoparks in Central Asia. Geopark designation is seen as a tool for highlighting an area's geological heritage for use in sustainable development. Geoparks are different from WH sites because small sites of local, national or regional interest can be included, whereas the WH list is for properties of OUV. Central Asian sites that are not considered to pass the qualifying OUV threshold required for WH status may nonetheless fulfill the criteria for international designation as MAB Biosphere Reserves, Ramsar sites or Geoparks.

3. Identification of sites that may meet nomination for World Heritage listing

Various experts, meetings and conferences, as well as limited information derived from exisiting national Tentative Lists, have proposed approximately 18 different sites in Central Asia as having potential to be nominated for WH listing (Table 9). One of the earliest reviews was IUCN's Commission on National Parks and Protected Areas which published an indicative global inventory of the world's greatest natural areas (CNPPA 1982), identifying 219 areas of World Heritage quality. Seven of these were in the former USSR, of which three were in what is now Russia and four (Kara-bojaz Gol and Badkhyzsky in Turkmenistan; The Delta of the Amu Darya on the Aral Sea and Chatkalsky State Reserve in Uzbekistan) were in the Central Asian republics. Two of the three Russian propositions have since been inscribed (Central Sikhote-Alin and Lake Baikal) but none of the Central Asian propositions have been.

This review is only considering potential sites for inscription based on natural criteria, not mixed or cultural. A further nine Central Asian sites have been suggested by a number of experts as potential mixed sites (see Table 10). , This review used the suggestions of previous experts as a starting point for a technical assessment that led to a list of six sites that may merit nomination for WH status on natural criteria. The relative merits of the various propositions were compared and objectively evaluated. This was achieved by a twin process of: i) comparison and evaluation of the OUV attributes of the sites based on literature review; and ii) consultation with national and international experts on Central Asia.

Partly because of language difficulties and partly due to the break-up of the former Soviet Union and consequent political and economic difficulties, there is unfortunately a general dearth of recent good-quality scientific data on the region, particularly in English. Waterbird population estimates illustrate this point. The International Waterbird Census is a highly-organised exercise conducted in mid-January each year since 1967, involving around 11,000 people from 47 countries in Europe, North Africa and Western Asia. However the most recent report (Gilissen *et al*. 2002) covering 1997-1999 for the Western Palearctic and South-West Asia reveals that no data were collected at any sites in Kazakhstan or Tajikistan, and only one site in Kyrgyzstan.

Twenty experts on and within Central Asia were therefore emailed (see Appendix IV), asked to identify a maximum of five sites that they thought were worthy of WH status, and provide brief justifications. Twelve replied (60%), and the data they provided and their justifications are incorporated in the following site accounts.

Table 9: Sites suggested as potential Natural WH sites in Central Asia

Country	Site Name	Natural Value				Suggested by				
		vii	viii	ix	x	UNESCO 2002/2004	UNESCO 2002	Karpowcz and Reap (2002)	Thorsell and Hamilton (2002)	CNPPA (1982)
Kazakhstan	Aksu-Zhabagly state natural reserve = Aksu-Djabagli	1			1	1		1	1	
	Northern Tyan-Shan (Ile-Alatau State National Park)			1	1	1		1	1	
	State National Natural Park "Altyn-Emel"	1	1	1						
	Steppes and Lakes of North Kazakhstan (= Saryarka)	1	1	1	1	1		1		
	Extension of Altai Golden Mts into Kazakhstan (Katon-Karagai National Park)						1			
	Central Tien Shan							1		
	Ural and Volga river deltas							1		
Kyrgyzstan	Sary-Tchelek							1		
Tajikistan	State Reserve "Tigrovaya balka"						1	1		
	Tajik National Park (includes Pamir Alay region)						1	1	1	
Turkmenistan	Sunt-Khasardinsky Reserve = Sunt-Khasardag (Western Kopetdag)						1	1		
	Badkhyz	1		1	1		1	1		1
	Kugitang						1	1		
	Kara-bojaz Gol	1		1						1
Uzbekistan	Chatkals Reserve = Tchatkalsky (Tien Shan)						1	1		1
	Mountainous Gissar (= Gissar + Zaravshan reserves? = Gorni Gissar)						1	1		
	Kitab						1			
	The Delta of the Amu Darya, on the Aral Sea		1							1

Note: See bibliography or footnote to Table 10 for full references. * = Tentative Lists officially submitted by the States Parties to UNESCO.

Table 10: Sites suggested as potential Mixed (Cultural + Natural) WH sites in Central Asia

Country	Site Name	Cultural Value						Natural Value				Suggested by:	
		i	ii	iii	iv	v	vi	vii	viii	ix	x	UNESCO (2002 / 2004)*	UNESCO (2002)
Kazakhstan	Barrows with stone ranges of the Tasmola culture		1	1	1			1			1	1	
Kazakhstan	Cultural landscape of Ulytau			1	1	1		1			1	1	
Kazakhstan	Paleolithic sites and geomorphology of Karatau mountain range	1	1	1					1	1	1	1	
Kazakhstan	Petroglyphs of Eshkiolmes			1	1			1				1	
Kazakhstan	Turkic sanctuary ot Merke			1	1			|			1	1	
Kyrgyzstan	Burana-Minaret			1	1					1		1	
Kyrgyzstan	Suleyman-Too		1	1	1					1		1	
Kyrgyzstan	Issyk-Kul as a cultural and natural landscape		1	1	1		1	1	1	1	1		1

Notes: The archaeological complex and petroglyphs of Tamgaly mentioned in the UNESCO Tentative List 2002 + 2004 as a potential Mixed site was actually inscribed as a Cultural site in July 2004. A WH nomination for Issyk-Kul as a Mixed site was under evaluation as of November 2004.

* = Tentative Lists officially submitted by the States Parties to UNESCO.

References cited in Tables 9 and 10:

- CNPPA (1982). *The World's Greatest Natural Areas: An Indicative Inventory of Natural Sites of World Heritage Quality.* Commission on National Parks and Protected Areas, IUCN, Gland, Switzerland. 69 pp.
- Karpowicz, Z. and Reap, J. (2002). Mission to Almaty, Kazakhstan. 16-22 December 2002. Mission Report. IUCN, Gland, Switzerland / ICOMOS 33 pp.
- Thorsell, J. and Hamilton, L. (2002). A Global Overview of Mountain Protected Areas on the World Heritage List: A Contribution to the Global Theme Study of World Heritage Natural Sites. Working Paper 6. IUCN, Gland, Switzerland. 33 pp.
- UNESCO (2002). Proceedings of UNESCO Regional Workshop: Possibilities of Nominations on World Natural and Mixed Heritage in Central Asia. National Academy of Sciences, Almaty, Kazakhstan. 16-18 December 2002. UNESCO, World Heritage Committee 17 pp.
- UNESCO (2002 / 2004). Tentative Lists Brief Descriptions submitted by the Central Asian States Parties. UNESCO, World Heritage Committee 27 pp.

3.1. Full Descriptions of Sites with higher potential for meeting WH Criteria

3.1.1 Badkhyz (Turkmenistan)

Introduction: Alternative spellings: Bathyz, Badghyz. The system of transliteration from Russian to English has not been consistent between different authors in the past. This has been further complicated since independence from the Soviet Union in 1991 by the "Turkmenization" of place names, and lack of a consistent transliteration scheme from Turkmen into English. Wherever possible, the anglicised names and spellings used here are those officially approved by the Ministry of Nature Protection for use in Turkmenistan's Country Study and National Biodiversity Strategy and Action Plan (MNP 2002a, 2002b).

Name: Badkhyz Zapovednik and associated zakazniks.
IUCN Management Category: Ia = Strict Nature Reserve (Badkhyz zapovednik) and IV (zakazniks).

Udvardy Biogeographical Province: 2.21.8 = Turanian.
Geographical Location: Extreme south of Turkmenistan, between the Tedjen and Kushka Rivers (the latter a tributary of the Murgap), near the Iranian and Afghan border.

Latitude: 35° 47' 5"N (35.785°).

Longitude: 61° 38' 12"E (61.637°).

Date and History of Establishment: 1941.
Area: 87,680 ha (+ 45,000 ha zakazniks).
Land Tenure: Government land by law.

Altitude: Altitude ranges from 800-1,270m.

Physical Features: Three main types of landscape. (1) The Badkhyz area in the north and west consists of the plateau and hilly ridges of the Gezgyadyk range in the foothills of the Eastern Kopetdag mountains, and is deeply dissected especially to the west where there are deep stony gorges. (2) To the east the mountains fall away to a rolling hilly plateau with desert steppe. (3) In the south the Eroylanduz basin and salt lake and the Kyzyljar depression form the limits of the plateau. Soils are sandy with loess-lime loams.

Climate: The climate is semi-arid and continental. Summers are hot and winters cold with strong winds, January mean temperature is -3°C to -4°C and July mean 23°C-31°C. The majority of the 200-240 mm annual precipitation falls in winter and early spring, and a long summer drought extends into autumn.

Vegetation: Around 76,000 ha of the zapovednik is classed as pistachio *Pistacio vera* arid woodland, a particularly scenically attractive ecosystem / landscape type of sub-tropical semi-savannah remarkably like parts of East Africa. The other main habitats are desert areas with a herbaceous community dominated by desert sedge *Carex pachystylis*, the grass *Poa bulbosa* and ephemerals, and semi-arid steppe dominated by annual and perennial grasses and forbs such as *Artemisia bedhysi*. There are also riverine areas with oleander *Nerium oleander* and poplar *Populus euphratica*. Other tree species include almond *Amygdalus spinosissima* and edible fig *Ficus carica*. Among many interesting plants are *Calligonum arborescens* and halophytic Chenopidaiceae such as *Haloxylon persicum* and *H. aphyllum*, *Salsola paletzkiana* and *Aellenia subaphylla*; and representatives of the following genera: Tulipa, Cousinia, Poa, Carex, Papaver, Malcolmia, Reaumuria, Iris, Eremostachys, Dorema, Delphinium, Allium, Alhagi and others. Among the 1050 recorded taxa of flowering plants there are 75 endemic species or subspecies, including *Tulipa kuschkensis*, *Cousinia badghysi* and *Ferula badrakema*.

Fauna: The fauna is typical of semi-desert / dry wooded mountains and hills. Around 40 species of mammal are believed to be present. Larger predators include caracal *Lynx caracal*, grey wolf *Canis lupus*, and striped hyaena *Hyaena hyaena* (LR/nt). A small but important relict population of North Persian leopard *Panthera pardus saxicolor* (EN) is estimated at 10-15 individuals. The most numerous ungulates are the Afghan urial *Ovis orientalis cycloceros* (VU), numbering 700-1,000, and the goitred (or sand) gazelle *Gazella subgutturosa* (NT) numbering around 500-700 head. There is a high diversity of small mammals, particularly rodents such as ground squirrels *Spermophilus* spp., gerbils *Merionus* spp., voles *Microtus* spp., and the mouselike hamster *Calomyscus mystax* (LR/nt). Although not reported from Badkhyz zapovednik itself, the little-known gerbil *Meriones zarudnyi* (EN) is found in several valleys in the nearby Kushka region. The red manul, a subspecies

of Pallas' cat, *Otocolobus manul ferrugineus* (LR/nt) is known from the area north of Takhta Bazar and may also occur in Badkhyz. Geoffroy's bat *Myotis emarginatus* (VU) is found in caves in the Kushka river valley and in Badkhyz zapovednik.

Most importantly, there is the world's largest herd of naturally occurring kulan, *Equus hemionus kulan* (CR) a Critically Endangered subspecies of the Asian wild ass. Under a strict protection regime, numbers had increased ten-fold from 500 head in 1941 to 5,000 in 1990, but after 1996 there was a rapid decline due to poaching and competition for grazing with domestic animals. There are no recent population estimates, but numbers are suspected to be as low as 300-650.

The zapovednik boasts two recorded amphibian species, 39 reptiles and 257 birds (of which 117 nest). Many of these are considered internationally threatened by IUCN. The herpetofauna includes the Central Asian cobra *Naja naja oxiana* (DD), and Afghan tortoise *Testudo horsfieldii* (VU). The diverse avifauna includes characteristic steppe / grassland species such as houbara bustard *Chlamydotis undulata* (LR/nt), little bustard *Tetrax tetrax* (LR/nt) and sociable plover *Vanellus gregarius* (VU). The Siberian crane *Grus leucogeranus* (CR) has been sighted once on migration, and the great bustard *Otis tarda* (VU) may also have been recorded. There is an extraordinary density of breeding vultures including black vulture *Aegypius monachus* (LR/nt), and other birds of prey such as the threatened imperial eagle *Aquila heliaca* (VU). Badkhyz is also one of the three main nesting areas in Turkmenistan for colonies of the lesser kestrel *Falco naumanni* (VU) which is threatened by changing agricultural practices including pesticide use and overgrazing affecting its insect food supply. In total, 53 animal species occurring in Badkhyz are considered nationally threatened and are listed in the Red Data Book of Turkmenistan (1999).

Cultural Heritage: No information

Local Human Population: No information

Visitors and Visitor Facilities: Scientific field trips for specialists, under guidance of local research staff and using reserve trails.

Scientific Research and Facilities: Investigation of reasons for reduction in numbers and methods for protection of the onager and gazelle; also into ecology and reasons for decline of pistachio stands. Zoological laboratory and photographic laboratory.

Conservation Value: No information

Conservation Management: Two zakazniks, Kyzyljarsky and Pulihatumsky, are contiguous with Badkhyz zapovednik, fall under the same administrative authority, and are managed as a single conservation unit, in effect acting as buffer zones to the zapovednik. Kyzyljarsky Zakaznik (alternative spelling: Kyzyldzharskiy; alternative name Eradzhinskiy) was created in 1956 to protect the calving grounds of kulan and sand gazelle. Covering 30,000 ha it adjoins the eastern boundary of Badkhyz zapovednik and lies entirely within Mary velayat. It includes part of the Eroyulanduz basin, a spectacular depression several hundred km^2 and approximately 500 m deep, bordered by steep cliffs and containing a saline lake and volcanic basalt cones and intrusions. Pulihatumsky zakaznik (alternative spelling Pulkhatum) was gazetted in 1956 to protect certain watering points used by the kulan population. It covers 15,000 ha on the north-west side of Badkhyz zapovednik, spanning the minor road from Sarahs to Sherhetabat (formerly Kushka), and extending as far west as the Iranian border. Whilst the majority of the zakaznik falls within Ahal velayat, a small portion lies in Mary velayat. Rangers conduct frequent motorized patrols throughout the zapovednik and its associated zakazniks (which form buffer zones to the west and east) to control poaching and other illegal activities. Some artificial water points are maintained by the rangers.

Management Constraints: Poaching of the kulan has recently become a problem in dry years when animals venture outside the patrolled and protected areas to the Kushka river to seek water and extra grazing. The zapovednik is potentially threatened by the planned construction of the TAP (= Turkmenistan - Afghanistan - Pakistan) gas pipeline through or near the reserve.

Staff: The administrative headquarters are based approximately 50 km outside the zapovednik in a village 5 km from the frontier town of Sherhetabat (formerly known as Kushka) on the border with Afghanistan. Within Badkhyz itself there are several permanently manned ranger outposts, for example at Kyzyljar near the eastern limit of the reserve, and at Akarcheshme in the western region.

Budget: No information.

Local Addresses: Kushka, Morgunovsky Settlement, Turkmenistan.

Justification for Potential WH Status: Badkhyz has been called the jewel in the crown of Turkmenistan's / the former USSR's protected area system. Officials of Turkmenistan's Ministry of Nature Protection believe that the site was proposed by the Turkmen government as a UNESCO World Heritage Site in 2000 (MNP 2002; and pers. comm.), but no record of this proposal has been found and it is not on the UNESCO Tentative List for Turkmenistan. CNPPA (1982) proposed that the site would qualify for WH status on criteria N (viii), (ix) and (x), a conclusion that this review would concur with.

Criterion N(vii): Superlative natural phenomena of natural beauty and asethetic importance The complex of savannah landscapes and rolling hills is extremely beautiful. The Eryolundaz depression is a spectacular and surreal "moonscape" with jet black volcanic intrusions contrasting starkly with brilliant white salt flats. The scenery has been likened to an Asian version of the Serengeti / Ngorongoro.

Criterion N(viii): Earth's history and geological features No information.

Criterion N(ix): Ecological processes / ecosystems Badkhyz is the best-preserved natural arid grassland ecosystem in Central Asia, and is sufficiently large to allow the maintenance of natural ecological processes such as speciation and succession. Biogeographically it is classed as a Cold Winter Desert biome, in which there are currently no other WH sites and is part of the Turanian Biogeographic Province, also currently unrepresented in WH sites.

Criterion N(x): Biodiversity and threatened species Badkhyz lies just a few km to the south of the junction of two Global 200 ecoregions, the Caucasus-Anatolian-Hyrcanian Temperate Forest and Central Asian Desert (the latter currently un-represented in the WH network) and thus contains many of the key species associated with them. The Badkhyz area hosts populations of many flagship threatened species - including kulan, Afghan urial and North Persian leopard - which are unique to the Central Asian region. It has high numbers of endemic plants, and is located in the Mountains of Middle Asia CPD.

Potential caveats: The site may need to be extended to protect the kulan's migration to summer grounds along the Kushka river e.g. towards and including the Chemenbit Zakaznik (12,000 ha, established in 1956). Protection and patrolling need to be increased to prevent illegal hunting of larger species. Construction of the TAP gas pipeline through the area must not be allowed.

3.1.2. Tigrovaya Balka (Tajikistan)

Name: Tigrovaya Balka Zapovednik (State Nature Reserve).
IUCN Management Category: Ia (Strict Nature Reserve).

Biogeographical Province: 2.36.12 (Pamir-Tian-Shan Highlands).

Geographical Location: Situated in the south-western part of Tajikistan near the border with Afghanistan on the fluvial plain of the Vakhsh and Pyandzh rivers (tributaries of the Amu Darya). The reserve stretches for 40 km along the Buritay Hills and southern part of the Aktay Range-Hodzha-Kazian Hills.

Latitude: 37°15'N.

Longitude: 68°30'E.
Date and History of Establishment: Established as a State Nature Reserve in 1938.

Area: 49,700 ha. In the early 1940s the reserve was reduced by 5,000-7,000 ha, but increased to 52,000 ha the following year. In 1976 it was again slightly reduced.

Land Tenure: State owned.

Altitude: Ranges from 320m to approximately 1,000m. The banks of the Pyandzh (or Pjandj) and the Vakhsh rivers are 320-325m above sea level, the Kashkakum Desert lies at 530m, Buritay Hills at about 1,000m and the Hodzha-Kazian Hills rise to 550m.

Physical Features: Geomorphologists distinguish six terraces in the Vakhsh River Valley, three of which lie within the reserve. There are small rises and falls, as well as the old river beds with lakes, on the first terrace. The second terrace is 1.5-2m higher than the first and has not been flooded by the waters of the Vakhsh River for a long time. The third terrace lies 3-4 km from the river on the border of the reserve. It descends steeply to one of the largest lakes of the reserve, Lake Dar'ya-Kul'. The sands of the Kashkakum Desert lie to the south on the left bank of the river. The first and the third terraces, and in some places even the fourth terrace of hills, lie on the right bank of the river. Flooding is common on the left bank, leaving many former river beds and alluvial soils of varying thicknesses. The upper terraces of floodlands, which evolved as a result of lowering of the river's erosion base, are covered with sand and clay. The southern ranges of the Aktau Mountains are situated on the right bank of the River Vakhsh. Floods usually occur in July and August when snow and ice melts in the mountains. Water level rises to 2-2.5m, and sometimes up to 4-4.5m when the lower terrace is flooded. The last large floods occurred in 1956, 1958 and 1959. Now the water level is controlled by Nurekskoy and Baypazinskoy hydro-electro power stations. Approximately 40 lakes (former river-beds) up to 5-6m deep are scattered in the Vakhsh Valley. The waters of these rivers are slightly mineralised. Soils are alluvial and saline due to the high water table which lies only 0.8-3.0m below the surface.

Climate: Conditions are sharply continental and dry. Mean annual temperature is 14-17°C; mean temperature of the coldest month (January) is 2°C and of the hottest month (July) 28-32°C. The highest temperature in July is 46-48°C. Temperatures are above freezing point on 250-310 days per year, and above 10°C on 200-250 days. Summer begins in May and lasts until mid-September. Strong, dry western winds with sand storms are characteristic. Autumn sets in at the end of September. Annual precipitation is about 200mm. Humidity ranges from 40% to 25-30% in spring-summer, in autumn it is drier, and in winter it reaches 70-80%.

Vegetation: Comprises "tugai" riverine forest, with poplars *Populus prunosa* and *P. diversifolia*, tamarisk *Tamarix hispida* and oleaster *Elaeagnus angustifolia*, reeds *Imperata cylindrica* and *Saccharum spontaneum*, and some liquorice *Glycyrrhiza glabra*. The aquatic flora includes *Scirpus* spp., *Myriophyllum* spp., *Potamogeton pectinatus*, and *P. perfoliatus*. Saline areas of "solonchak" soils contain saltwort *Salsola richteri* and some ephemeral vegetation.

Fauna: Mammals include golden jackal *Canis aureus*, marbled polecat *Vormela peregusna*, striped hyaena *Hyaena hyaena* (LR/nt), Bactrian or Bukhara deer *Cervus elaphus bactrianus* (VU), sand or goitred gazelle *Gazella subgutturosa* (NT) and Bukhara urial *Ovis orientalis bocharensis* (EN). The name "Tigrovaya Balka" means Tiger Gorge in Russian, and the Caspian tiger *Panthera tigris virgata* (EX) formerly occurred. Avifauna includes whooper swan *Cygnus cygnus*, gadwall *Anas strepera*, tufted duck *Aythya fuligula*, goldeneye *Bucephala clangula*, goosander *Mergus merganser*, Tajik pheasant *Phasianus colchicus chrysomelos*, striated scops owl *Otus brucei*, little owl *Athene noctua*, stone curlew *Burhinus oedicnemus*, and black-bellied sandgrouse *Pterocles orientalis*. Reptiles include Central Asian monitor *Varanus griseus caspius*, Lebetina viper *Vipera lebetina*, Central Asian cobra *Naja naja oxiana* (DD) and little carpet viper *Echis carinatus*. The ichthyofauna includes the rare Small Amu-Dar Shovelnose Sturgeon *Pseudoscaphirhynchus hermanni* (CR) and the Large Amu-Dar Shovelnose Sturgeon *P. kaufmanni* (EN).

Cultural Heritage: No information.

Local Human Population: At the beginning of the century the Vakhsh Valley was one of the most sparsely populated and scantily explored regions of Central Asia. Kishlaks (villages) were far away from each other. Intensive agricultural exploitation of land in the valley began in the 1930s and the population increased accordingly.

Visitors and Visitor Facilities: No information.

Scientific Research and Facilities: Work in the past was concentrated on building up stocks of Bactrian deer, gazelle, pheasants and overwintering, migratory birds. The 'tugai' vegetation was studied and there were equipped laboratories.

Conservation Value: Tigrovaya Balka is the most important reserve in Tajikistan in terms of representation of ecosystems and rare species, and contains the largest and most intact section of "tugai" forest in Central Asia.

Conservation Management: The nature reserve can be divided into four ecological zones, each requiring specific management regimes. The southern part of the reserve comprises the Vakhsh Valley which contains

the only wilderness. The northern part is a wetland complex, which can be managed for scientific and experimental purposes. The Pyandzh River area experienced many fires and, therefore, serves for research into the effects of fire and re-generation. Experiments on reintroduction of several faunal and floral species have been carried out in hilly areas.

Management Constraints: Increasing levels of pesticides in the water due to unregulated farming in neighbouring areas was a serious threat to the aquatic species prior to the civil war in Tajikistan. During the civil war, Tigrovaya Balka became part of the battle zone, and was therefore abandoned by research and protection staff. The reserve suffered the usual consequences of military occupation - hunting, looting and vandalism - but the ecosystems have miraculously survived. Post-war field surveys supported by small grants from ISAR have shown that for the most part the ecological values of Tigrovaya Balka have been preserved.

Staff: No information.

Budget: No information.

Local Addresses: Tajikistan, Kumbangirsky District, Dusti village.

Justification for Potential WH Status: The tugai riparian thicket / forest is one of Central Asia's most important and unique ecosystems. Elsewhere in the region, the tugai is preserved only as narrow strips and small patches along watercourses. In Tigrovaya Balka the tugai between the Vakhsh and Pyandzh rivers is much larger in extent and forms an almost impenetrable jungle, providing habitat for viable populations of many threatened species.

Criterion N(vii): Superlative natural phenomena of natural beauty and asethetic importance: Not relevant.

Criterion N(viii): Earth's history and geological features No information.

Criterion N(ix): Ecological processes / ecosystems: Tugai is a specific complex of woody shrubs and thicket-like vegetation, unique to Central Asia, that has evolved in response to a particular combination of climatic fluctuations. The vegetation has developed highly specialized adaptations to the harsh conditions of the riparian desert, in which flooding cycles of two to three months are followed by extreme dryness and increased soil salinity.

Criterion N(x): Biodiversity and threatened species: Tigrovaya Balka harbours populations of Bukhara urial *Ovis orientalis bocharensis* (EN) and two highly threatened species of sturgeon and Eurasian otter (VU). It also supports the largest population of Bactrian or Bukhara deer *Cervus elaphus bactrianus* (VU) in Central Asia. The reserve has high numbers of endemic plants, and is located in the Mountains of Middle Asia CPD. It is a lowland region within the currently unrepresented Pamir-Tien-Shan Highlands Biogeographic Province, and is situated in the Global 200 Ecoregion "Middle Asian montane woodlands and steppe".

Potential caveats: Civil war and unrest may destabilize the area; anthropogenic impacts may already have severely modified the ecological values.

3.1.3 Saryarka: Steppes and Lakes of Northern Kazkhstan (Kazakhstan)

Introduction: This site (referred to as Saryarka or SLNK) has already been nominated by Kazakhstan (dossier prepared October 2002) and considered by the WH Committee in 2003. An IUCN independent evaluation was carried out, incorporating a field visit by two consultants, L. Molloy and R. Hogan in August 2002, which identified a number of concerns about the site, particularly its integrity and lack of information about other comparable sites in the region (IUCN 2003c). The full text of the site sheet prepared by UNEP-WCMC to accompany the nomination dossier, which fully outlines the biodiversity value of the site, is given in Appendix V. Decision 27 COM 8C.6 of the 27th meeting of the WH Committee in June / July 2003 deferred consideration of the nomination "until a detailed action plan and implementation programme demonstrating the commitmment of the State Party 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" (WHC 2003). The same decision also requested IUCN to undertake a thematic study for Central Asia, partly in order to identify whether comparable sites existed elsewhere in the

region. The nomination was not re-submitted by Kazakhstan for consideration at the 28th meeting of the WH Committee in 2004.

Justification for Potential WH Status: The site was orginally nominated under all four natural criteria.

Criterion N(vii): Superlative natural phenomena of natural beauty and asethetic importance.
The landscape of the steppe and lakes is difficult to appreciate from ground level because of the flatness of the topography and the impenetrable nature of the wetlands. Nonetheless 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's evaluation did not consider that the site met this criterion (IUCN 2003c).

Criterion N(viii): Earth's history and geological features
The nomination stated that the site is the best remaining example of 'humus-building graminaceous steppe' between the Black Sea and the Altai Mountains. IUCN's evaluation (IUCN 2003c) accepted the high level of naturalness within the site, but thought that no convincing evidence had been presented to establish the global significance of the site because of its geological setting or present-day landforms. IUCN did not consider that the site met this criterion.

Criterion N(ix): Ecological processes / ecosystems:
IUCN (2003c) considered the seasonal dynamics of the hydrology, chemistry and biology of the lakes to be of considerable scientific interest and possibly of OUV. The diverse flora and fauna of the wetlands has evolved through complex wetting/drying cycles. However the evaluators considered that there was a need to develop a more comprehensive thematic study for Central Asia to objectively assess how the site compares to other important areas within this region in relation to this criterion.

Criterion N(x): Biodiversity and threatened species
IUCN's evaluation (IUCN 2003c) stated that the wetlands of northern and western Kazakhstan are of international importance and may be of OUV 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, the evaluators considered there was a need to develop a more comprehensive thematic study for Central Asia to objectively assess how the site compares to other important areas within this region in relation to this criterion.

Potential caveats: IUCN's evaluators noted that there were integrity concerns that needed 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. They considered that at the time of the evaluation, the site did not meet the conditions of integrity required of WH sites (IUCN 2003c).

Comparison of OUV of SLNK with other Central Asian and regional sites.
SLNK lies within the Pontian Steppe Biogeographical Province (2.29.11) which stretches from the Danube to a point several hundred kilometres north-west of the Ob river. Within and neighbouring this region there are many other steppe and wetland protected areas. The following sections provide brief descriptions of the biodiversity values of the most important of these sites, and compares and contrasts their steppe and wetland values with those of SLNK.

1. Steppe Values

1a. Other Protected Areas with Steppe Values in the Pontian Steppe
Askaniya Nova in Ukraine was created in 1921 to protect feather grass steppe. It is dominated by the feather grasses *Stipa lessingiana*, *S. ucrainica* and *S. capillata*, together with fescue *Festuca sulcata* and crested hair grass *Koeleria cristata*. Herbaceous plants include abundant *Pyrethrum millefoliatiatum*, *Galatella villosa*, and *Artemisia austriaca*. Other typical species are *Tulipa schrenkii* and *T. biebersteiniana*, purple mullein *Verbascum phoeniceum*, *Iris pumila*, the plumbago *Goniolimon tataricum* and summer cypress *Kochia prostrata*. Since 1985 it has been designated as a MAB Biosphere Reserve covering 33,307 ha. However, the core area or zapovednik only covers 11,054 ha, much smaller than the proposed SLNK site.

Chernomorskiy (Russian for 'Black Sea') Biosphere Reserve designated in 1984 is situated on the northern coast of the Black Sea about 45 km south-west of the city of Kherson in Ukraine. Its 98,407 ha include 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. It includes three Ramsar

sites. The core area covers 70,509 ha (of which marine: 56,361 ha) and there is a marine buffer zone(s) of 18,620 ha. However, the steppe types represented are coastal and forested in contrast to the open grass steppes of SLNK.
The Luganskiy zapovednik in eastern Ukraine also includes some Pontian steppe (Dieterich, pers. comm.) but is tiny and fragmented at only 1,607 ha split into three separate parts.

The Orenburgsky State Nature Reserve (zapovednik) near Orenburg in Russia covers 21,653 ha and is characterized as belonging to the Middle European Forest Biogeographic Province (2.11.05) but contains some steppe. However, the area is relatively small and fragmented and large herbivores are lacking.

The Tsentral'nochernozem Biosphere Reserve gazetted in 1978 is located about 550 km south of Moscow close to the Ukrainian border at approximately 51°00'N; 36°40'E. The area comprises meadow steppes lying between 230-263m a.s.l. with a high floristic diversity (up to 80 species per square metre). Plants include trees such as oak (*Quercus robur*), maples (*Acer platanoides* and *A. tataricum*), lime (*Tilia cordata*), hazel (*Corylus avellana*), aspen (*Populus tremula*) and grasses such as *Stipa pennata*, *S. capillata*, *Calamagrostis epigeios*, *Poa angustifolia*, *Bromopsis inermis* and *B. riparius*; and communities with ice age relict plant species such as *Androsace kosopolyanskii*, *Rupleurum mulitnerve*, *Daphne iuliae*, *Dendranthema zawadskii* etc. The reserve takes its name from its soil type, the so-called 'chernozem', which is a black and very fertile soil. As an island in an intensively used agricultural landscape, the 6,287 ha core area of the biosphere reserve protects one of the last remaining undisturbed steppes in Europe. In the 10,280 ha buffer zone, which includes some 20,000 people (1998), management plans regulate agriculture and restrict the use of fertilizers and pesticides. Around the biosphere reserve, intensive agriculture, iron ore mining and industrial production take place. However, the undisturbed steppes in the core zone only total approximately 33 km^2 in five separate sections (Dieterich pers. comm.).

1b. Other Protected Areas with Steppe Values in the Mongolian-Manchurian Steppe
The Mongolian-Manchurian Steppe, Udvardy Biogeographical Province (2.30.11), lies to the west of the Pontian Steppe and extends from Mongolia into northern China. The landscape is very similar to the Pontian Steppe, but ecologically it is quite distinct, and is often referred to as the "Eastern Steppes". Part of the Uvs Nuur basin WH site lies within this BP.

Nomrog Strict Protected Area in Mongolia, created in 1992 covers 31,205 ha of grassy steppe but is in a different biogeographic province to Saryarka. It lies much further east at approximately 46°55'N 119°33'E, and is in the "Eastern Steppes" which come under the influence of the Asian monsoon rainfall in summer, whereas SLNK at between 63 and 69ºE is in the "Western Steppes" influenced by the Atlantic Ocean.

The Uvs Nuur Basin WH site (1,068,853 ha), lying at approximately 50º16'N 92º43'E is the northernmost of the enclosed basins of Central Asia. It takes its name from Uvs Nuur Lake, a large, shallow and very saline lake, important for migrating birds, waterfowl and seabirds. The site is made up of twelve protected areas representing the major biomes of eastern Eurasia, on both sides of the Mongolian / Russian border. The steppe ecosystem supports a rich diversity of birds and the desert is home to a number of rare gerbils, jerboas and the marbled polecat. The mountains are an important refuge for the globally threatened snow leopard (EN), mountain sheep or argali (VU) and the Asiatic ibex. Again, this is an "Eastern Steppe" ecosystem.

The Eastern Mongolian Steppe in Mongolia was designated as a Strict Protected Area (IUCN Management Category Ib) on 1st January 1992. Its central coordinates are 46°33'29"N 117°03'41"E, and it covers 570,374 ha (presumably mainly of steppe) but no other details are currently available.

1c. Steppe Value Summary
The integrity and functionality of steppe ecosystems is in large part linked to the absolute size of the steppe. No other steppe reserves of comparable size to the SLNK nomination exist in Kazakhstan or elsewhere in the "Western Steppes", or are currently planned. The few reserves that do include substantial areas of natural steppe lie further east in the "Eastern Steppes" in a different biogeographic province, the Mongolian-Manchurian Steppe. The State Party has reportedly already agreed to extend the Naurzum reserve section of SLNK to include an extra 1,000 km^2 of steppe. The Critically Endangered saiga antelope *Saiga tatarica* is undoubtedly the key threatened species of OUV for the conservation of steppe ecosystems in Central Asia. There do not appear to be any potential Central Asian WH sites that could definitely secure the future of this flagship steppe species because it undertakes seasonal migrations over considerable distances. However, SLNK does protect some habitat and calving grounds that are regularly used by the Betpak-Dala population (the most threatened population of saiga) at the northern limit of its range. There is also a huge amount of untouched

steppe to the west of Korgalzhin reserve that could potentially be added (Dieterich, pers. comm). A recommendation of this report would be that the potential WH site should therefore be expanded to include as much saiga habitat as possible.

2. Wetland Values

2a Other Protected Areas with Wetland Values in the Pontian Steppe

The Lakes of the Lower Turgay and Irgiz are situated in the Aktyubinsk district, north-east of the Aral Sea near the town of Kouilis in the north of Kazakhstan at approximately 48º42'N 062º11'E. Designated in 1967 as a zakaznik (IUCN Management Category IV) and as a Ramsar site in 1976, the site covers 348,000 ha. It comprises a large group of lakes (some without outflow) in depressions, on a plateau dissected by a number of drainage channels. It is a good example of a wetland on the edge of an arid zone (the Kyzyl-Kum Desert), and water levels vary considerably between wet and dry years. About 25,000 pairs of birds breed, including *Cygnus olor*, *Anas clypeata*, *A. strepera*, *A. fuligula*, *Tadorna tadorna* and *Fulica atra*. The site provides a very important moulting place for many different species of waterfowl including the Dalmatian pelican *Pelecanus crispus* (LR/cd). In favourable years up to 1.5 million migrating waterfowl and waders have been recorded including some 200,000 Anatidae such as *Anser anser*, *A. albifrons*, *A. erythropus*, the less common *Branta ruficollis*, several thousand *Anas penelope* and diving ducks such as *A. platyrhynchos*, *A. crecca*, *A. querquedula*, *A. acuta*, *Aythya ferina* and *Bucephala clangula*. Other birds include the globally threatened *Grus leucogeranus*, as well as *Platalea leucorodia* and *Casmerodius albus*. The site was placed on the Montreux Record of priority sites for conservation action in 1993, because barrages constructed upstream on the Turgay River and its tributaries cut off the water supply. The reduction of water levels has not only affected the wildlife (especially waterfowl), but also human populations and their traditional occupations of fishing and cattle rearing. (Information source: 1997 Ramsar Information Sheet). No recent data on the site is available. It does seems strange that it is not included in the SLNK nomination as due to the Turgay River flyway there is a stronger ecological link between Sarykopa and Naurzum and this site than between the former two and Korgalzhin.

2b Other Protected Areas with Wetland Values elsewhere in the Wider Region

The Ural River delta is located in the Turanian biogeographic province (2.21.8) on the Caspian Sea in Kazakhstan. Little information on the area is available, but it has been estimated that the Ural delta can support up to 25 million migratory birds (IUCN 2003c). However it has no national protected area status and is not a Ramsar site.

The Uvs Nuur Basin transboundary WH site in Mongolia / Russia includes three wetland sites (Ubsu-Nur, Oruku-Shinaa and Tes River) and Uvs Nuur Lake itself. These areas lie in the Mongolian-Manchurian Steppe biogeographic province (2.30.11). The many marshes, wetlands and lakes of the basin attract seabirds, waterfowl and migratory species. Some 368 bird species have been recorded on the Russian side, whilst 173 species have been recorded for Mongolia.. Among these are a number of internationally important species such as the globally threatened white-headed duck *Oxyura leucocephala* (EN), Baikal teal *Anas formosa* (VU), imperial eagle *Aquila heliaca* (VU), greater spotted eagle *Aquila clanga* (VU), band-tailed fish eagle *Haliaeetus leucoryphus* (VU), white-tailed sea-eagle *Haliaeetus albicilla*, lesser kestrel *Falco naumanni* (VU), Siberian crane *Grus leucogeranus* (CR), red-crowned crane *Grus japonensis* (EN), hooded crane *Grus monacha* (VU), white-naped crane *Grus vipio* (VU), relict gull *Larus relictus* (VU), corncrake *Crex crex* (VU), redbreasted snipe *Limnodromus semipalmatus*, whitethroated bushchat *Saxicola insignis* (VU) and Dalmatian pelican *Pelacanus crispus* (LR/cd). However, there is no mention of this site being an important stopover for waterfowl on a major migratory flyway.

The Tobol-Ishim Forest-Steppe in Russia, designated a Ramsar site in 1994, covers 1,217,000 ha of the forest-steppe zone of the Western Siberian Plain in the West Eurasian Taiga biogeographic province (2.2.3). The site is located in the Ishim province, 190-250 km south of the city of Tumen, at approximately 55º27'N 69º00'E, and lies at an altitude of 100-158m. The area is important for migrating and breeding populations of birds, especially of colonial shore birds. The mosaic of wetlands within the forest-steppe supports a rich and significant diversity of habitats and species. Globally threatened birds include: *Pelecanus crispus* (LR/cd), *Anser erythropus*, *Branta ruficollis*, *Oxyura leucocephala* (EN), *Aquila heliaca*, *Falco naumanni* (VU), *Grus leucogeranus* (CR), *Crex crex* and *Vanellus gregarius*. However, no recent estimates are available of breeding, migratory or moulting population sizes. The hydrological regime of the lakes is characterised by cyclical changes in inundation which cause marked changes in water level, hydrochemical composition, and the size and shape of lakes. The lakes are fed by surface run-off, underground water and precipitation. Freshwater lakes sometimes become brackish; medium-sized and small lakes dry out or become transformed into marshes, "solonchaks" or meadows. As the humidity increases, the reverse occurs. The area is subject to

drought, with extremely dry periods occurring one to three times each decade. In recent years, the trend has been towards decreasing inundation of the forest-steppe. This has resulted in a decrease in the extent of habitat suitable for breeding, moulting and migrating populations of waterbirds, which is likely to result in a considerable decline in waterbird populations. There has also been some increase in human impact from increased economic activities, sport hunting, transformation of lake shores into hay fields, and recreational pressure, and this is likely to continue. Human activities adversely affecting wetland ecosystems also include application of pesticides in forestry and burning of hay fields in spring.

The Chany Lakes are located in the Barabinskaya lowland, in the southern region of Western Siberia, Russia, in the West Eurasian Taiga biogeographic province (2.2.3). They lie in Novosibirsk Region, 50 km from the town of Chany, 50 km from the town of Barabinsk and 8 km from the village of Chistoozernoye, approximate co-ordinates: 55º02'N 77º40'E. Designated a Ramsar site on 13/09/1994 the lakes cover 364,848 ha, of lacustrine systems characteristic of the western Siberian forest-steppe. The site supports large breeding and migrating populations of waterbirds, often numbering more than 20,000 birds. Globally threatened species include the Endangered *Oxyura leucocephala* (an occasional breeding species), and the Critically Endangered *Numenius tenuirostris* (a rare passage migrant).

2c Wetland Value Summary

Other wetlands in the region (e.g. Uvs Nuur, Tobol-Ishim Steppe) appear to undergo much the same types of wetting and drying cycle described for SLNK. It seems unlikely therefore that the seasonal dynamics of the hydrology, chemistry and biology of SLNK is of OUV. In terms of avian diversity SLNK harbours a similar number of species (341) to other sites in the wider region, including similar species of threatened waterfowl and birds of prey (see site descriptions above). However, the site differs in the staggering quantity of birds it holds - although it is important to note that estimates vary widely. No recent data on waterbird populations is available from the most authoritative source, the International Waterbird Census in the Western Palearctic and South-West Asia. This census includes Kazakhstan, but there is no data from the country in the most recently-published censuses covering 1997-1999 (Gilissen *et al*. 2002).

The Korgalzhin-Tengiz lakes are capable of feeding 15-16 million (IUCN 2003c) or 5-10 million (UNEP-WCMC 2003) waterbirds, among them flocks of geese estimated at 2-2.5 million (IUCN 2003c) or 0.5 million (UNEP-WCMC 2003). After rains these lakes support 350,000 nesting waterfowl and the Naurzum and Sarykopa lakes 250,000 (IUCN 2003c) [The corresponding UNEP-WCMC 2003 figures are 50,000 and 20,000]. The sites comprise a key stopover point and cross-roads on the following migratory flyways: Siberia - Central / South Asia; Siberia - Eastern and Central Europe; Scandinavia - Siberia -Eastern Europe. They do therefore seem to be of OUV for their importance for migratory and nesting waterbirds.

Overall Conclusion

SLNK appears to have potential to meet OUV for its wetland biological diversity and for its steppe biological diversity, potentially satisfying criteria N(x) for selection as a WH site. This report would concur however with that of IUCN (2003c) that the site does not qualify on criteria N(vii)-N(ix). It lies outside any G200 Ecoregion or CPD, in the Pontian Steppe biogeographic province (2.29.11). This has only one other WH site, the predominantly wetland Danube Delta, situated at the extreme western tip of the province. In addition to its wetland areas, a modified SLNK could include substantial areas of steppe, part of the Temperate Grassland biome that is currently under-represented in WH sites (the second-least represented biome after Cold Winter Deserts). Unfortunately not enough data is currently available to ascertain whether an enlarged SLNK could potentially safeguard the saiga antelope (CR), the key flagship steppe species in Central Asia.

3.1.4 Extension of Golden Mountains of Altai into Kazakhstan (Kazakhstan)

Introduction: The Kazakh government recently created 832,000 ha of new protected areas, all of which come under IUCN management categories I and II, meaning that they will be strictly protected with biodiversity conservation as their aim. WWF has recognized the creation of these areas by the Kazakh government as a "Gift to the Earth". At least one of these areas, Katon-Karagai National Park, is located in the Altai mountains of Kazakhstan, and could form the basis of the extension of the Russian "Golden Mountains of Altai" WH site into Kazakhstan.

Name: Katon-Karagai National Park, potentially other protected areas.

Biogeographical Province: 2.35.12 (Altai Highlands).

Geographical Location: In the north-eastern corner of Kazakhstan, adjoining the Katunsky Zapovednik and the Ukok Quiet Zone on the Ukok plateau (both in Russia).
Coordinates: Approximately 49º00'N 87º00'E.

Date and History of Establishment: 2000?

Area: 637,000 ha.

IUCN Management Category: Unknown, probably II.

Land Tenure: State-owned.

Altitude:.Minimum unknown, maximum summit of Mt Belukha, 4506m.

Physical Features: Includes the Kazakh side of Mt Belukha, and the Khr. Yuzh Altay mountain range, a spur running west from the Ukok Plateau.

Climate: Continental.

Vegetation: Katon-Karagai contains Siberian pine and juniper forests.

Fauna: The forests in this region are home to 360 species of vertebrates, of which around 40 are listed in the Red Data Book of Kazakhstan. Globally threatened species include the Altai argali *Ovis ammon ammon* (VU), Menzbier's marmot *Marmota menzbieri* (VU) and Asiatic wild dog *Cuon alpinus* (VU). Birds include the Altai snowcock *Tetraogallus altaicus.*

Cultural Heritage: No information.

Local Human Population: No information.

Visitors and Visitor Facilities: There are various visitor facilities in the Park, including a sanatorium, Rakhmanov's Springs, that can accommodate 120 people.

Scientific Research and Facilities: No information.

Conservation Value: Constitutes an important ecological corridor connecting two pieces of "The Golden Mountains of Altai" Russian WH site.

Conservation Management: No information.

Management Constraints: No information.

Staff: No information.

Budget: No information.

Local Addresses: No information.

Justification for Potential WH Status: The area(s) would be contiguous with the southern sections of the Russian WH site "The Golden Mountains of Altai". It / they share many of the same biological, ecological and geological characteristics. The inclusion of the area(s) into this WH site would i) enlarge the overall area; ii) enhance its integrity. Its/their management category should not be an issue since "The Golden Mountains of Altai" WH site already incorporates several different IUCN management categories within it. Thorsell and Hamilton (2002) suggested that the Golden Mountains of the Altai in Russia could eventually become a transfrontier site with adjacent areas not only in Kazakhstan, but also China and Mongolia. The Kazakh extension would qualify under the same criterion that the Russian WH site was nominated for, namely:

Criterion N(x): Biodiversity and threatened species*:* The Altai region represents an important and original centre of biodiversity of montane plant and animal species in northern Asia, a number of which are rare and

endemic. The proposed extension area(s) is/are located in the Altai-Sayan CPD. It/they are also within the Global 200 Ecoregion “Altai-Sayan montane forests”.

Potential caveats: The management of such newly-created protected areas might not conform to World Heritage standards.

3.1.5 Western Tien Shan (Kazakhstan / Kyrgyzstan / Uzbekistan)

Introduction: A complex of national protected areas and two MAB biosphere reserves have been designated in the Western Tien Shan mountains at the junction of the borders of Kazakhstan, Kyrgyzstan and Uzbekistan (Table 11). Many are actually contiguous; others are closely clustered and would be biologically linked through the movement of mobile species. Transboundary co-operation has already been initiated through the Global Environment Facility (GEF) / World Bank West Tien-Shan Biodiversity Project. This provided a grant of 10.15 million USD over five years from 2000 to 2004, and involved the following West Tien-Shan protected areas: Aksu-Dzhabagly [alternative spellings Aksu-Djabagli and Aksu-Jabagly] in Kazakhstan; Sary-Chelek [= Sary Chelekskiy] and Besh-Aral in Kyrgyzstan; and Chatkal [= Chatkal’skiy] in Uzbekistan. The aims of the project included implementation of a number of concerted actions at the local, national and regional (trans-national) levels, based on regional co-ordination and co-operation. Although international co-operation between the Central Asian states is currently limited, and mountain sites are already well-represented in the WH list, there is obviously excellent potential here to capitalize on the West Tien Shan Biodiversity Project and inscribe a transboundary WH site of truly spectacular landscape and biodiversity value. The exact delimitation of such a site would require a more detailed study, but most experts regard Aksu-Dzhabagly as the key site.

Table 11: Main features of the principal protected areas in the Western Tien Shan

Country	Site Name	IUCN Management Category	Date Designated	Area (ha)
Kazakhstan	Aksu-Dzhabagly State Nature Reserve #	Ia	1926/7	75,094
Kyrgyzstan	Sary-Chelek Zapovednik #	Ia*	1959	23,868
	Besh Aral State Nature Reserve #	Ia	01/01/1979	63,200
	Chandalash Wildlife Refuge	IV	01/01/1975	35,000
	Manass Wildlife Refuge	IV	01/01/1975	15,000
Uzbekistan	Chatkal Zapovednik #	Ia*	1947	35,809
	Ugam Chatkal National Park	II	01/01/1990	574,600
			Total	**822,571**

Note: # = included in GEF / World Bank West Tien Shan Biodiversity Project.
* = MAB Biosphere Reserve.

Name: Western Tien Shan: potentially consisting of Chatkal Zapovednik and Ugam Chatkal National Park (Uzbekistan) / Aksu-Dzhabagly (Kazakhstan) / Sary-Chelek and Besh Aral (Kyrgyzstan). Possibly also Manass and Chandalash (Kyrgyzstan).

Biogeographical Province: 2.36.12 (Pamir-Tian-Shan Highlands)

Geographical Location: These seven protected areas lie at the junction of three countries - Kazakhstan, Kyrgyzstan and Uzbekistan - in the western Tien Shan mountains. They stretch from the south-western end of the Chatkal’skiy Range in Uzbekistan (Chatkal Zapovednik) to the north-western end of the Talassky Alatau range in Kazakhstan (Aksu-Dzhabagly State Nature Reserve), and extend eastwards to the north-eastern slopes of the Chatkal’skiy Range in Kyrgyzstan (Sary Chelek Zapovednik).

Coordinates: Aksu-Dzhabagly 42º30'N, 70º10'E; Chatkal 41º08'N, 69º59'E; Sary-Chelek 41º47'N, 71º54'E; others unknown.

Date and History of Establishment: See Table 11.
Area: Approximate area 822,571 ha. The Chatkal Mountains Biosphere Reserve component covers 57,360 ha (45,160 ha core area and 12,200 ha buffer zone), whilst the Sary-Chelek Biosphere Reserve covers 23,868 ha (including a core area of 18,080 ha).

Land Tenure: Mostly state-owned by Kazakhstan, Kyrgyzstan and Uzbekistan.

Altitude: Ranges from 1,110m (Aksu-Dzhabagly State Nature Reserve) to 4,247m (Sary-Chelek Zapovednik).

Physical Features: The reserves encompass the ridge and spurs of the Chatkal'skiy Range, numerous river basins, high altitude lakes e.g. Sary-Chelek at 2,000m, and many hanging glaciers with ice falls. Rocky outcrops of Devonian and Carboniferous age are common, with thin deluvial and eluvial deposits lying on shallow bed rocks, and valleys are deeply entrenched. Soils are various brown earths.

Climate: Varies with altitude and location. Conditions are sharply continental, with mean temperatures (at 1,200m) of -16°C during the coldest months of January and February, and of 20-25°C during the warmest month, July. At low altitude, mean annual temperature is 11.5°C. Maximum and minimum temperatures are 37.9°C and -21°C, respectively. Annual precipitation is 680-900mm, with a mean of 656mm at 1,200m. The frost-free period is 190-200 days. Snow cover can last at medium altitudes from the end of December to mid-March; higher altitudes are above the snow.

Vegetation: Most of these protected areas remain in a natural or semi-natural state. However, of the 574,600 ha of Ugam Chatkal National Park, forest comprises 56,400 ha, pastures 177,300 ha, and irrigated agricultural land 1,610 hectares. Natural vegetation in the reserves consists of three main vegetation belts: mountain Turanian-type semi-savanna, forest/shrub (mostly juniper and hardwood with the notable presence of wild fruit tree species) and alpine steppe. River valleys are characterised by tugai-type landscapes. Forests of junipers (*Juniperus turkestanica*, *J. semiglobosa*, and *J. seravschanca*) and deciduous trees such as *Prunus sogdiana*, *Acer turkestanicum*, *Crataegus turkestanica, Malus kirghisorum* and walnut *Juglans regia* are present, as are spruce *Picea schrenkiana* / and fir *Abies semsnovii* woodlands. South- and west-facing slopes support mountain steppe and sclerophytic communities, including groves of *Pistacia vera*. Highland areas have meadows. There are 1,100 recorded species of plants, including 40 species of trees and shrubs. Some 72 are rare and endemic.

Fauna: There are at least 42 mammals including characteristic species such as the brown bear *Ursus arctos*, snow leopard *Uncia uncia* (EN), Eurasian lynx *Lynx lynx* (NT), roe deer *Capreolus capreolus*, Tien Shan argali *Ovis ammon karelini* (VU), Asiatic ibex *Capra [ibex] sibirica*, and Menzbier's marmot *Marmota menzbieri* (VU) (endemic to the western Tien Shan). Over 240 birds have been recorded, including Himalayan snowcock *Tetraogallus himalayensis* at higher altitudes and numerous chukar partridge *Alectoris chukar*, as well as golden eagle *Aquila chrysaetos*, booted eagle *Hieraeetus pennatus*, saker falcon *Falco cherrug*, lammergeier *Gypaetus barbatus* and black stork *Ciconia nigra*. There are also at least nine species of reptile, two amphibians and five fish.

Cultural Heritage: In the southern part of the Chatkal Zapovednik there are ancient drawings, dating back to 1000- 2000 BC, on the cliffs along the Tereksay River in Karasau, 2,000m above sea level. Aksu-Dzhabagly State Nature Reserve contains more than 2,000 petroglyphs.

Local Human Population: Zapovedniks contain no human populations, but there are settlements in Ugam Chatkal National Park.

Visitors and Visitor Facilities: Visits can be made to the "Ia" reserves only by special arrangement and visitors must be guided along specific predetermined routes.

Scientific Research and Facilities: Research is focussed on studying the complex structure and dynamics of the Western Tien Shan, including an inventory of flora and fauna, and on developing techniques to re-afforest the mountains, especially the nut-tree forest areas. Specific research topics have included the biology of wood-producing plants and of rare animal species, such as marmot and snow leopard. There are equipped laboratories, experimental plots and meteorological stations. Accommodation is available for scientists.

Conservation Value: The reserves are representative of the Western Tien Shan and harbour a rich variety of rare and threatened species of plants and animals. Aksu-Dzhabagly State Nature Reserve alone contains 14 of 16 habitat types found in the Tien Shan mountains, has extensive forests and exceptional biodiversity (including 72 wild relatives of cultivated plants).

Conservation Management: The various reserves have different protection regimes. Chatkal Zapovednik in Uzbekistan is already twinned as a 'cluster reserve' with Sary-Chelek State Nature Reserve in Kyrgyzstan, and was designated as part of the Chatkal Mountains Biosphere Reserve in April 1978. Some recent transboundary co-operation has occurred (see Introduction).

Management Constraints: Parts of these reserves have been used for hunting and grazing, and for mineral prospecting, while part of Ugam Chatkal National Park is settled and cultivated. Over-grazing and hunting are the main conservation threats, together with over-collection of firewood in some areas. Certain tourist sites are under heavy visitor pressure, which needs controlling / managing.

Staff: No information.

Budget: No information.

Local Addresses: Regional West Tien Shan Project Implementation Unit, Room 206, 106 Chui avenue, Bishkek, Kyrgyz Republic, 720040. Tel.: + 996 (312) 66 29 67
Fax: + 996 (312) 66 26 09. E-mail: regional@biopiu.elcat.kg Website: http://www.catbiodiversity.net

Justification for Potential WH Status: CNPPA (1982) proposed that Chatkal Zapovednik would qualify under criteria N(viii) and N(x), and Thorsell and Hamilton (2002) considered that Aksu-Dzhabagly merited inscription as a montane site.

Criterion N(vii): Superlative natural phenomena of natural beauty and asethetic importance Believed to be an area of spectacular montane scenery, meriting inscription as a montane site.

Criterion N(viii): Earth's history and geological features No information.

Criterion N(ix): Ecological processes / ecosystems No information.

Criterion N(x): Biodiversity and threatened species Taken as a whole, the West Tien Shan has large, viable populations of most of the larger fauna (many such as the snow leopard and Tien Shan argali globally threatened) characteristic of the currently un-represented Pamir-Tian-Shan Highlands Biogeographic Province. It has high numbers of endemic plants, and is located in the Mountains of Middle Asia CPD. It also lies within the Global 200 Ecoregion "Middle Asian montane woodlands and steppe.

Potential caveats: Hunting and over-grazing by cattle and other domestic livestock need controlling. Growing numbers of tourists should be regulated. International transboundary co-operation is still in its infancy: designation of a transboundary WH site could further catalyse this.

3.1.6 Northern Tien Shan (Kazakhstan)

Introduction: The potential WH site would be a serial nomination, one northern site consisting of Altyn-Emel [=Altun Emel] National Nature Park; while the southern site would be a cluster consisting of the contiguous reserves of Ile-Alatau [= Ele Alatau] National Nature Park and Alma-Atinskiy [= Alma-Atinskii] Zapovednik. Ile-Alatau National Park (Kazakhstan) borders Kyrgyzstan, and in the future it might be possible to extend this potential site to make a transboundary WH site with protected areas in Kyrgyzstan.

Name: Northern Tien Shan

Biogeographical Province: 2.36.12 (Pamir-Tian-Shan Highlands)

Geographical Location: Altyn-Emel is situated on the northern slopes of the Dzunghar Alatau mountain range. The southern protected areas lie on the northern and central parts of the Zailiyskiy Alatau mountain range. Alma-Atinskiy lies 25km east of Almaty, the former capital of Kazakhstan, in the central part of the

Zailiisky Alatau Range. Three-quarters of the territory consists of the northern Kailiisky alatan. Its boundary follows the River Leviy Jalgar in the west, the River Pravy Talgar in the north, and in the east, the ridge separating the valleys of the Issyk and Jurgen rivers. The distance from the west to the east is 32km. The rest of the reserve is in southern Zailiisky alatan, where the southern border of the reserve extends from near the Toguzak mountain pass, down the Zugo-Vossochniy, Talgar and Chilik rivers to the Koshulak and Jamchi rivers.

Coordinates, Date and History of Establishment, Area, and IUCN Management

Category: Alma-Atinskiy was first established in May 1931 and designated a state nature reserve in 1935, but ceased to exist in 1951. It was re-established as a State Nature Reserve in 1961 at approximately 43°N, 78°E. Between 1966 and 1983 Kalkany mountain semi-desert zone (17,800ha) was included in the reserve, together with an unique natural object, the 'Singing Sands'. In 1983 this site was transferred to Kapchagayskiy Hunting Reserve. It now covers 73,342ha. Both Altyn-Emel (co-ordinates ca. 43º57'N 78º38'E) and Ile-Alatau

Country	Site Name	IUCN Management Category	Date	Area (ha)
Kazakhstan	Altyn-Emel National Nature Park	II	1996	169,627
Kazakhstan	Alma-Atinskiy Zapovednik	Ia	1961	73,342
Kazakhstan	Ile-Alatau National Nature Park	II	1996	164,450
			Total	**407,419**

(co-ordinates ca. 43º09'N 77º49'E) were established in 1996, and are over twice as large as Alma-Atinskiy (Table 12). The entire site would cover around 407,419 ha.

Table 12: Main features of the principal protected areas in the Western Tien Shan

Land Tenure: State-owned.

Altitude: Ranges from approximately 1,000m in Atyn-Emel and 1,100m in Ile-Alatau to 4,973m at the peak of Talgar Mountain in Alma-Atinskiy.

Physical Features: Altyn-Emel consists of sandy plains, steppe-covered foothills and mountains reaching 2,500m high. Ile-Alatau contains mountains, numerous glaciers and gorges up to 700m deep. Alma-Atinskiy Zapovednik forms part of a northern ridge of the Tien-Shan Mountains and consists of the northern Zailiisky Alatau and the Illissky Depression. The former is characterised by a network of peaks culminating in Mt Talagar, and has strongly dissected relief resulting from intense erosion. It includes stretches of the fast-flowing Talgar and Issyk rivers which ultimately drain into Lake Balkash. Soils range from degraded chernozems to black earths.

Climate: Conditions in Alma-Atinskiy are continental. Mean annual temperature is 6.8°C in the valleys and 0.8°C on the mountains. Temperatures in the valleys vary from -4.3°C in January to 18.1°C in July, and from -9.7°C to 10.6°C on the mountains. The annual number of frost-free days varies from 145 in the valleys to 90 on the mountains. Mean annual precipitation is 830-870mm. Snow cover lasts for 160-190 days and is 60-80cm deep.

Vegetation: In Altyn-Emel vegetation types inlude the peculiar Dzungharian deserts as well as mountain steppe, shrub stands, spruce forest and alpine and sub-alpine meadows. A total of 634 plant species have been recorded, including 27 endemics. Alma-Atinskiy contains forest-meadow steppe (1,300-2,600m) comprising conifers, mixed forest, grasslands and forest grasslands with spruce *Picea schrenkiana* and feather grasses *Stipa capillata*, *Phleum phleoides* and *Festuca ganeschinii*. The sub-alpine belt (2,600-3,000m) supports evergreen scrub, *Juniperus turkestanica* steppe and mixed grasslands. In the alpine zone (3,000-3,600m), meadows are interspersed with rock outcrops. Other species present include apple *Malus sieversii*, honeysuckle *Lonicera altmanii* and representatives of the genera *Armeniaca*, *Crataegus*, *Rosa*, *Artemisia*, *Geranium*, *Myosotis*, *Gentiana* and *Cobresia*. Some 950 species have been recorded, including 13 trees, and

63 shrubs. Ile-Alatau contains similar vegetation types to Alma-Atinskiy, and up to 1,200 species of plants - including 46 rare and endemic species - have been recorded.

Fauna: Altyn-Emel supports 70 species of mammal, including populations of montane species such as snow leopard *Uncia uncia* (EN), Tien Shan brown bear *Ursus arctos*, and Tien Shan argali *Ovis ammon karelini* (VU); and lowland species such as kulan *Equus hemionus kulan* (CR), sand or goitred gazelle *Gazella subgutturosa* (NT). Eurasian otter *Lutra lutra* (VU), stone marten *Martes foina* and marbled polecat *Vormela perugnusa* are also found. The 155 species of birds recorded include golden eagle *Aquila chrysaetos*, Barbary falcon *Falco pelegrinoides*, bearded vulture *Gypaetus barbatus* and ibisbill *Ibidorhyncha struthersii*. There are also 25 reptiles, four amphibians and 28 fishes. Mammals in Alma-Atinskiy include red and large-eared pikas *Ochotona rutila* and *O. macrotis*, marmot *Marmota baibacina*, vole *Clethrionomys frater*, birch mouse *Sicista concolor*, wolf *Canis lupus*, stoat *Mustela erminea*, stone marten, Eurasian lynx *Lynx lynx* (NT), red deer *Cervus elaphus*, roe deer *Capreolus capreolus* and Asiatic ibex *Capra sibirica*. The snow leopard is a rare visitor to the high mountains. Birds include lammergeier *Gypateus barbatus*, golden eagle *Aquila chrysaetus*, Himalayan snowcock *Tetraogallus himalayensis* and chukar *Alectoris chukar*. Of the passerines, there are whistling thrush *Myiophonus caerulens*, grosbeak *Mycerobus carnipes* and Guldenstadt's, blue-headed and Eversmann's redstarts *Phoenicurus erythrogaster*, *P. caeruleocephalus* and *P. erythronotos*. Ile-Alatau also supports a diverse fauna: 47 mammals (including Tien Shan argali and Asiatic wild dog *Cuon alpinus* (VU)), 148 species of nesting birds, 10 reptiles, 2 amphibians, 8 fish and at least 1,500 insects.

Cultural Heritage: Altyn-Emel includes 191 historic / cultural monuments, from the Stone, Bronze and Iron Age, including a number of barrows and burial grounds.

Local Human Population: No information.

Visitors and Visitor Facilities: In Alma-Atinskiy a system of reserve trails is used for specialist scientific and educational excursions, with guides drawn from local researchers.

Scientific Research and Facilities: No information.

Conservation Value: Together these three protected areas span almost the complete range of Central Asian habitats, descending as they do from high mountains to desert. They harbour an extraordinary diversity of higher plants and vertebrates, many of them threatened and / or endemic.

Conservation Management: No information.

Management Constraints: No information.

Staff: No information.

Budget: No information.

Local Addresses: No information.

Justification for Potential WH Status:
The justification for a serial nomination would be that together the sites encompass the full range of northern Tien Shan species and habitats, descending from alpine regions at 4,951 m (the peak of Mt Talgar), to semi-desert at ca. 1,000 m.

***Criterion N(x): Biodiversity and threatened species**:* The Northern Tien Shan WH site has high floral and faunal diversity and includes a relatively high number of threatened species such as snow leopard and kulan. It has high numbers of endemic plants, and around half of the proposed site is located in the Mountains of Middle Asia CPD. It is situated within the currently un-represented Pamir-Tian-Shan Highlands Biogeographic Province. The whole site lies within the Global 200 Ecoregion "Middle Asian montane woodlands and steppe", but is also close to the border of the "Central Asian Deserts" Gobal 200 Ecoregion and contains many faunal and floral elements associated with it, such as desert reptiles and kulan.

Potential caveats: Given the distance between the two proposed components, it may be necessary to establish a connecting corridor in order to prevent them becoming ecological islands.

4. Conclusion

Central Asia is a vast, biodiverse and scenically rich region, currently unrepresented in the World Heritage List. The Central Asian countries have been troubled by economic problems and political instability, thus most of the protected areas in Central Asia (and throughout the CIS) are also suffering management problems caused by lack of funds, infrastructure and political support. Six sites that may merit nomination as natural WH properties - between them spanning all five countries - were identified as having the potential of having outstanding universal value, based on literature review and consultation with regional experts. These consist of:

- two single sites (Badkhyz and Tigrovaya Balka);
- one transboundary extension to an existing Russian WH site (extension to Golden Mountains of Altai);
- two serial sites (Steppes and Lakes of Northern Kazakhstan and Northern Tien Shan)
- and one transboundary cluster site (Western Tien Shan).

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List of Acronyms

CAREC	Regional Environmental Centre for Central Asia
CBD	Convention on Biological Diversity
CIFOR	Center for International Forestry Research
CIS	Commonwealth of Independent States
CNPPA	Commission on National Parks and Protected Areas (IUCN)
CPD	Centre of Plant Diversity
EBA	Endemic Bird Area
GEF	Global Environment Facility
IBA	Important Bird Area
ICIMOD	International Centre for Integrated Mountain Development
ICOMOS	International Council on Monuments and Sites
ISAR	Resources for Environmental Activists
IUCN	The World Conservation Union
MAB	Man and the Biosphere (a programme of UNESCO)
OUV	Outstanding Universal Value
SLNK	Steppes and Lakes of Northern Kazakhstan
SSC	Species Survival Commission (of IUCN)
UNEP-WCMC	United Nations Environment Programme – World Conservation Monitoring Centre
UNESCO	United Nations Educational, Scientific and Cultural Organisation
WDPA	World Database on Protected Areas
WESCANA	West and Central Asia and North Africa (a programme of IUCN)
WH	World Heritage
WHC	The World Heritage Convention
WHS	World Heritage Site(s)
WWF	World Wide Fund for Nature / World Wildlife Fund

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APPENDICES

Appendix I: Criteria for Inclusion of Properties in the WH List

To be included on the World Heritage List, sites must satisfy the selection criteria. These criteria are explained in the Operational Guidelines which, besides the text of the Convention, is the World Heritage Committee's main document. Revised regularly by the Committee, the criteria have evolved to match the evolution of the World Heritage concept itself.

Cultural criteria

The criteria for the inclusion of cultural properties in the World Heritage List should always be seen in relation to one another and should be considered in the context of the definition set out in Article 1 of the Convention which is reproduced below:

"**monuments**: architectural works, works of monumental sculpture and painting, elements or structures of an archaeological nature, inscriptions, cave dwellings and combinations of features, which are of outstanding universal value from the point of view of history, art or science;

groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of outstanding universal value from the point of view of history, art or science;

sites: works of man or the combined works of nature and of man, and areas including archaeological sites which are of outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view."

A monument, group of buildings or site - as defined above - which is nominated for inclusion in the World Heritage List will be considered to be of outstanding universal value for the purpose of the Convention when the Committee finds that it meets one or more of the following criteria and the test of authenticity. These criteria are defined by the Committee in its Operational Guidelines. Each property nominated should:

i. represent a masterpiece of human creative genius; or

ii. exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design; or

iii. bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared; or

iv. be an outstanding example of a type of building or architectural or technological ensemble or landscape which illustrates (a) significant stage(s) in human history; or

v. be an outstanding example of a traditional human settlement or land-use which is representative of a culture (or cultures), especially when it has become vulnerable under the impact of irreversible change; or

vi. be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance (the Committee considers that this criterion should justify inclusion in the List only in exceptional circumstances and in conjunction with other criteria cultural or natural);

Natural Criteria

In accordance with Article 2 of the Convention, the following is considered as “natural heritage”:

“natural features consisting of physical and biological formations or groups of such formations, which are of outstanding universal value from the aesthetic or scientific point of view;

geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science or conservation;

natural sites or precisely delineated natural areas of outstanding universal value from the point of view of science, conservation or natural beauty.”

A natural heritage property - as defined above - which is submitted for inclusion in the World Heritage List will be considered to be of outstanding universal value for the purposes of the Convention when the Committee finds that it meets one or more of the following criteria specified by Operational Guidelines (February 2005) and fulfilling the conditions of integrity set out below. Sites nominated should:

(vii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; or

(viii) be outstanding examples representing major stages of the Earth’s history including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features; or

(ix) be outstanding examples representing signifcant ongoig ecological and biological processes in the evolution and development of terrestrial, freshwater, coastal and marine ecosystems and communites of plants and animals; or

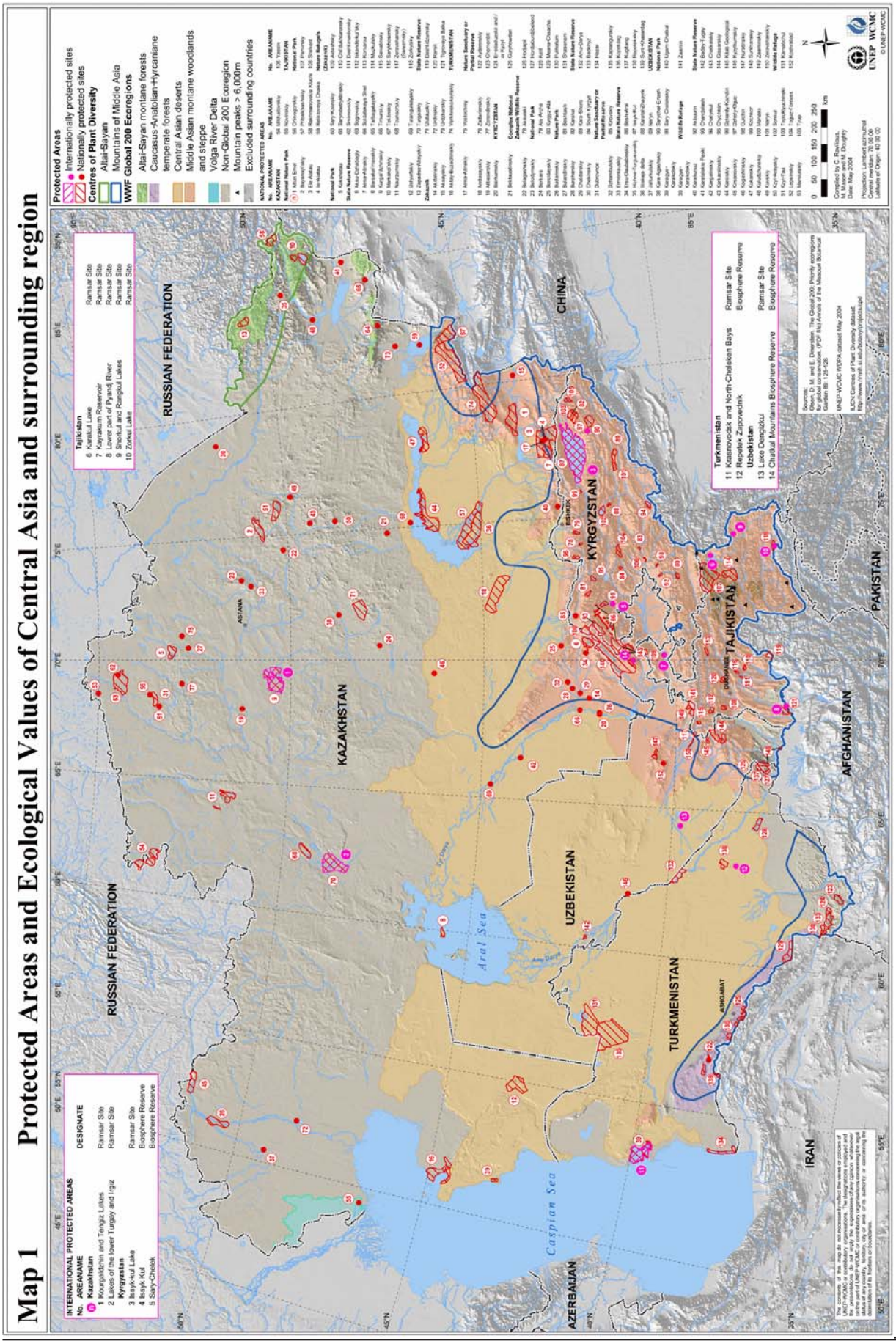
(x) contain the most important and significant natural habitats for *in situ* conservation of biological diversity, including those containing threatened species of outstanding universal value from the point of view of science and conservation

Natural sites proposed as WH sites must have a) Outstanding Universal Value, and must fulfil b) Conditions of Integrity. These attributes are judged against the one or more Criteria that the natural site chosen must comply with.

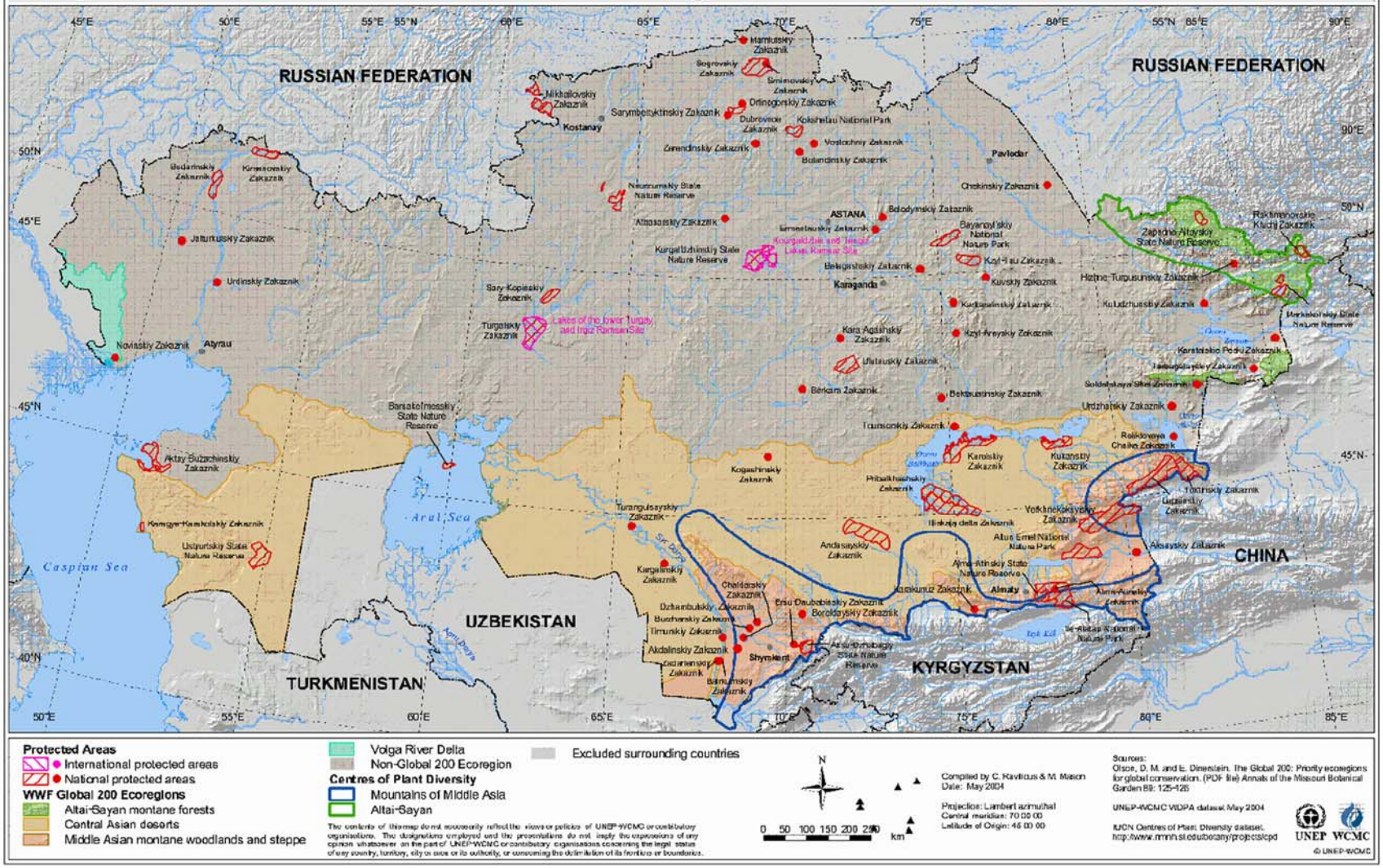
Attributes	Outstanding Universal Value	Conditions of Integrity
Criterion N(vii)	Very best phenomena / stunning beauty	Integrated and linked elements
Criterion N(viii)	Best example of Earth's History	Complete set of features
Criterion N(ix)	Best ecological features	Sufficient size / allowing long term processes to continue
Criterion N(x)	Best natural habitats / i*n situ* ecosystems / species	Viable populations / migratory routes / protected areas

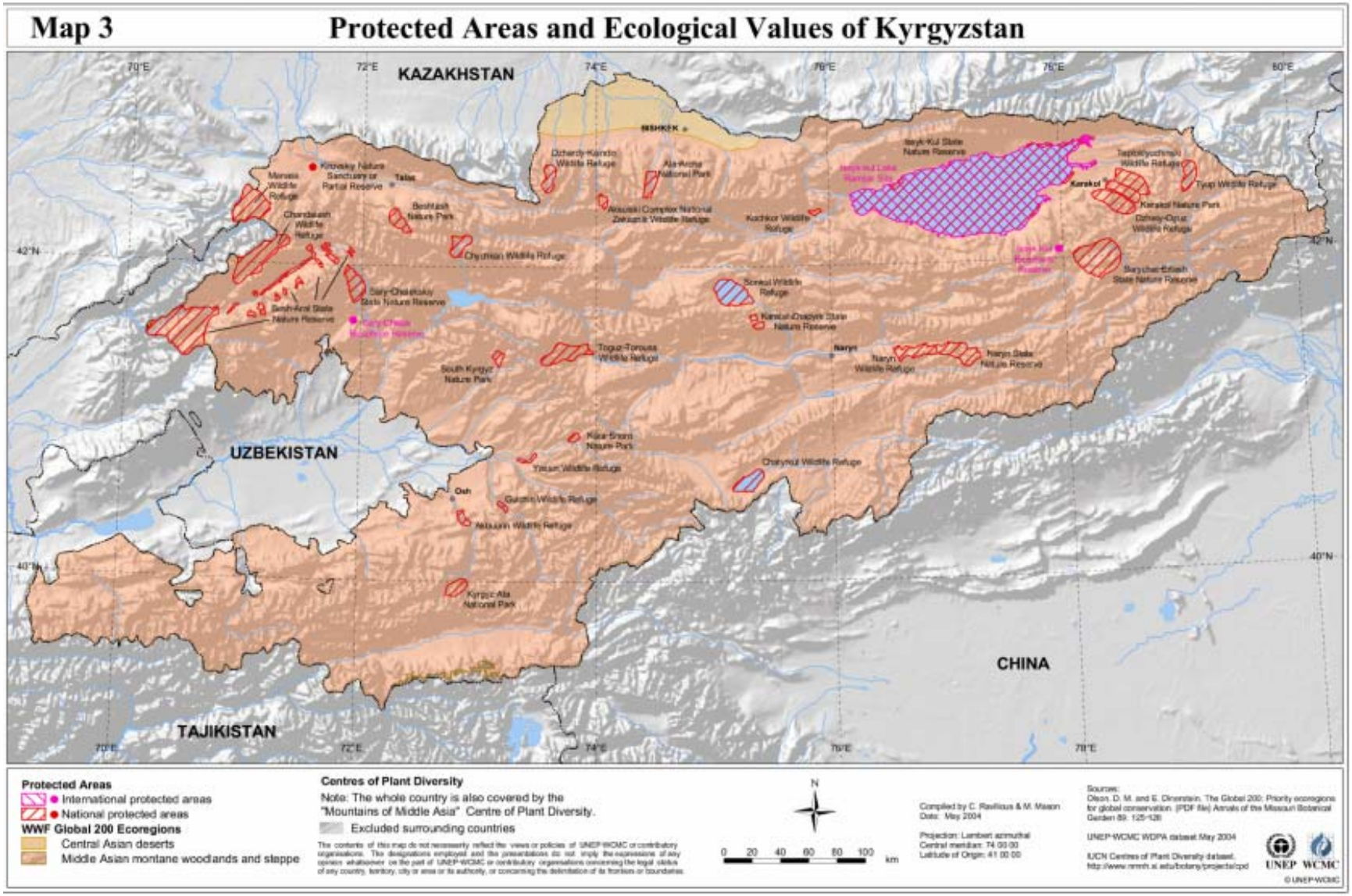
The Attributes and Criteria are the tests that need to be applied to each of the natural sites put forward for possible World Heritage listing.

Appendix II: Maps

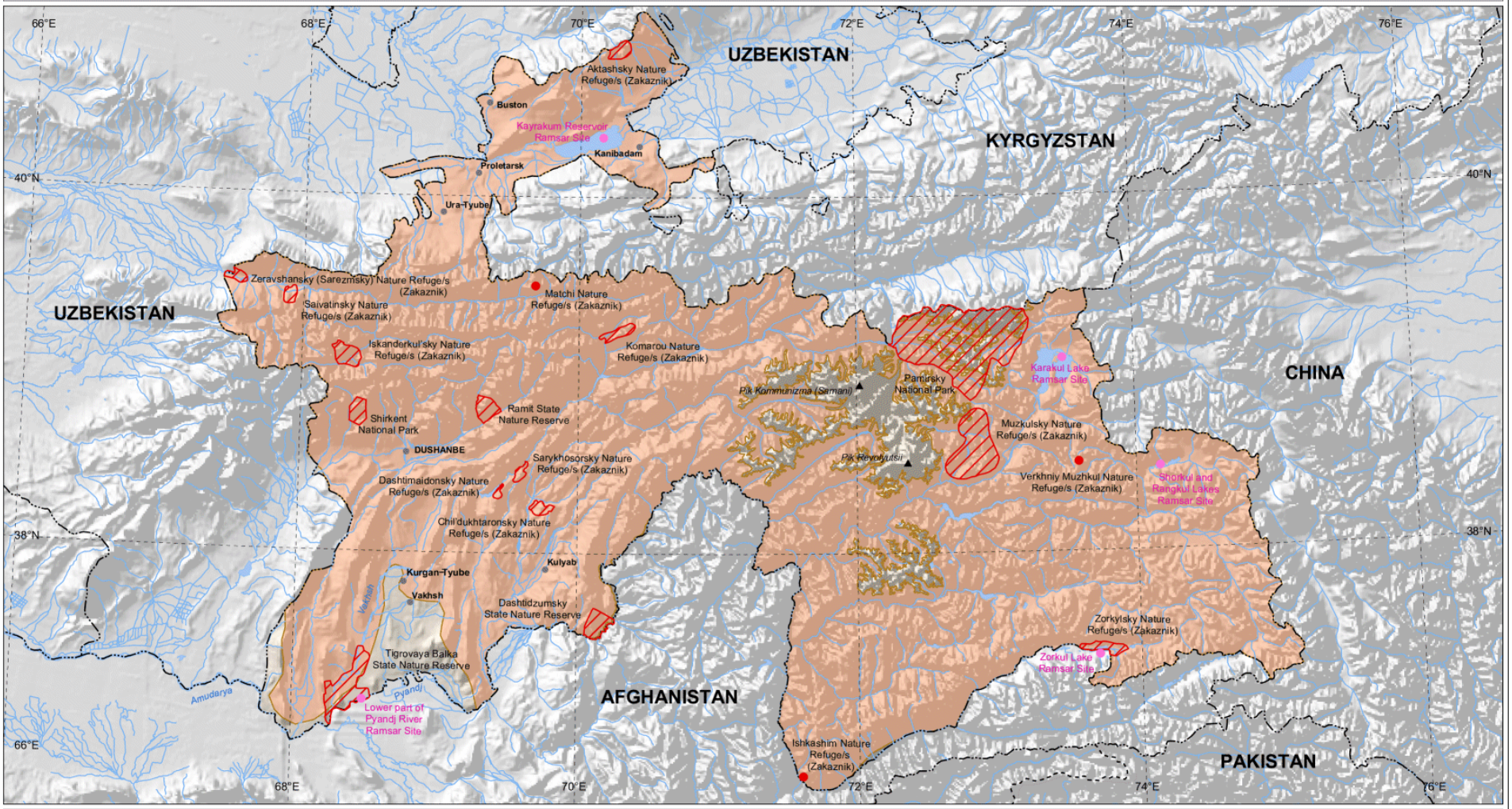


Map 2 Protected Areas and Ecological Values of Kazakhstan




Map 3
Protected Areas and Ecological Values of Kyrgyzstan
KAZAKHSTAN
UZBEKISTAN
TAJIKISTAN
CHINA
BISHKEK
Osh
Talas
Karakol
Naryn
70°E
72°E
74°E
76°E
78°E
80°E
42°N
40°N
Protected Areas
International protected areas
National protected areas
WWF Global 200 Ecoregions
Central Asian deserts
Middle Asian montane woodlands and steppe
Centres of Plant Diversity
Note: The whole country is also covered by the "Mountains of Middle Asia" Centre of Plant Diversity.
Excluded surrounding countries
The contents of this map do not necessarily reflect the views or policies of UNEP-WCMC or contributory organisations. The designations employed and the presentations do not imply the expressions of any opinion whatsoever on the part of UNEP-WCMC or contributory organisations concerning the legal status of any country, territory, city or area or its authority, or concerning the delimitation of its frontiers or boundaries.
N
0 20 40 60 80 100
km
Compiled by C. Ravilious & M. Mason
Date: May 2004
Projection: Lambert azimuthal
Central meridian: 74 00 00
Latitude of Origin: 41 00 00
Sources:
Olson, D. M. and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. (PDF file) Annals of the Missouri Botanical Garden 89: 125-126
UNEP-WCMC WDPA dataset May 2004
IUCN Centres of Plant Diversity dataset, http://www.nmnh.si.edu/botany/projects/cpd
UNEP WCMC
© UNEP-WCMC

Map 4 Protected Areas and Ecological Values of Tajikistan



Protected Areas
- International protected areas
- National protected areas

WWF Global 200 Ecoregion
- Middle Asian montane woodlands and steppe
- Non-Global 200 Ecoregion

Centres of Plant Diversity

Note: The whole country is also covered by the "Mountains of Middle Asia" Centre of Plant Diversity.

Excluded surrounding countries

N

0 20 40 60 80 100 km

Compiled by C. Ravilious & M. Mason
Date: May 2004

Projection: Lambert azimuthal
Central meridian: 70 00 00
Latitude of Origin: 40 00 00

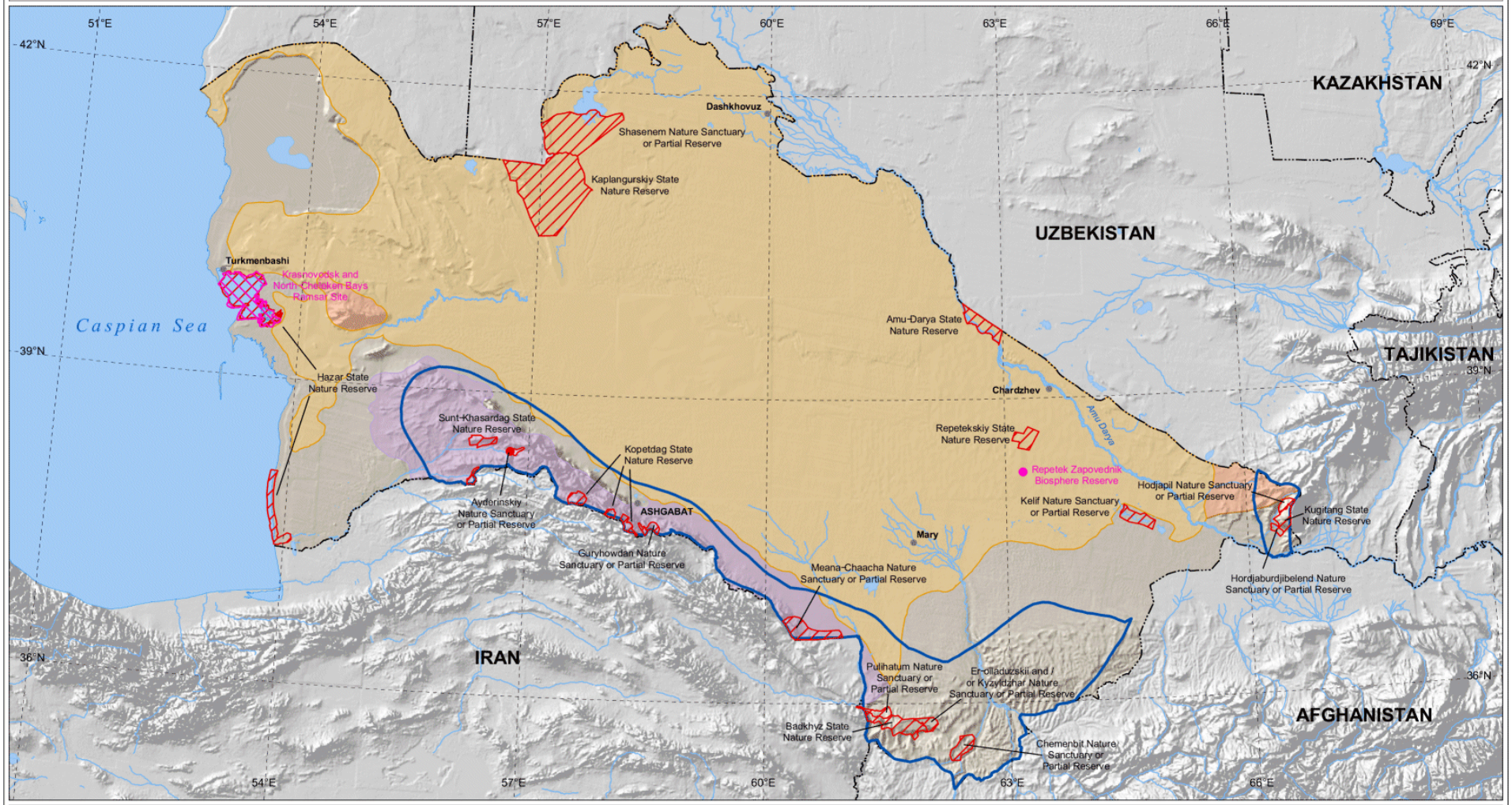
Sources:
Olson, D. M. and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. (PDF file) Annals of the Missouri Botanical Garden 89: 125-126

UNEP-WCMC WDPA dataset May 2004

IUCN Centres of Plant Diversity dataset.
http://www.nmnh.si.edu/botany/projects/cpd

UNEP WCMC

Map 5 Protected Areas and Ecological Values of Turkmenistan



Protected areas
- International protected areas
- National protected areas

WWF Global 200 Ecoregions
- Caucasus-Anatolian-Hyrcaniane temperate forests
- Central Asian deserts
- Middle Asian montane woodlands and steppe
- Non-Global 200 Ecoregion
- Excluded surrounding countries

Centres of Plant Diversity
- Mountains of Middle Asia

N

0 40 80 120 160 200 km

Compiled by C. Ravilious & M. Mason
Date: May 2004

Projection: Lambert azimuthal
Central meridian: 61 00 00
Latitude of Origin: 40 00 00

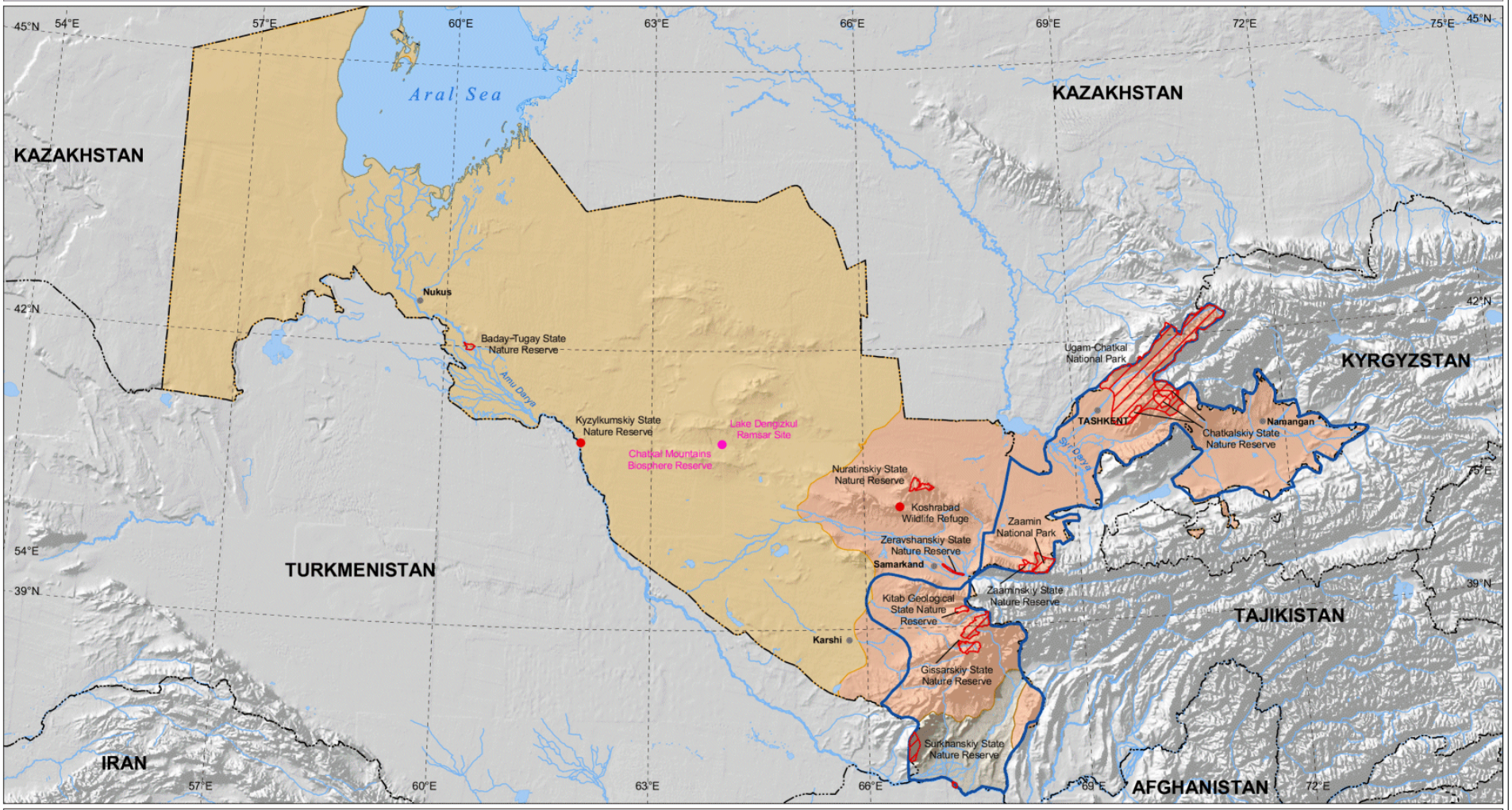
Sources:
Olson, D. M. and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. (PDF file) Annals of the Missouri Botanical Garden 89: 125-126

UNEP-WCMC WDPA dataset May 2004

IUCN Centres of Plant Diversity dataset. http://www.nmnh.si.edu/botany/projects/cpd

UNEP WCMC

Map 6 Protected Areas and Ecological Values of Uzbekistan



Protected areas
- International protected areas
- National protected areas

WWF Global 200 Ecoregions
- Central Asian deserts
- Middle Asian montane woodlands and steppe
- Non-Global 200 Ecoregion

Centres of Plant Diversity
- Mountains of Middle Asia
- Other surrounding countries

N

0 40 80 120 160 200 km

Compiled by C. Ravilious & M. Mason
Date: May 2004

Projection: Lambert azimuthal
Central meridian: 64 00 00
Latitude of Origin: 41 00 00

Sources:
Olson, D. M. and E. Dinerstein. The Global 200: Priority ecoregions for global conservation. (PDF file) Annals of the Missouri Botanical Garden 89: 125-126

UNEP-WCMC WDPA dataset May 2004

IUCN Centres of Plant Diversity dataset.
http://www.nmnh.si.edu/botany/projects/cpd

UNEP WCMC

Appendix III: IUCN Red Listed Taxa in Central Asia

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Mammalia	Equidae	Equus ferus	Horse	EW	1				
Mammalia	Equidae	Equus ferus ssp. przewalskii	Przewalski's Wild Horse, Mongolian Wild Horse, Takh	EW	1				
Mammalia	Felidae	Panthera tigris ssp. virgata	Caspian Tiger, Turan Tiger	EX	1	1	1	1	1
Actinopterygii	Acipenseridae	Acipenser nudiventris [Aral Sea stock]	Ship Sturgeon	EX	1				1
Mammalia	Bovidae	Capra falconeri ssp. heptneri	Tadjik Markhor	CR C2a			1	1	1
Mammalia	Bovidae	Ovis ammon ssp. nigrimontana	Kara Tau Argali	CR C2b	1				
Mammalia	Bovidae	Saiga tatarica	Saiga Antelope	CR A2a	1			1	1
Mammalia	Bovidae	Saiga tatarica ssp. tatarica	Russian Saiga	CR A2ad	1			1	1
Mammalia	Equidae	Equus hemionus ssp. kulan	Kulan	CR A2bcd+4bcd	1			1	1
Aves	Scolopacidae	Numenius tenuirostris	Slender-Billed Curlew	CR C2b, D	1				
Actinopterygii	Acipenseridae	Pseudoscaphirhynchus fedtschenkoi	Syr-Darya Shovelnose Sturgeon	CR A1ae, D	1		1		1
Actinopterygii	Acipenseridae	Pseudoscaphirhynchus hermanni	Small Amu-Dar Shovelnose Sturgeon	CR A1ae, D			1	1	1
Actinopterygii	Salmonidae	Salmo trutta ssp. aralensis [Aral Sea and Amu Darya River stock]	Aral Sea Trout	CR A1ace	1		1	1	1
Magnoliopsida	Cornaceae	Swida darvasica		CR D			1		
Mammalia	Bovidae	Capra falconeri	Markhor	EN A2cde			1	1	1
Mammalia	Bovidae	Ovis ammon ssp. severtzovi	Severtzov's Urial, Kyzylkum Sheep	EN A2cde, C2b	1				1
Mammalia	Bovidae	Ovis orientalis ssp. bocharensis	Bukhara Urial	EN A1cde, C1+2a			1	1	1
Mammalia	Felidae	Panthera pardus ssp. saxicolor	North Persian Leopard	EN C2a			1	1	1
Mammalia	Felidae	Uncia uncia	Snow Leopard, Ounce	EN C2a(i)		1	1		1

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Mammalia	Mustelidae	Mustela lutreola	European Mink	EN A1ace	1				
Mammalia	Muridae	Ellobius alaicus	Alai Mole Vole	EN B1+2c		1			
Mammalia	Muridae	Meriones zarudnyi	Zarundny's Jird	EN B1+2c				1	
Mammalia	Myoxidae	Selevinia betpakdalaensis	Desert Dormouse	EN B1+2c	1				
Aves	Anatidae	Oxyura leucocephala	White-Headed Duck	EN A1acde	1		1	1	1
Reptilia	Viperidae	Vipera ursinii	Meadow Viper, Orsini's Viper	EN A1c+2c		1			1
Amphibia	Hynobiidae	Ranodon sibiricus	Semirechensk Salamander	EN B1+2a	1				
Actinopterygii	Acipenseridae	Acipenser gueldenstaedtii	Russian Sturgeon	EN A2d	1			1	
Actinopterygii	Acipenseridae	Acipenser gueldenstaedtii [Caspian Sea stock]	Russian Sturgeon	EN A2d	1			1	
Actinopterygii	Acipenseridae	Acipenser nudiventris	Bastard Sturgeon Ship Sturgeon	EN A1acde+2d	1		1	1	1
Actinopterygii	Acipenseridae	Acipenser nudiventris [Caspian Sea stock]	Ship Sturgeon	EN A1acde+2d	1			1	
Actinopterygii	Acipenseridae	Acipenser persicus	Persian Sturgeon	EN A2d	1			1	
Actinopterygii	Acipenseridae	Acipenser stellatus	Star Sturgeon, Stellate Sturgeon	EN A2d	1			1	
Actinopterygii	Acipenseridae	Huso huso	Beluga	EN A2d	1			1	
Actinopterygii	Acipenseridae	Huso huso [Caspian Sea stock]	Beluga	EN A1acde+2d	1			1	
Actinopterygii	Acipenseridae	Pseudoscaphirhynchus kaufmanni	False Shovelnose Sturgeon, Large Amu-Dar Shovelnose Sturgeon	EN A1acd			1	1	1
Actinopterygii	Salmonidae	Stenodus leucichthys ssp. leucichthys	Beloribitsa	EN C1	1			1	
Mammalia	Bovidae	Capra aegagrus	Wild Goat	VU A2cde				1	
Mammalia	Bovidae	Capra aegagrus ssp. blythi	Sind Ibex, Turkmen Wild Goat	VU A2cde				1	
Mammalia	Bovidae	Capra aegagrus ssp. turcmenica	Turkmen Wild Goat	VU A2cde				1	
Mammalia	Bovidae	Ovis ammon	Argali	VU A2cde	1	1	1	1	1
Mammalia	Bovidae	Ovis ammon ssp. collium	Kazakhstan Argali	VU A2cde, C1	1				
Mammalia	Bovidae	Ovis ammon ssp. karelini	Tien Shan Argali	VU A2cde, C1+2a	1	1			

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Mammalia	Bovidae	Ovis ammon ssp. polii	Marco Polo Argali, Marco Polo Sheep	VU A2cde, C1		1	1		
Mammalia	Bovidae	Ovis orientalis	Mouflon, Urial	VU A2cde			1	1	
Mammalia	Bovidae	Ovis orientalis ssp. arkal	Transcaspian Urial, Arkal	VU A2cde	1			1	1
Mammalia	Bovidae	Ovis orientalis ssp. cycloceros	Afghan Urial	VU C1				1	
Mammalia	Cervidae	Cervus elaphus ssp. bactrianus	Bokharan Deer, Bactrian Red Deer	VU D1	1		1	1	1
Mammalia	Canidae	Cuon alpinus	Asiatic Wild Dog, Dhole	VU C2a	1	1	1		
Mammalia	Felidae	Acinonyx jubatus	Cheetah	VU C2a(i)	1	1	1	1	1
Mammalia	Mustelidae	Lutra lutra	Eurasian Otter	VU A2cde	1	1	1	1	1
Mammalia	Phocidae	Pusa caspica	Caspian Seal	VU B1+2e	1			1	
Mammalia	Rhinolophidae	Rhinolophus euryale	Mediterranean Horseshoe Bat	VU A2c				1	
Mammalia	Rhinolophidae	Rhinolophus hipposideros	Lesser Horseshoe Bat	VU A2c	1	1	1	1	1
Mammalia	Vespertilionidae	Myotis capaccinii	Long-Fingered Bat	VU A2c					1
Mammalia	Vespertilionidae	Myotis dasycneme	Pond Bat	VU A2c	1				
Mammalia	Vespertilionidae	Myotis emarginatus	Geoffroy's Bat	VU A2c	1	1	1	1	1
Mammalia	Talpidae	Desmana moschata	Russian Desman	VU B1+2c	1				
Mammalia	Ochotonidae	Ochotona pusilla	Steppe Pika	VU A1cd, C2a	1				
Mammalia	Equidae	Equus hemionus	Asian Wild Ass	VU A3bcd; C1				1	
Mammalia	Dipodidae	Cardiocranius paradoxus	Five-Toed Pygmy Jerboa	VU A1c	1				
Mammalia	Dipodidae	Salpingotus crassicauda	Thick-Tailed Pygmy Jerboa	VU A1c	1				
Mammalia	Muridae	Spalax giganteus	Giant Mole Rat, Russian Mole Rat	VU A1c, B1+2c	1				
Mammalia	Myoxidae	Myomimus personatus	Masked Mouse-Tailed Dormouse	VU B1+2c				1	
Mammalia	Sciuridae	Marmota menzbieri	Menzbier's Marmot	VU B1+2c	1	1	1	1	1
Aves	Anatidae	Anser erythropus	Lesser White-Fronted Goose	VU A1acd+2bcd	1				
Aves	Anatidae	Branta ruficollis	Red-Breasted Goose	VU B1+2c	1				
Aves	Anatidae	Marmaronetta angustirostris	Marbled Teal	VU A1cd+2cd, C1	1		1	1	1

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Aves	Charadriidae	Vanellus gregarius	Sociable Plover	VU A1ac+2bc, C1		1	1	1	1
Aves	Laridae	Larus relictus	Relict Gull	VU C1	1				
Aves	Columbidae	Columba eversmanni	Pale-Backed Pigeon	VU A1acd	1	1	1	1	1
Aves	Accipitridae	Aquila clanga	Greater Spotted Eagle	VU C1	1				
Aves	Accipitridae	Aquila heliaca	Imperial Eagle	VU C1	1			1	1
Aves	Accipitridae	Haliaeetus leucoryphus	Pallas's Fish-Eagle	VU C1	1		1		1
Aves	Falconidae	Falco naumanni	Lesser Kestrel	VU A1bce+2bce	1	1	1		1
Aves	Otididae	Otis tarda	Great Bustard	VU A2c	1	1	1		1
Aves	Rallidae	Crex crex	Corncrake	VU A2c	1	1	1	1	1
Aves	Muscicapidae	Saxicola insignis	Hodgson's Bushchat	VU C1	1				
Reptilia	Testudinidae	Testudo graeca	Spur-Thighed Tortoise	VU A1cd				1	
Reptilia	Testudinidae	Testudo horsfieldii	Central Asian Tortoise, Horsfield's Tortoise	VU A2d	1	1	1	1	1
Actinopterygii	Acipenseridae	Acipenser baerii	Siberian Sturgeon	VU A2d	1				
Actinopterygii	Acipenseridae	Acipenser persicus [Caspian Sea stock]	Persian Sturgeon	VU A1acde	1			1	
Actinopterygii	Acipenseridae	Acipenser ruthenus	Sterlet	VU A1c+2d	1				
Actinopterygii	Acipenseridae	Acipenser stellatus [Caspian Sea stock]	Stellate Sturgeon	VU A1acde+2d	1			1	
Actinopterygii	Balitoridae	Nemacheilus starostini	Starostin's Loach	VU D2				1	
Actinopterygii	Cyprinidae	Aspiolucius esocinus	Pike Asp	VU A1acde	1		1	1	1
Insecta	Dytiscidae	Graphoderus bilineatus		VU B1+2ac				1	
Insecta	Formicidae	Chalepoxenus spinosus		VU D2	1				
Insecta	Formicidae	Chalepoxenus tarbinskii		VU D2		1			
Insecta	Formicidae	Chalepoxenus zabelini		VU D2				1	
Insecta	Formicidae	Strongylognathus minutus		VU D2				1	

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Insecta	Lasiocampidae	Phyllodesma ilicifolia	Small Lappet Moth	VU A1c	1				
Insecta	Papilionidae	Parnassius apollo	Apollo Butterfly	VU A1cde	1	1			
Insecta	Papilionidae	Parnassius autocrator		VU D2			1		
Insecta	Gomphidae	Onychogomphus assimilis		VU B1+2c				1	
Insecta	Tettigoniidae	Saga pedo	Predatory Bush Cricket	VU B1+2bd	1	1	1	1	1
Coniferopsida	Pinaceae	Abies sibirica ssp. semenovii		VU D2		1			1
Magnoliopsida	Rosaceae	Malus sieversii		VU B1+2c	1	1	1		1
Mammalia	Felidae	Otocolobus manul ssp. ferrugineus	Red Manul	LR/nt	1			1	
Mammalia	Hyaenidae	Hyaena hyaena	Striped Hyaena	LR/nt			1	1	1
Mammalia	Rhinolophidae	Rhinolophus blasii	Blasius's Horseshoe Bat	LR/nt				1	
Mammalia	Rhinolophidae	Rhinolophus ferrumequinum	Greater Horseshoe Bat	LR/nt	1	1	1	1	1
Mammalia	Vespertilionidae	Miniopterus schreibersi	Common Bentwing Bat, Schreiber's Long-Fingered Bat	LR/nt			1	1	
Mammalia	Vespertilionidae	Myotis frater	Fraternal Myotis	LR/nt			1		1
Mammalia	Vespertilionidae	Nyctalus lasiopterus	Giant Noctule	LR/nt	1				1
Mammalia	Vespertilionidae	Nyctalus leisleri	Lesser Noctule	LR/nt	1				1
Mammalia	Dipodidae	Pygeretmus shitkovi	Greater Fat-Tailed Jerboa	LR/nt	1				
Mammalia	Dipodidae	Salpingotus heptneri	Heptner's Pygmy Jerboa	LR/nt	1				1
Mammalia	Dipodidae	Sicista betulina	Northern Birch Mouse	LR/nt	1				
Mammalia	Dipodidae	Sicista subtilis	Southern Birch Mouse	LR/nt	1				
Mammalia	Muridae	Blanfordimys bucharicus	Bucharian Vole	LR/nt			1		
Mammalia	Muridae	Calomyscus mystax	Afghan Mouse-Like Hamster	LR/nt				1	
Mammalia	Muridae	Cricetulus migratorius	Gray Dwarf Hamster, Grey Hamster	LR/nt	1				

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Mammalia	Myoxidae	Dryomys nitedula	Forest Dormouse	LR/nt	1	1	1	1	1
Mammalia	Myoxidae	Glis glis	Fat Dormouse	LR/nt				1	
Mammalia	Sciuridae	Marmota caudata	Long-Tailed Marmot	LR/nt		1	1		1
Mammalia	Sciuridae	Spermophilus major	Russet Ground Squirrel	LR/nt	1				
Aves	Anatidae	Aythya nyroca	Ferruginous Duck	LR/nt	1		1	1	1
Aves	Scolopacidae	Limnodromus semipalmatus	Asian Dowitcher	LR/nt	1				1
Aves	Accipitridae	Aegypius monachus	Black Vulture, Cinereous Vulture	LR/nt	1	1	1	1	1
Aves	Accipitridae	Circus macrourus	Pale Harrier	LR/nt	1				
Aves	Accipitridae	Haliaeetus albicilla	Grey Sea Eagle, White_Tailed Eagle	LR/nt	1		1	1	1
Aves	Otididae	Chlamydotis undulata	Houbara Bustard	LR/nt	1		1	1	1
Aves	Otididae	Tetrax tetrax	Little Bustard	LR/nt			1	1	1
Aves	Emberizidae	Emberiza cineracea	Cinereous Bunting	LR/nt					1
Aves	Muscicapidae	Bradypterus major	Long-Billed Bush-Warbler	LR/nt			1		
Aves	Phalacrocoracidae	Phalacrocorax pygmeus	Pygmy Cormorant	LR/nt	1		1	1	1
Reptilia	Emydidae	Emys orbicularis	European Pond Turtle	LR/nt	1			1	
Bivalvia	Unionidae	Pseudanodonta complanata		LR/nt	1				
Bivalvia	Unionidae	Unio crassus		LR/nt					
Hirudinoidea	Hirudinidae	Hirudo medicinalis	Medicinal Leech	LR/nt	1				1
Insecta	Formicidae	Formica rufa	Red Wood Ant	LR/nt					1
Insecta	Formicidae	Formica uralensis		LR/nt	1				
Insecta	Lycaenidae	Lycaena dispar	Large Copper	LR/nt	1				1
Insecta	Lycaenidae	Maculinea alcon	Alcon Large Blue	LR/nt	1	1			
Insecta	Lycaenidae	Maculinea arion	Large Blue	LR/nt	1	1			

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Insecta	Lycaenidae	Maculinea nausithous	Dusky Large Blue	LR/nt	1				
Insecta	Lycaenidae	Maculinea teleius	Scarce Large Blue	LR/nt	1				
Insecta	Papilionidae	Archon apollinaris		LR/nt				1	
Insecta	Satyridae	Coenonympha oedippus	False Ringlet	LR/nt	1				
Coniferopsida	Cupressaceae	Platycladus orientalis		LR/nt			1		
Mammalia	Muridae	Eolagurus luteus	Yellow Steppe Lemming	LR/cd	1				
Mammalia	Sciuridae	Marmota bobak	Bobak Marmot	LR/cd	1				
Aves	Pelecanidae	Pelecanus crispus	Dalmatian Pelican	LR/cd	1			1	1
Amphibia	Discoglossidae	Bombina bombina	European Fire-Bellied Toad	LR/cd	1				
Mammalia	Bovidae	Gazella subgutturosa	Goitred Gazelle, Sand Gazelle	NT	1	1	1	1	1
Mammalia	Felidae	Felis margarita	Sand Cat	NT	1			1	1
Mammalia	Felidae	Lynx lynx	Eurasian Lynx	NT	1	1	1	1	1
Mammalia	Felidae	Otocolobus manul	Pallas's Cat	NT	1	1	1	1	1
Mammalia	Canidae	Vulpes cana	Blanford's Fox	DD				1	
Mammalia	Canidae	Vulpes corsac	Corsac Fox	DD		1			1
Mammalia	Dipodidae	Sicista pseudonapaea	Gray Birch Mouse	DD	1				
Aves	Glareolidae	Glareola nordmanni	Black-Winged Pratincole	DD	1				
Reptilia	Elapidae	Naja naja ssp. oxiana	Central Asian Cobra, Oxus Cobra	DD		1	1	1	1
Actinopterygii	Clupeidae	Alosa pontica		DD	1			1	
Actinopterygii	Clupeidae	Clupeonella cultriventris		DD	1			1	
Actinopterygii	Cobitidae	Sabanejewia aurata	Goldside Loach	DD					1
Actinopterygii	Cyprinidae	Aspius aspius	Asp	DD	1			1	1
Actinopterygii	Cyprinidae	Cyprinus carpio	Wild Common Carp	DD	1			1	1
Actinopterygii	Cyprinidae	Pelecus cultratus	Ziege	DD	1			1	
Actinopterygii	Cyprinidae	Rutilus frisii	Black Sea Roach	DD	1				

Kingdom Class Order	Family	Scientific Name [Fish stock]	English Common Name(s)	2003 IUCN Red List	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
Actinopterygii	Percidae	Perca schrenkii	Balkhash Perch	DD	1				
Actinopterygii	Percidae	Stizostedion marinum		DD	1			1	
Actinopterygii	Salmonidae	Stenodus leucichthys		DD	1			1	
Gastropoda	Lymnaeidae	Myxas glutinosa	Glutinous Snail	DD	1				
Insecta	Nymphalid-ae	Hypodryas maturna	Scarce Fritillary	DD	1				
Insecta	Sphingidae	Hyles hippophaes		DD	1	1	1	1	1
Insecta	Sphingidae	Proserpinus proserpina	Willowherb Hawkmoth	DD	1			1	1
	Total Taxa	**167**			**117**	**36**	**55**	**87**	**71**

See following pages

Notes: 1 = Taxon present in country. There are 167 IUCN 2003 Red Listed taxa in the Central Asia region. 10 taxa are listed as Critically Endangered (CR); 22 as Endangered (EN); 61 as Vulnerable (VU); 4 as Near Threatened (NT); 2 as Extinct (EX); 2 as Extinct in the Wild (EW); 4 as Low Risk (conservation dependent) LR(cd); and 43 as Low Risk (near threatened) (LR(nt)) and 19 as Data Deficient (DD).

Appendix IV: Sample text of email sent to experts

Dear X

I have been contracted by Pedro Rosabel of IUCN to undertake a short World Heritage Regional Thematic Study on Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). As part of the review I am consulting widely with experts in and on the region.Georgina Peard, WH Project Officer at IUCN suggested that as a regional expert you might be able to offer a little of your advice to this project.

Central Asia currently has no natural or mixed (cultural and natural) WH sites. One of the aims of the review is to identify a limited number of key protected areas* in Central Asia (in principle 5 to 6 key sites -which could include serial sites) that may merit inscription on the World Heritage List.

For a site to be included on the World Heritage List, the World Heritage Committee must find that it represents "outstanding universal values", i.e. is of the very highest global quality. For sites nominated on grounds of natural heritage, this means that the site must meet one or more of the following criteria:
(i) be outstanding examples representing major stages of the earth's history, including the record of life, significant ongoing geological processes in the development of landforms, or significant geomorphic or physiographic features; or
(ii) be outstanding examples representing significant ongoing ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals; or
(iii) contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; or
(iv) contain 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.

I have prepared a table of sites that the States Parties themselves / various studies / experts have suggested might merit inscription (see attached Table) which includes the results of a Regional Workshop on WH Sites held in Almaty, Kazakhstan in December 2002. A total of 18 sites have been suggested for ther natural values alone. A further nine sites have been suggested as mixed WH sites. Most of these mixed sites appear to be very culturally-oriented sites with little if any outstanding natural value, with the exception of Issy-Kul in Kyrgyzstan.

I would be most grateful if you could spare the time to look through the list and based on your knowledge and experience select a maximum of five sites that you think might merit inscription as WH sites for their natural outstanding universal values. If you feel there are sites that have been overlooked, feel free to include them. Please do give brief justifications for your choice of site explaining what its outstanding universal value is and which criteria you think it qualifies under.

Any assistance you can give would be very greatly appreciated.

With best regards

Dr Chris Magin
Protected Areas Specialist

*N.b. In this review we are only considering sites that already have protected area status.

Appendix V: Summary / recommendations of Almaty meeting

PROCEEDINGS
OF UNESCO REGIONAL WORKSHOP

Possibilities of Nominations on World Natural and Mixed Heritage in Central Asia

National Academy of Sciences Almaty, Kazakhstan 16-18 December 2002

The UNESCO Regional workshop "Possibilities of Nominations on World Natural and Mixed Heri-tage in Central Asia" took place on 16-18 December 2002 at the National Academy of Sciences (Almaty).

The workshop was organized by the UNESCO World Heritage Centre with the support of the UNESCO Almaty Cluster Office and the National Commission of the Republic of Kazakhstan for UNESCO.

The workshop brought together representatives of governmental, scientific and non-governmental organizations from Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, experts of National Commissions for UNESCO, international organizations such as the UNESCO World Heri-tage Centre (WHC), the World Conservation Union (IUCN), the International Council on Monu-ments and Sites (ICOMOS), the World Wild Fund for Nature (WWF), Naturschutzbund Deutsch-land (NABU) as well as independent experts.

The goal of the workshop was to assist the Central Asian countries in harmonizing their respective Tentative Lists, in particular for natural/mixed heritage properties; prioritizing actions for the prepa-ration of new nominations; and co-ordinating, to the extend possible, transboundary cluster nomina-tions.

The workshop's tasks included consideration of the process of preparing nominations based on concrete properties in Central Asia, increasing awareness of the World Heritage Convention's goals and mechanisms, identifying priority needs of Central Asian region through implementation of the World Heritage Convention and improvement of the related regional strategies.

Further a brief information of the workshop's proceeding is given. (the agenda and the list of par-ticipants are enclosed).

16 December 2002

During the workshop the participants visited **the archaeological complex of Tamgaly** situated within 170 kilometres NW from Almaty.

The archaeological complex of Tamgaly includes numerous and various monuments dated the ep-och of Bronze up to the ethnographical period. The most valuable of them is the unique collection of petroglyphs. In 1998 the monument was included into Kazakhstan Tentative List for World Heritage Nominations as an object of mixed natural and cultural heritage since in addition to its eminent cultural and historical value it has such natural points of note as rare and endangered plants.

At the previous meeting of Experts for Global Strategy of the World Cultural Heritage in Central Asia organized in May 2000 by the UNESCO World Heritage Centre the Archaeological complex of Tamgaly was recognized as one of the priority objects of Central Asia to be included into the World Heritage List as a cultural landscape. Since 2000 UNESCO provides an active support for its conservation.

The visit to Tamgaly was included into the programme of the workshop as a practical component to demonstrate concrete measures undertaken by Kazakhstan on conserving potential World Heritage Properties as well as the process of preparing nominations.

17 December 2002

The second day of the workshop was held in accordance with the agenda. **Mr. Florent Le Duc, UNESCO Almaty Cluster Office,** introduced to the participants the goals and the tasks of the workshop.

On behalf of the Government of Kazakhstan Mr. Marat Essenbayev, Ministry of Foreign Af-fairs of RK, emphasized that the Central Asian region had abundant aged and rich heritage both natural, verbal and cultural.

The reporter confirmed that the Republic of Kazakhstan supported the initiative of UNESCO aimed at encouraging world's culture and original historical values. With the support of the UNESCO Ka-zakhstan carries out activities on investigating and preserving such ancient and medieval monu-ments as Otrar, Tamgaly etc. In 2001 two files of nominations were submitted to the UNESCO World Heritage Centre: (1) an architectural complex of Khodja Akhmed Yassaui and (2) a unique natural landscape "Steppes and Lakes of the Northern Kazakhstan" integrating two reserves of Kor-galdzhin and Naurzum.

The reporter noted that the Workshop was a topical one and would serve as an additional tool to achieve the goals set. The UNESCO continues to actively advocate cultural values and achieve-ments of all the countries including Kazakhstan, activities of its eminent representatives. It was out-lined that cooperation between Kazakhstan and the UNESCO is a mutually advantageous process owing to which Kazakhstan more contributes to the global development in the 21-century. During the visit of Mr. Koichiro Matsuura, UNESCO Director General, that took place in August 2001, the President of Kazakhstan noted that owing to international support provided the country could carry out scientific researches of the cultural heritage and the history of the past.

Mr. Essenbayev assured that with the active support provided by the UNESCO and the consecutive activity of the Central Asian countries the world society would be enriched with the valuable cul-tural heritage of the region.

Prof. Vladimir Berezin, Academician-secretary, Academy of Sciences of Kazakhstan in his statement underlined the unique character of natural landscapes in Central Asia. The countries' de-velopment is interrelated with the past historical heritage, and the civilization can not be reached without conservation of natural resources of the territory. Therefore investigation of the natural richness of the region is very important for the countries' further development.

The necessity and importance of this seminar was stipulated by the threatening tendency to lose natural monuments, elements and structures of archaeology, architecture, that is the vast heritage of universal value from the point of view of history, art, science as well as the people living in that re-gion. Therefore the initiative of UNESCO and the National commission will be an important step towards coordinated measures on identifying and conserving objects of natural and mixed heritage in the region.

The reporter noted the participation of Kazakhstan scientists in the preparation of the first nomina-tion on natural heritage "Steppes and Lakes of the Northern Kazakhstan ". The next natural property in the nomination of which the scientific society is going to be involved will be the Kazakhstani Al-tai region.

He also stated that the Kazakhstani scientists will take an active part in the activities on identifica-tion and conservation of new important objects and facilitate the process of the implementation of the UNESCO World Natural and Cultural Heritage Convention on this territory.

Mr. Feng Jing, Asia-Pacific Unit (UNESO World Heritage Centre), on behalf of the World Heritage Centre thanked all the participants for the support of the Convention and preparation of files for nominations. He also expressed his gratitude to the Government of Kazakhstan for the sup-port of the workshop, to all Central Asian countries, National Commissions for UNESCO, IUCN, ICOMOS, Academy of Sciences and other partners.

The reporter made a review of the implementation of the UNESCO Convention that in 2002 will celebrate its 30 anniversary. In his report he made a detailed analysis of the links between the nature and the human beings, existing natural, cultural and mixed monuments of the world, including Cen-tral Asian countries joined the UNESCO World Heritage Convention. The participants were given the information on the monuments endangered in Asia, south-east of Asia and the Pacific.

In the next part of his report the reporter spoke about activities undertaken in the indicated countries on conservation of cultural and natural heritage, on implementation of the World Heritage Conven-tion. He also spoke about the joint work of scientists and official authorities, about the Global strat-egy for balancing the Wold heritage List approved in 1994.

Mr. Feng Jing gave a short review of the activities carried out by the UNESCO regional offices in Almaty and Tashkent cities where a number of trainings were held.

Mr. Florent Le Duc gave a short information on the UNESCO activity in Kazakhstan, Kyrgyzstan and Turkmenistan. He mentioned the projects already implemented and planned on conservation of the historical and cultural monuments basing on the examples of Tamgaly and Otrar in Kazakhstan. He also noted that the activities undertaken by the experts from Kyrgyzstan on including the Issyk-Kul Lake into the World Heritage List as a cultural and natural landscape could be referred to as a good example. Speaking about the projects planned to be implemented in Kyrgyzstan the reporter noted that the project on conserving the ancient cities of the Chu valley would be probably realized in the nearest future with the support of the Japan Trust Fund. It was shortly mentioned about the support provided to the folklore crafts, trade fairs and exhibitions of craftspeople held, transfer and development of handicraft at schools, projects elaborated in mountain regions of Central and South Asia, particularly on ecotourism, as well as means for their implementation.

Ms. Georgina Peard, representative of the World Conservation Union (IUCN) greeting the participants introduced her organization and Mr. Vitaly Gromov, IUCN local coordinator. She spoke about the goals and tasks pursued by IUCN, about influence, support and assistance provided by the organization all over the world aimed at conservation of the natural integrity and diversity and sustainable use of natural resources based on an equity approach.

According to the World Heritage Centre's prescription the expert assessment is to be given upon the consideration of the nominated natural objects by the IUCN specialists. The organization is also to control the state of the natural heritage properties. Due to this the UNESCO World Heritage Centre recommend the countries – parties of the Convention to actively cooperate with IUCN.

Ms. Peard noted in her statement that at present activities on natural heritage conservation are strengthening, international cooperation is extended to provide sustainable development and estab-lishment of NGO network, interaction between the governments, attraction of donors and so on. However among the main barriers to achieve success remain inadequacy of the national legislation, insufficient financing and support provided to organizational process. Therefore there is a need in inter-sectoral integrated approach while preparing and implementing management plans, as well as providing long term support through funding innovation initiatives.

Prof. James Reap, International Council on Monuments and Sites (ICOMOS) said that since the adoption of the UNESCO Convention in 1972 three organizations such as the International Cen-tre on Conservation and Restoration of Monuments (ICCROM), the International World Heritage Union (IUCN), the International Council on Monuments and Sites (ICOMOS*)* provide consultative support to many countries on cultural and natural heritage. They are called to control the process of making the World cultural and natural heritage list as well as the state of cultural and natural prop-erties. In this view the World Heritage Committee recommends all the countries – parties to the Convention to cooperate with these organizations.

He also introduced the mechanism of activity of ICOMOS National Committees. A national com-mittee includes a number of experts who carry out technical assessment of the objects, facilitate qualitative expertise and experience sharing. The Republic of Kazakhstan is planning to establish the National Committee that will promote cultural and mixed properties to be included into the World Heritage List.

The reporter noted that many archaeological and historical monuments and cultural landscapes in Central Asia are not sufficiently presented for the UNESCO World Heritage List. The reporter also spoke about the educational programmes developed by their organization.

Ms. Tatyana Bragina, representative of the World Wild Fund for Nature (WWF) introduced to the participants the scope of activity of their organization, contribution of the WWF to the process of identification and promotion of the natural properties for nomination. Ms. Bragina gave a de-tailed information about the training held in 2000 on preparing documents for nominating Central Asian properties of world natural and mixed heritage into the World Heritage List. The training was conducted with the financial support of UNESCO World Heritage Centre and World Heritage Fund.

The result of the training was the preparation of a series of short nominations in Central Asia. Ac-tivities on preliminary selection of the most perspective unique natural monuments were carried out in all five countries of Central Asia. Each country prepared the necessary validating information (description) for two monuments to be submitted for nomination in accordance with the require-ments of the World Heritage Centre (as per approved format of nominations).

During the seminar the materials of different nominations were completed and several nominations in Turkmenistan and Tajikistan were actually ready to be submitted to the UNESCO. Using the ma-terials of the seminar the nomination of Naurzum reserve in Kazakhstan was prepared which later on with the efforts of experts from Kazakhstan, WWF and NABU was included into one nomina-tion “Steppes and Lakes of the Northern Kazakhstan”. At present the nomination is under consid-eration of the World Heritage Centre.

Mr. Til Dieterich, representative of NABU, greeting the participants set his hopes that the work-shop will serve as a basis for Central Asia necessary to facilitate further activity on nominating world heritage monuments. Taking into account the level of the workshop that brought together ex-perts and representatives of governmental, scientific and non-governmental organizations Mr. Dieterich noted that probably the workshop would develop concrete measures aimed at the prepara-tion of new World heritage properties.

Representatives of Kazakhstan (B. Bekniyazov, Ministry of Environmental Protection), **Uzbeki-stan** (E. Chernogayev, State Environmental Committee), **Tajikistan** (prof. N. Nigmatov, Academy of Sciences), **Turkmenistan** (À. Ibragimov, National Institute of Deserts, Flora and Fauna), **Kyrgyzstan** (Ì. Yeraliyeva, National Commission for UNESCO) greeted the participants and ex-pressed their gratitude to the organizers and wished fruitful results to the workshop.

When the goal and the tasks of the workshop were introduced and the programme approved **Mr. Feng Jing,** Asia-Pacific Unit, UNESCO World Heritage Center presented his report on the process of the World heritage conservation, nomination period, international support and requirements for the World Heritage conservation which change periodically.

The reporter highlighted the following important aspects:

- Application of the Convention on world cultural and natural heritage;
- Preparation of nominations;
- Conservation of nominated objects
- Emblems of the UNESCO and the World Heritage Centre which are the symbols of the Convention and reflect global values.

Mr. Feng Jing spoke about the Concept for Environment and Cultural Heritage Protection, about new amendments made to the Guide for implementing the Convention on World Heritage Conser-vation (10-14 June 2002, England). He also spoke about procedures on considering the files for nominations, about the schedule of annual meetings and the World Heritage List (at present about 730 objects in 125 countries are identified). The reporter gave a short information on the developed Global Strategy for Balancing the World Heritage List, activities undertaken in different countries on developing the Global Strategy Action Plan.

The participants got acquainted with the activity of the World Heritage Fund, procedures of receiv-ing financial support to prepare a file, the review of the consideration process for Asian countries, China and others. The participants received a detailed information on the preparation of the nomina-tions, criteria for assessing proposed natural and cultural objects, structure of a file, its format and related requirements.

In addition the reporter told the participants about establishing a new section in the Centre dealing with World heritage monitoring and characterized endangered objects in Asian region and urgent measures need for their improvement.

Ms. Georgina Peard, (IUCN) reported **on the process of assessing natural heritage nomina-tions**. In her report she spoke about the schedule frames for considering files of nominations in ac-cordance with the amendments to the Guide for implementing the Convention on World Heritage Conservation, about the role and activity of IUCN carried out for the implementation of the Con-vention, about criteria of the World Heritage and other issues concerning legislation, management plan elaboration, community attraction etc,. Ms. Peard acquainted the participants with the process of assessing natural objects, selecting experts and the activities planned to be carried out by the or-ganization in the future.

Dr. Zbig Karpowicz's (IUCN) report was accepted with great interest where he described **the cur-rent situation of the process of identifying potential objects in Central Asia** proposed to be in-scribed into World natural and mixed heritage list. In his statement he underlined the necessity of applying the National Strategy for Biological Conservation, effective approach and assessment to identifying properties for nomination.

A full characteristic of bio-geographical zones, biodiversity of Central Asia, changes in ecosystems and information about natural heritage tentative lists of each country was given. The reporter under-lined the main problems of realization the world heritage activities and suggested a way-out through institutional support, operational management, good coordination and correct expertise. He also mentioned a number of international donors and organizations for developing cooperation.

Prof. James Reap (ICOMOS) informed the participants about **the process of assessing cultural heritage and identifying potential objects in Central Asia** for the World Cultural Heritage List. Prof. Reap acquainted the participants with the activity, role and goals pursued by ICOMOS, the process of assessing the proposed files and other important measures on promoting and conserving cultural monuments. The reporter underlined the big potential of the Central Asian countries in nominating natural and cultural monuments. The criteria for identifying properties for nomination and the categories of including nominations into the World Heritage List were of great interest for the participants.

Ms. Tatyana Bragina (WWF) and **Mr. Til Dieterich** (NABU) made a joint **presentation of the activity carried out by WWF and NABU, as well as of the nomination «Steppes and Lakes of the Northern Kazakhstan»** (Sary-Arka). The reporters gave a full description of the presented nomination «Steppes and Lakes of the Northern Kazakhstan» (Sary-Arka). The nomination was prepared with the aim to conserve the unique nature of Eurasian area, though from the very begin-ning the nominations were prepared separately on two natural reserves of Naurzum and Korgaldz-hyn.

Further taking into account the location of the reserves in one physical and geographical zone and existence of the most important global flyways of water birds, that is Central Asian and Siberia and South Eurasia, these nominations were integrated into one named «Steppes and Lakes of the North-ern Kazakhstan». In addition both territories have similar strategic principles for protection and management. The territory is represented by a specific dry steppe, which cannot be met beyond the boundaries of Kazakhstan, and a range of micro-landscapes unique in the world. The vastest water area of steppe zone lies on the territory of the proposed nomination - Tengiz-Korgaldzhyn lakes (2 600 êì^2), that has no equal flyways.

They also shared experience on the preparation of the file, problems they had to overcome while preparing aerial and space images and cartographic materials. They spoke about the process of co-ordinating the issue concerning the extension of the territory of nomination with the local authority. The information was accompanied by the fragments from the film, slides and other visual aids.

Presentation of Kyrgyz Republic was made by Ms. Maya Yeraliyeva, representative of the Na-tional Commission of Kyrgyzstan for UNESCO and **Mr. Djumamadel Imankulov**, Director of Research project bureau "Kyrgyzrestoration".

Ms. Yeraliyeva spoke about the activities implemented on heritage conservation and noted the country's willingness to strengthen its capacities of decision-making in conservation, long-term protection, presentation and development of potential world heritage properties of Kyrgyz Republic.
In this regard an important effort was the national seminar "Increasing awareness on the UNESCO Convention for world heritage protection and conservation of cultural and natural heritage of Kyrgyz Republic" held on

September 11-13, 2002 (Bishkek). The seminar was organized by the National Commission for UNESCO in close cooperation with the UNESCO World Heritage Centre and with the support of the World Heritage Fund.

At present there are no monuments in Kyrgyzstan inscribed into the World Heritage List. In 2000 six significant monuments of Kyrgyzstan were included into the UNESCO World Heritage Tenta-tive List:

1. Issyk-Kul – as a cultural and natural landscape;
2. Petroglyphs of Saimaly-Tash;
3. Cultural and natural landscape – Suleiman-Too;
4. Architectural and archaeological complex of Shakh-Fazil;
5. Uzgen architectural and archaeological complex;
6. Tower of Buran and other sites of ancient settlements situated on the Great Silk Road of the Chu valley.

The reporter noted that the situation with registration, conservation and usage of the national cul-tural heritage is a complex one. She also reported about the measures planned to guarantee adequate conservation and management of world heritage potential objects at the official level.

Mr. Dzhumamadel Imankulov made the presentation of the nomination **"Issyk-Kul as a cultural and natural landscape"** which is under preparation now. He gave a full description of the object that included a number of specially protected areas. The territory of Issyk-Kul is the natural habitat for 1500 species of vascular plants, 54 mammalian, 267 birds, 11 reptiles, 4 amphibians, 31 fish, more than 30 invertebrates and about10 vertebrates – endemic and sub-endemic of Tien Shan.

Among the plants *Achnatherum splendens, Ephedra equisetina, Leontopodium sp*., aconite, spruce of Shrenk, sea-buckthorn, barberry and others are found. Among the fauna representatives living in the hollow snow leopard, Siberian ibex, roedeer, Tian Shan white-clawed bear, beech-marten, *Aquila regia, Aquila nipalensis*, erne etc., are registered. In winter time within the water area about 33 waterfowls *such as Pelecanus onocrotalus and Pelecanus crispus, Phoenicopteri, Ñ. cygnus and Cygnus olor* etc. inhabit here.

In accordance with the rules of the Ramsar Convention on Wetlands the lake was acknowledged to be a wintering place for waterfowls of global significance. Among all the lakes in the world situated 1200 meters above sea level the Issyk-Kul lake takes up the second place in the area extent after the Titikaka lake in South America and in water volume and in depth it is first lake in the world. Issyk-Kul is the largest frost-resisting lake in Central Asia. A vast reservoir (with the volume of about 1738 cubic km and salinity of 6 pro mil) and the mountains rising in the sky form a complex com-bination of landscapes. Within the lake's area various archaeological monuments namely rock carv-ings of the nomads and highly artistic articles made of bronze can be found.

With the support of the World Heritage Centre the compiled file for the nomination is considered to have natural and cultural features and therefore will be nominated as an object and mixed heritage. The participants were demonstrated fragments from the nomination, slides with unique landscapes, natural monuments, mountains and the monument named "The Broken Heart".

By the end of the presentation the participants were asked a number of questions concerning the legislation of Kyrgyz Republic and problems with its implementation.
Prof. N. Nigmatov (Tajikistan) noted that the work did not demonstrate the phenomenon of Issyk-Kul, and from etho-cultural point of view former aborigines of the zone besides "Sakas" (Iron Age inhabitants of Indo-Iranian origin) should be indicated. The reporter replied that the historical aspect should be coordinated nevertheless Issuk-Kul was a phenomenon: (1) a secluded historical and cul-tural phenomenon and (2) a natural phenomenon.

The works of the Republic of Tajikistan were presented further in accordance with the agenda.

Mr. Latif Latifi, National Commission for UNESCO, gave a brief information on the preparation of the file of "Yagna Dara" object. UNESCO supports the conservation of this monument. In addi-tion 4 monuments of nature and culture are inscribed into the World Heritage Tentative List. Among them are:

The state reserve "Tigrovaya balka" which covers the area more than 50 thousand hectares. The place is the last of the remained in the world reserves of the unique communities of tugai flora and fauna. The reserve

is the habitat of more than 60 species of rare and endangered invertebrate ani-mals in Tajikistan and Central Asia. Populus and Elaeagnus species represent the wood vegetation on the territory.

The Tajik National Park is a unique region for conserving valuable landscape complexes, rare and endangered species of flora and fauna, natural, cultural and historical monuments; developing and regulating tourism. About 120 endemic species as well as endangered animals inhabit on this terri-tory. There are a lot of natural, cultural and historical monuments, hot wells and mineral springs, an ancient site of settlement named "Bozordara", galciers named after Fedchenko, Medvezhiy, as well as the highest peaks named after Somoni and Lenin. The Tajik National Park is the most high-level national park in the world. The property for nomination is characterized by the following criteria:

- Existence of natural ecotopes important for biodiversity conservation including species of universal value from the point of view of science and conservation need;
- An example of significant environmental and biological ecosystems' evolution and devel-opment, including flora and fauna;
- Availability of landscapes of unusual beauty and aesthetic significance;
- A unique evidence of cultural traditions some of which are already lost but some still exist;
- Preservation of customary character of planning exterior intrinsic to an ordinary traditional way of life.

Prof. Numan Nigmatov spoke **about the cultural monuments of the republic**. About 2000 of monuments include architectural, archaeological, mixed natural and cultural objects. 22 monuments of Tajikistan are phenomenal. There was a suggestion to inscribe into the Tentative list more 15 monuments. During the discussions the questions concerning the area of cultural monuments out of the total territory of the Republic (4,2%), nominations considered by the UNESCO, benefits of transboundary properties, improvement of cooperation with state bodies of different levels were asked.

Mr. Feng Jin, chairman of the sectional group, assured that the Tentative list was not closed yet and through the Governments the countries could increase the number of the objects proposed for inclu-sion into the World Heritage List. In addition the World Heritage Fund's resources could be used for preparing the nominations. Therefore the preparation of the tentative list for natural and cultural properties could be continued. The ICOMOS representative noted that the organization could be involved into activities on identifying objects for World Heritage nominations as a group of experts.

December 18, 2002

The second day of the workshop started with the **presentation of Turkmenistan** made by **Mr. Akmukhamet Ibragimov**. The participants were very interested in the report and the pictures and slides presented. Mr. Ibragimov gave a short review on all the nominations of natural properties in Turkmenistan:

Sunt-Khasardinsky reserve includes (or included recently) 85% of all rare mammals of Turk-menistan, about 1/3 of which are endemic and sub-endemic. The fauna of bats is very rich, it in-cludes 20 species, 7 of which are inscribed into the Red Data Book of Turkmenistan. The Red Data Book of Turkmenistan includes 23 insects (15 species of which were registered in the Red Data Book of the USSR), 1 species of amphibious, 4 creepers, 9 birds and 15 mammals.

The experts of the reserve registered about 89 birds making nets. Southwestern Kopetdag particu-larly the territory of the reserve are the fixed northern wintering places of many passerines due to the open and woody ecotope.

Badkhyz is considered to be a place of legends and winds. The territory is characterized by the unique natural complexes: relic pistachio savannas, ancient extinct volcano, brackish, rocky, bad-land, sandy and other types of deserts and semi-deserts, rich biodiversity, a great number of en-demic rare and endangered plants and animals. The monuments of the quaternary of the Earth's his-tory are also unique. Finds of middle-eocene flora, shells of ostrich eggs, fragments of small mam-mals' skeletons and lizards' skulls in sandstones (top pleocene, akchagyl) prove the fact that once there were conditions favourable for genus fauna and ancient

flora. The scientists' data show that in the middle and late Holocene the specific compound of mammals remained unchanged despite the speeding dryness and climate continentality.

A compound of mountain, semi-desert and desert species characterizes the fauna of Badkhyz. About 350 of vertebrates and 1300 of invertebrates characteristic of the transition zone of desert, semi-desert and arid hilly landscapes inhabit on the reserve's territory. Among them local endemic as well as endemic of Central Asia are met – badkhyz ground beetle, cracker of Kryzhanovsky, badkhyz nocturnal ground beetles, tuberous gecko, snake-lizard of Chernov's, onager etc.

Kugitang is the land of dinosaurs and caves of valuables. Kugitang is an integral natural complex with its components and interrelations. The integrity of the nomination is enhanced owing to the vast desert adjoining the mountains, which prevents the blending of flora and fauna elements from other mountains. It makes for the huge territory of natural complexes of the Kugitang mountains among other mountain regions of Turkmenistan. Many species that inhabit on the territory nomi-nated are registered in the Red Data Book of Turkmenistan and MANP (about 100 endemic species and subspecies of plants and above 20 species of animals including markhor, Tien Shan European red bear, striped hyena, caracal lynx, leopard, Turkestan lynx, goitred gazelle, Bukhara mountain sheep etc.).

The reporter also underlined that all the natural properties are monitored every year; flora and fauna of the territories are stable. The problem is that there is a lack of financing for map preparation.

Mr. Ibragimov also suggested that the procedures of file compilation should be simplified and UNESCO could provide permanent consultative assistance.

During the discussions it was recommended:

By Ms. Peard that the experts (not necessarily from IUCN) came to assist on-site in preparing nominations. By Mr. Feng Jin to hold annual sessions of UNESCO in Central Asian countries and if supported by the Governments to include them into UNESCO schedule of activities.

Mr. Ibragimov (Turkmenistan) supported this idea.

Prof. Nigmatov (Tajikistan) believes that it is necessary to attract not high-paid occasional experts. The experts should be qualified and able to coordinate the activity on-site that is in the immediate region of the nominated properties.

A representative of Kazakhstan Mr. Bekniyazov suggested that UNESCO studied experience of the UN Convention to Combat Desertification where Central Asia could act as one component.

The chairman of the meeting was interested in the legislation of Turkmenistan and whether there was a need for its improvement. Mr. Ibragimov replied that environmental laws are developed by the specialists engaged in nomination activities therefore the preparation of the legislative basis goes on in a proper way.

The presentation of Uzbekistan was made by Mr. Rakhmatulla Salikhov and Mr. Eugeniy Cher-nogayev.

Rakhmatula Salikhov spoke about environmental laws and state programmes developed and im-plemented, about the priority cultural and natural monuments, approved by the governmental agen-cies, about the procedures of their agreement and concrete measures undertaken to conserve the monuments.

Eugeniy Chernogayev presented two objects of natural heritage – Chatkalsk state biosphere reserve and mountainous Gissar with the appropriate visual aids which were accepted with great interest by the participants of the workshop.

Chatkals reserve includes hilly and mountainous zones extending up to dividing ridges. This pro-vides a long-term conservation to these zones and their flora and fauna. Selecting the territory for the present reserve less transformed sites preserving non-disturbed landscapes and vegetative cover were given preference to. The reserve's territory have necessary conditions for permanent habita-tion of rare animals the number of which remains more or less stable as well as associated species of plants and animals.

Mountainous Gissar is represented by the remnants of geological Devonian period, which are unique for Eurasia. The territory combines protected natural complexes and objects of cultural heri-tage. Gissar reserve is notable for many-tier geological structures. The most ancient structural stage includes layers of crystal pressed back to lower and middle Proterozoic metamorphic complex of southwestern spurs of Gissar ridge. The second structural stage is represented by metamorphic for-mations of Silurian period developed on the southern slopes of the Gissar ridge. Volcanogenic and volcanogenic-sedimentary rocks of coal bed characterize the third layer. The fourth layer includes sedimentary formations of mesa-Cainozoic group of measure.

The present study of the Devonian Zinzilban in section enabled the International subcommittee for Devonian system stratigraphy believe that it could be referred to as a stratotype of lower boundary Em's layer. The proposed territory enters West-Gissar district of Afghan-Turkestan geobotanic province of Iran-Turkestan region belonging to Old Mediterranean sub-realm. Here the top zone of vegetation is found. The area is a unique natural complex including all the varieties of western ex-treme end of Pamir-Altai mountain ecosystems.

Due to absolute protection regime all characteristic and rare species of flora and fauna were con-served and at present their number is stabilized. The total amount of vascular plants makes up ac-cording to certain assessment no less than 800-900 species. As per the assessment made by the spe-cialists the species diversity of insects' amounts to 3000. The territory of the nomination has impor-tant objects of cultural heritage: 1) in the north of Gissar reserve on the mountainous slopes of Khazret-Sultan there is a pilgrimage place of Moslem Saint Khodzhy-Dauda (Khazret-Sultan) known beyond the limits of Uzbekistan; 2) in the south of the reserve in the value of the Kalasai river there is a world-known cave of Amir Timur (a natural cavern 860 meters long).

There was a suggestion from the representatives of Uzbekistan to make a joint transboundary terri-tory with Tajikistan, since Zaravshan reserve borders a sanctuary of Tajikistan with rare and endan-gered species of animals, such as Bukhara deer and others. It would strengthen joint nature protec-tion measures.

The presentation of the Republic of Kazakhstan «On the implementation of the Convention on world cultural and natural heritage protection in Kazakhstan» was made by the chief of the admini-stration for perspective planning and international cooperation, Ministry of Environmental Protec-tion, **Mr. Bulat Bekniyazov**. He noted that starting from 1998 activities are undertaken on includ-ing several protected areas and objects into the World Cultural and Natural Heritage List.

At present the preparation of the file for the first natural monument of Korgaldhzyn (prepared with the support of NABU) and Naurzum (prepared with the support of WWF) reserves integrated in one nomination **"Steppes and Lakes of the Northern Kazakhstan"** to be inscribed into the World Cultural and Natural Heritage List is completed

The reporter gave a short description of the natural objects included into the Preliminary list: (1) Ste reserve of Aksu-Zhabagly, (2) Northern Tien Shan – on the basis of Ile-Alatau state national natural park, (3) State national natural park "Altyn-Emel"; the slides of these unique nature were demon-strated.

To the participants' attention the information on the planned transboundary biosphere territory in Northern Caspian region (Kazakhstan, Russia) along the northern sea-shore including deltas of the Volga and Ural rivers was given. Recently MAB National committee of Russia approved this idea.

Also the reporter showed the slides of the planned biosphere territory in the Altai region. The Altai region covers transboundary territories of Kazakhstan, Russia, Mongolia and China and is the unique place of biological and landscape biodiversity in Central Asia. In this view by the efforts of the transboundary countries – Kazakhstan, Russia, Mongolia and China -it was decided to con-serve biological and landscape diversity of the area though establishing the transboundary biosphere territory – the Altai bioreserve.

Mr. Bekniyazov confirmed the readiness of Kazakhstan to consider the further possibility of ex-tending the network of "Altai Golden Mountains" with the inclusion of the all transboundary pro-tected territories of Altai mountain system into UNESCO World Natural Heritage List.

The representative of Kazakhstan also answered the questions in the inquiry from concerning the role of the national legislation, where he underlined that all the territories for nominations were in-cluded into state reserves and national parks, which referred to specially protected areas of the re-publican significance.

It is the property of the Republic of Kazakhstan and on the basis of the Law “On specially protected areas” they are subordinated to the state implementing agency – Committee for forestry, fishery and hunting of the Ministry of Agriculture of the Republic of Kazakhstan. The land is given to reserves and national natural parks for perpetuity.

Also basing on the experience of the prepared file on natural heritage the assessment of the activi-ties carried out by the National Committee for UNESCO, ministries and local administration was made. It was emphasized here that the Ministry of Agriculture performs state management and co-ordination of the activity of nominated reserves and national parks as well as the process of assign-ing lands for their establishment.

During the preparation stage of the full file for nominating the natural objects the selection of the territory, establishment of the regime, development of management plans are made. This is also dis-cussed and to be agreed with the local authorities.

Mr. Bekniyazov also noted that the process of file preparation for nominating natural objects of the Republic of Kazakhstan was carried out with the active participation of the scientists from academic and other research institutions including the Institute of Botany, Institute of geography, Institute of zoology, Korgaldzhyn and Naurzum reserves.

The participants of the workshop were given the information concerning the contribution and the role of NGOs/ local communities in the activities.

The reporter also underlined the issue of including the main ecosystems into the content of these nominations and gave the information on the transboundary territories under consideration with respect to Uzbekistan and Kyrgyzstan namely (1) «Aksu-Zhabagly» reserve, involved into the GEF project area on biological conservation of the western Tien Shan and (2) Ile-Alatau national park bordering Kyrgyz Republic.

The reporter emphasized the importance of identifying objects of mixed natural and cultural heri-tage. To date among the objects proposed for the nomination there are several sites of mixed cul-tural and natural heritage. They are the nomination of «State natural reserve of Aksu-Zhabagly», «Cultural landscapes of Ulytau», «State national natural park of Altyn-Emel».

The representative of Kazakhstan underlined the need in international support since financing allot-ted by the Government is insufficient to carry out activities on the development and maintenance of the heritage sites properly.

From Kazakhstan there was a suggestion:

- To pay attention to abiotic environment i.e. geological monuments of nature;
- Together with Uzbekistan and Kyrgyzstan develop a joint nomination Northern and West-ern Tien Shan (information and experience sharing);
- Identify regional priority and develop a strategy by priorities.

Mr. Fishman (Kazakhstan) made the presentation on the geological monuments of the republic – candidates to be included into the World Heritage List. He noted that protection of the animate na-ture and the abiocoen was a very interesting topic for the world community, he also suggested that the Convention should have an article on bio- and geo-diversity protection.

Ms. Peard (IUCN) answered this suggestion that there was a new article in the convention on pro-tecting geological monuments. At present a review is being prepared n London concerning that is-sue. In 1996 IUCN prepared a report on the geological objects and dynamics of the geological monuments’ destruction. At present the World Heritage List has several objects of geological ori-gin.

Prof. Nigmatov (Tajikistan) noted there should not be a disassociation between the nominations.

Mr. Zbig Karpowicz chaired the second part of the session. During it the questionnaires were discussed and filled concerning the evaluation of the results and general conclusion on the national presentations.
The presentations of all the counties were interesting and important. All the items of the question-naire were discussed in detail.

There was a suggestion about simplification of the legislation of Kyrgyz Republic, necessity to de-fine coordination methods, establish coordination mechanism between the agencies, create a Na-tional Cultural Heritage Centre;

Kazakhstan gave positive replies to all the items of the questionnaire;

It is necessary to increase the coordinating role of the National Commission in Tajikistan;

Turkmenistan has more information on the cultural objects than on the natural ones.

On the whole the National Commissions' activity in the region could be assessed as satisfactory.

Mr. Bekniyazov (Kazakhstan) thinks that there is a need in permanent consultative assistance from UNESCO.

ICOMOS suggested holding a number of training seminars;

Ms. Bragina (Kazakhstan) noted the high scientific potential of the region and necessity to involve it into consultation process. She also said about the necessity to work out the mechanism of pay-ment to the experts;

The representative of Tajikistan suggested that the experts should be involved into the technical im-plementation of the projects;

Representative of Turkmenistan (Mr. Ibragimov) suggested to hold 1,3,6 months training courses at the completion of which the participants would be granted certificates so that they could work on the nominations;

Representative of Kazakhstan (Mr. Bekniyazov) noted the necessity of assistance in preparing files, visiting sites of global significance for making comparative analysis;

Representative of Tajikistan (Mr. Nigmatov) supposed strengthening of the professional skills and and authority of the National Commissions and UNESCO and increasing the level of the National Commissions' members to the experts';

Mr. Ibragimov (Turkmenistan) thinks that it is necessary to increase the level of the specialists through holding courses and seminars, systematically deliver the information to all stakeholders, that is to inform not only though the state structures and NGOs but though the National Commis-sions too. This will facilitate the efficiency of their activitiy.

Mr. Imankulov (Kyrgyzstan) underlined the need to attract youth, schools and the local population, since there were problems with training specialists.

Further the report of Mr. Vitaly Gromov, IUCN representative in Central Asia was delivered. He spoke about the activities undertaken to improve legislation basis on specially protected areas in Central Asia. These measures laid the basis for the developed project proposal «Development of Programme on specially protected areas» and in the next year this project is expected to be imple-mented.

Recommendations of the regional workshop

The chairman of the section **Mr. Zbig Karpowicz** offered the participants besides filling out the questionnaires to discuss the draft Recommendations of the regional workshop and note the main issues raised during the workshop including advantages of transboundary and regional cooperation, creation of protected interstate zones for natural and mixed objects, development of a regional ap-proach, implementation of the general action plan, sharing experience.

The participants vitally discussed the draft of Recommendations and made additions and changes into the text of recommendations (enclosed).

The participants noted the necessity to plant nature protection projects, develop cooperation be-tween different stakeholders. The Preliminary lists of natural and mixed objects should be re-considered and it is necessary to organize national thematic trainings and identify indicators for monument conservation.

By the end of discussing the recommendations a number of proposals were made:

«To re-consider the preliminary lists – in this view there is a great deal to do. The proposed object must have a chance to become world heritage. Therefore we need to think it over before their re-consideration» (Dietrich, NABU);

«New lists should be made, and an item on "animate nature and abiocoen» (Fishman, Kazakhstan);

«To re-consider and complete the preliminary list, prepare an Instruction on the implementation of the Convention for the National commissions, coordinators and the expert group» (Ablaikhanova, Kazakhstan, adopted, item.2 b)

item 3 (b) add the word "clarify" (Imankulov, Kyrgyzstan)

item 4 water and glaciers reserves etc.. paragraphs A,B,C should not be included into the final document (Ibragimov, Turkmenistan)

as for item 5, to clarify the expression «will be integrated» as «innovation initiatives» (Imankulov, Kyrgyzstan)

The participants disputed over about using the term "Silk way" in the recommendations (item 7). By the end of the discussions the participants came to the conclusion that UNESCO would consider the issue in detail and suggest more acceptable variant.

Finally the participants of the workshop acknowledged the necessity to re-consider and complete the preliminary list for World heritage within their countries, arrange the process of preparing nominations on a high professional and effective level. The participants also agreed to come to a joint Central Asian approach to the World Heritage Convention though establishing a coordinating body.

The participants emphasized the necessity of planning nature protection projects, developing coop-eration between different stakeholders, envisaging thematic trainings at the national level and iden-tifying indicators for monument conservation.

The meeting of Kazakhstan representatives and IUCN

During the seminar the Kazakhstan representatives met with IUCN.

The cause of the meeting was a letter–request from IUCN as a result of Les Molloy and Rolf Hogan's visit, IUCN experts, to Korgaldzhyn and Naurzum reserves.

During the visit the experts suggested that the nomination "Steppes and lakes of the Northern Ka-zakhstan" change for some other that would characterize the Kazakh steppe, for example «Sary-Arka» etc.

The experts had three questions concerning the nominations:

1. Guarantee that the Nura river flows into Tengiz-Korgaldzhyn lake systems;
2. Increasing the status of Sary-Kopa sanctuary, as a reserve otherwise it should be excluded from the nomination;
3. Integrating Tersek and Sypsyn areas into Naursum reserve.

Solution of these of issues will be heard by IUCN members approximately in March-April 2003, but Kazakhstan should speed up the official reply to the above-listed questions.

The official representative from Kazakhstan Mr. B. Bekniyazov (MEP RK) gave an irrefragable answer on all these questions:

1. Withdrawal of Nura rivers's flow from Tengiz-Korgaldzhyn lake systems is not envisagedd since Astana will receive water next year though the channel Ishim-Irtysh as well as though Vasilyev water reserve nearby. As per forecasts about 500 thousand people will live in As-tana and such water inlet is considered to be sufficient. Also there are investigated extra sources of fresh water to supply Astana

with drinking water. In this regard the issue of water export from Nura river to Astana is out of the question and Tengix-Korgaldzyn lakes are go-ing to have a permanent supply.

2. The issue of giving Sary-Kopa sanctuary the status of a reserve is not an esy one and need some time. According to the Law of the Republic of Kazakhstan “On specially protected ar-eas” the sanctuary is not the state propriety but belongs to the private sector with the condi-tion of temporary possession. The natural resources are used in a sparing regime. To make the sanctuary a reserve it should be first transferred to the state ownership. Also the territory will require additional financing which is a problem nowadays. We hope that by February 2003 the Ministry of Environmental Protection and Ministry of Agriculture of the Republic of Kazakhstan will come to a joint decision on this question.
3. As for Tersek and Sypsyn, this issue ca be solved and I can guarantee it but the process will take some time.

Mr. Bekniyazov assured that by February 2003 IUCN would have an official reply from the Gov-ernment of RK on all these questions.

Resume

UNESCO regional workshop **«Possibilities of Nominations on World Natural and Mixed Heri-tage in Central Asia» took place on 16-18 December 2002 in Almaty.**

The workshop was organized by UNESCO World Heritage Centre with the support of the UNESCO Almaty Cluster Office and National Commission of the Republic of Kazakhstan for UNESCO.

As a result of the workshop a detailed information concerning the nominations in Central Asia for the World Natural and Mixed Heritage was received, particularly:

- agreement on the preliminary lists of natural and mixed heritage;
- establishment of priorities while preparing new heritage properties;
- coordination of nominated properties situated on the transboundary territories.

The participants of the workshop acknowledged the necessity of re-considering preliminary lists of world heritage monuments, as well as:

- creation of the nomination preparatory process at high professional level;
- development of Central Asian regional approach to the World Heritage Convention.

During the workshop the five Central Asian Countries made the presentations on the state of the nominations of World natural and mixed heritage and implementation of UNESCO World Heritage Convention.

The workshop also helped the World Heritage Committee to define the priority needs of Central Asian region while implementing the World Heritage Convention and to improve related regional strategies.