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World Park Special Status on Some Representative Protected Areas of Mongolia

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I. Introduction

North East Asia is a sub-region of Asia comprising five countries: the People's Republic of China, Japan, Republic of Korea, Mongolia and Democratic People's Republic of Korea (UNEP, 2004). It has the highest population of all the sub-regions with a total of 1.5 billion people (http://ru-world.net/north-east-asia/). All five countries are unique in terms of their natural landscape, cultural heritage and biodiversity. For example, Eastern China is bound by the Yellow Sea and Western China has major mountain ranges, notably the Himalayas. Mongolia comprises the largest unfenced grassland steppe in the world and Gobi Desert, which is the second-largest desert after the Sahara. Korea forms a peninsula that extends from the Asian mainland and is surrounded by the Sea of Japan and Yellow Sea. Japan is an island country with unique landscape and biodiversity as well.

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Compared statistics (UNEP-WCMC, 2016) in information about protected areas (PAs) and their activities in North East Asian countries are shown in Table 1. Protected Areas Management Effectiveness (PAME) was very similar between the four countries except for the Democratic People's Republic of Korea. Japan and China have more national and international protected areas, whereas there were less protected areas or a lack of data communication in the Democratic People's Republic of Korea. Comparing the percentage coverage of protected areas, Japan and China is leading the terrestrial (19%) and marine (4%), respectively.

Through the East Asian-Australian Flyway Partnership, countries in North East Asia collaborate in protecting migratory birds (see more information in http://www.birdlife.org/asia/programmes/migratory-birds-and-flyways-asia). This is an example of how countries can unite under a joint goal.

Table 1. Protected Areas in North East Asian Countries

Countries	Number of National Protected Areas	Number of International Protected Sites	Coverage of Protected Areas %	PAME %
Mongolia	89	19	17% terrestrial	53.2
China	2066	88	17% terrestrial 4% marine	59.1
Japan	4845	55	19% terrestrial 1% marine	50.9
Republic of Korea	560	23	8% terrestrial 1% marine	58.5
Democratic People's Republic of Korea	31	3	2 terrestrial 0% marine	Not possible to assess

Source: UNEP-WCMC (2016). Global statistics from the World Database on Protected Areas (WDPA). Cambridge, UK: UNEP- WCMC.

During the Rio Summit in 1992, Mongolia declared that the country is aiming to designate 30% of its territory as protected areas through Parliament Resolution No-43, 1993. Based on the six IUCN basic categories (Dudley, 2008), different countries choose and adopt their own appropriate categories with some adjustments. Mongolia officially has four different categories for protected areas such as Strictly Protected Areas, National Parks, Nature Reserves and Natural Monuments. Apart from that, new sites are emerging sites that are starting to attract international level regard through their own unique characteristics to the World Heritage, Biosphere Reserve, RAMSAR conventions, South East Asian rare animals and bird conservation network, North East Asian Crane Site Network and Global Transboundary Protected Areas Network.

Internationally recognized sites include the following: two World Heritage Sites, six UNESCO-MAB Biosphere Reserves, 11 Ramsar Sites-Wetland of International Importance, two Trans-boundary Protected Areas, the East Asia Endangered Animal & Bird Conservation Network and the North East Asia Crane Conservation Network. Six trans-boundary parks with Russia and seven trans-boundary parks with China are planned to be established (Oyungerel, 2010). World Heritage-Uvs Lake Depression has been approved as a transboundary protected area (Kurbatskaya *et al.*, 2013). Furthermore there are six potential transboundary areas with Russia, seven potential transboundary areas with China under the process of developing protected area justification and proposals (Oyungerel, 2005).

Since the 1990s, the area of Mongolia designated as protected areas has expanded significantly, to the current total of 90 protected areas which now covers 26.2 million hectares, or 17.5% of the country's surface, according to a report by the "Strengthening the Protected Area Net¬work" Project MON/10/302 by UNDP/GEF of 2012. The Government of Mongolia and Ministry of Nature Environment and Tourism (MNET) have a target to protect 30% of the land area of Mongolia. Mongolia is attempting to bring up its national parks, which cover 44.5% (11.4 mill hectare) of all protected area in Mongolia, to the international standard level of type II category of IUCN. Based on this, 30 sites recognized as international natural parks can apply and potentially meet the standard criteria.

Worldwide, other countries choose their own special sites based on several criteria, such as being representable as historical classic objects, with biological evolution evidence, ongoing geological processes, unique natural phenomenal landscape, significant geomorphic or physiographic features and exclusive sites with rare wildlife and plants which possess outstanding universal value from the point of view of science or conservation (Deguignet *et al.*, 2014). World Heritage Sites are conserved under the World Heritage Convention worldwide (Deguignet *et al.*, 2014), and national level sites are potentially conserved locally while attracting visitors from other countries and advertisement. Mongolia has an exceptionally wide potential of defining special protected sites while attracting international tourism with its nomadic lifestyle and preservation of pristine landscape with ancient historical sites. Mongolian identified protected areas are of high value from historical and biological perspectives, and they can be potentially brought up to international level recognition worldwide by certain selected criteria.

Mongolian national parks accounted for only 0.48% of the total sites covered by protected areas and this indicates that historical and cultural heritage have less protection (Oyungerel 2016, unpublished data). A special World Park status can be understood as including mandatory national parks but could also include specific areas where other protected categories exist. Because of their global importance, valuable places based on their own goal are protected by the PA network in accordance with directions. For example, some of the world's few remaining grassland ecosystems in the Eastern Mongolian protected areas are protected, while on the northern border in Central Asia some aquatic desert ecosystems are associated with a unique environment to create a small amount of natural places.

World historical monuments and the Emperor Chingis' own identity of Mongolia are seen in such sites as Khan Khentii, Onon-Balj National Park, and Altai Tavan Bogd National Park, the world's major center of fresh water and permafrost glaciers, while camels and the Gobi bear of Great Gobi SPA, among other species on the international Red List of Threatened Species, are widespread. Eastern Mongolia is also home to the world's endangered species such as gazelle. The only proven large-scale Hunnu grave site in the world is in Mountain Noyon.

II. Protected Areas of Mongolia

Protecting places means preserving and conserving for the future and using them in the future when necessary. Reserves are designated to maintain biodiversity conservation, use natural resources wisely with certain flexible regulation, and allow reduced population of plants and animals to regenerate (Oyungerel, 2004). On other hand, it is nationally and globally important places that provide vital habitats for migratory birds, and other species, and it is aimed to restore natural landscape and allow use of natural resources sustainably over a long time. 20% of global terrestrial land is supposed to be designated as reserves that aim to conserve the pristine state of natural conditions for more sustainable production and sustainable development in the future (Helliwell, 1976).

Mongolia has four types of national and three types of international protected sites, whereas there are 13 types of national and three types of international protected sites in the Republic of Korea (Table 2).

Table 2. Comparison of protected area type numbers of North East Asian countries.

Countries	Number of different types of national protected areas	Type of international protected sites1
Mongolia	4	3
Republic of Korea	13	3
Democratic People's Republic of Korea	5	1
Japan	15	3
China	8	3

Source: International protected areas: World Heritage Site, UNESCO-MAB Biosphere Reserve Ramsar Site-Wetland of International Importance.

The Protected Areas which cover a total of over 26.2 million hectares, or approximately 17, 5% of the country's surface, have become main tourism destinations in Mongolia (Figure 1).

Figure 1. Global Trade Growth Enters Period of Stagnation

Note: The five different colors indicate the protected areas including strictly protected areas (red color), National Parks (yellow), Natural Reserves (yellow green), Monuments (orange) and locally protected areas (dark goldenrod).

Due to lack of appropriate management of natural resources usage, conservational planning and management, tourism cannot contribute well for Protected Area development. Despite difficulties, a protected areas management plan was developed to maintain balance between the protection and enhancement of its sensitive natural environment, socio-historical sites and improve social and economic outcomes for

local residents, the supporting plans such as tourism management plan and business plan have still not been developed.

30 National Parks of Mongolia cover an area of 11.4 million ha - 44.5% of total protected areas in the country (http://mpa.gov.mn).

The following are the categories of Special World Park Status:

I. Area that preserves evidences of world's geological and evolutionary history.

II. Special natural ecosystem and region, habitat of globally endangered species, habitat of the source population of unique species and unique scenic landscape.

III. Traditional knowledge and traditional lifestyle that is in harmony with nature and preserved by the indigenous or ethnic groups of local people. A place where people use natural & living resources sustainably and their livelihood directly depends on ecosystem services.

IV. Area that preserves world historic and cultural heritage of humanity evidences of human evolutionary history and ancient Mongolian cultural heritage.

Mongolia's protected areas represent the country's very best landscapes, ecosystems, wildlife habitats, watersheds and forests. International and domestic visitors are attracted to these protected areas because they offer the opportunity to enjoy wide open spaces, solitude, adventure, to connect to nature and the chance to experience some of the best hospitality in the world. Globally, these values are becoming increasingly rare and sought after.

Protected areas are important carbon sinks and provide buffers against the effects of human induced global warming.

2.1. Significance of Natural Reserve Parks

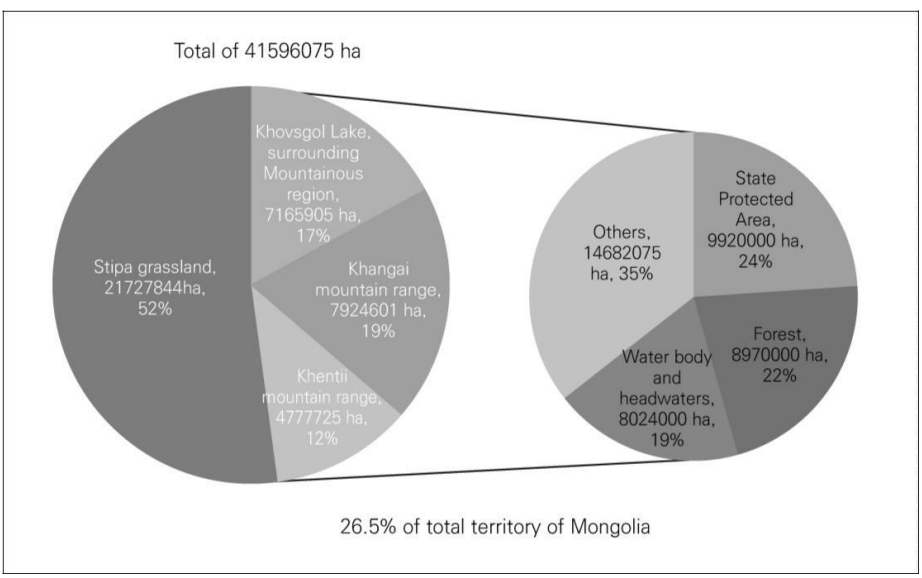
These proposed parks (see Figure 2) play a critical role for biodiversity conservation, protection of the vital forests that provide stable supply of water resources and water regulating functions, core distribution of permafrost that sustains important run-off generating area of rivers and ecological balance of vital ecosystems and preservation of vulnerable

habitats that occur on the meeting point of natural regions. This also plays an essential role for keeping solid boundaries between steppe grassland, gobi, and desert region that are degraded and decertified, thus preventing biodiversity from degradation, depletion and decline and sustaining ecological balance and services for the country.

This will enable opportunities to incorporate socio-economic characteristics in planning and managing of natural resources, sustainable use of resources, involving the local community in conservation, and implementation of a community-based nature conservation concept.

Eco-regions, river basins and landscape will be preserved with their biological resources and ecological connectivity that are internationally accepted goals of conservation approaches. These parks will meet international requirements and can be internationally accepted within the category of protected areas and receive international attention. All of such representative protected areas will be discussed below. See the information about total area in Figure 2.

Figure 2. Proposed Protected Areas for World Park



2.2. Change Mountain Range Natural and Cultural Heritage

The central mountains of Khangai range play an important role for maintaining the ecological balance of ecosystems of not only Mongolia but also Central Asia. Orkhon River valley originates from Khangai Mountain and preserves priceless natural and cultural heritage, rare archaeological remains and historic sites, many endangered species of plant and animal and a unique natural landscape. Orkhon River valley conserves precious evidences of human history of the world. The UNESCO's World Heritage Committee declared Orkhon Valley as a World Heritage site. The remains of Kharkhorum city, the capital and important cultural and trade centre of the Mongol Empire of Chingis Khaan, resides in the valley. Kharkhorum was not only the former administrative centre of the empire but also it used to be an important trade and cultural centre which played a key role for connecting the East and West. The Orkhon Valley Nature and Cultural Heritage covers 353.04 thousand ha area.

2.3. Khangai Natural Reserve Park

Khangai Mountain is the meeting point of forest, taiga, steppe grassland, Gobi and desert. It restricts distribution of these distinct regions and forms an independent region that maintains the general natural balance and integration of Mongolia. The geographical location, mountain formation, landscape distributions, spatial layout of Khangai Mountain indicate it as an independent great region. Therefore, the characteristics of Mongolia are centered in Khangai Mountain, which is surrounded by Taiga Mountain of the southern Baikal region, Central Asian desert, Altai-Soyon Mountain, Daurian-Mongolian steppe and Great Khyangan Mountain and the countries interconnecting these great regions. The Khangai Mountains comprise globally significant watersheds and headwaters of rivers that join the basin of the north Arctic Ocean and closed basin of Central Asia.

The flora of Khangai Mountain represents species from the Siberian taiga, Mongolian steppe grassland and Daurian steppe. The mountain steppe and mountain forest belt prevail. The high altitude alpine zone of Khangai Mountain contains species that grow in Altai and Soyon, and relict species from Himalaya can also be found with relatively young endemic species. The characteristics of fauna formed by the species living between Siberia and Central Asia are inhibited in Khangai.

Khangai Mountain covers the administrative region of Arkhangai, Bayankhongor, Uvurkhangai, Zavkhan and Khuvsgul aimag and it covers about 7,924,601.1 ha and a total of 151,026 people live in the area.

2.4. Khentii Mountain Park & Cradle of Mongolian Governance

This heritage place covers the central and eastern mountains of the Khentii Mountain range. The area conserves a unique natural landscape, mineral springs and historic remains of the great Chingis Khaan. It is home to many endangered plant and animal species. The Onon-Balj River basin of the area is the only place in Mongolia that is covered by an assemblage of pine forest, larch forest, birch forest and mixed forest. These forests play a significant role for preserving water, regulating and storing a stable source of water for the river and maintaining the ecological balance of the place. It is also home for various endangered cranes, bustard, and other migratory birds.

The region has unique communities of aquatic plants and animals from East Asia. The Onon-Balj River basin is the part of the Mongol-Daurian eco-region that is one of the 200 global conservation priority eco-regions of the 21st century. In terms of flora, the area comprises species that represent the northern edge of Central Asia and it is dominated by the forest steppe flora of Dauria and Manjuur. Many historic places represent Chingis Khaan’s history, including Deluun Boldog, the birth place of Chingis Khaan, which resides in the area. It can be designated as a cultural heritage, the cradle of Mongolian governance. Designated area covers 4.7 million ha.

2.5. Khentii Nature Reserve Park

The Khentii Mountain taiga forest is at the southern edge of the Siberian forest and northern edge of the Central Asian forest and it is relatively low in elevation compared to the Khangai and Khovsgol Mountain ranges. It is extensively covered by taiga forest, making it a unique landscape in Mongolia. With the headwaters of Kherlen, Onon, Tuul, Estii, Zakhar, Shoroot, Minj, Eroo Rivers originating from Khentii, the region is rich in fresh water resources.

The forest in Khentii grows not only on north-facing slopes like the forests in Khangai, Altai, Khovsgol but also grows on south-facing slopes as well. All seven species of native needle trees (3 species of pine, 2 species of larch and 2 species of fir) of Mongolia grow in Khentii.

Khentii provides a significant level of water-storing and water-regulating ecosystem services. It plays a vital role for sustaining regular supply of water for rivers, regulating water allocation, and providing ecological balance. It is home to the globally endangered white-naped crane, hooded crane and great bustard. It is rich in fresh water biodiversity. Species of Daurian-Manjuur indicators grow and live in the Onon River basin.

The proposed Khentii Nature Park belongs to the administrative region of Dornod, Tuv, Selenge, Khentii aimag and green belt of Ulaanbaatar City and covers 4,777,725 ha. There are 69,859 people living in the area.

2.6. Natural and Cultural Heritage of the Mongol Altai Mountain range

The Mongol Altai Mountain range is part of the Altai Mountain range and is located in the western Mongolia region. 70% of mountains occur in the range of 2,000-3,000 meters above sea level, with the remaining 30% occurring above 3,000 meters from sea level. It is prevailed by cool climate. There are 250 glacial rivers that cover 514 sqr. km area in total.

There are many unique beautifully formed places in Mongol Altai and most of these places are designated as state protected areas, including Altai Tavan Bogd, Siilkhem Mountain, Munkhkhairkhan, Myangan Ugalzatiin Mountain National Parks, and Khukh Serkh, Turgen and Tsagaan Shuvuut strictly protected areas.

There are many glacial lakes such as Khoton Khorgon, Dayan, Munkhkhairkhan waterfall and Turgen Goojuuriin waterfall. All of the above mentioned places are valuable natural heritages of Mongol Altai Mountain.

Over 20 ethnic and social groups have rich cultural diversity and speak their own dialects and languages. They are still adhere to traditional customs, beliefs, values and intellectual and material heritages. The place is richest in cultural diversity and unique in Mongolia.

The nominated site "Natural and Cultural Heritage of Mongol Altai Mountains" covers 12.1 million ha.

2.7. Altai Tavan Bogd National Park

This park of nomadic cultural civilization belongs to the western part of Mongolia. Mongol Altai Range is a continuation of Mongolia's part of the Altai Ranges. Through observation of general global warming and changes in climate and environment, a proposal to nominate this area as a Transboundary Biosphere Reserve was not accepted. It is very important to observe and monitor the Altai mountains system, its peaks, glaciers and eternal snow caps, which are one of the important parts of the monitoring globalization process of western (Atlantic) and eastern (Pacific) airflow movements, activation and repetition to Altai Ranges during summer each year.

The Mongol Altai Range is the main habitat of endangered species that are registered in the World Red Book, such as the snow leopard, Argali sheep, ibex and many others.

The Mongol Altai region's identity is very unique in that it is the main land for many ethnic groups who have kept their own culture, traditions, religions, languages, such as durvud, togrguud, urianhai, zakhchin and Kazakhs, Tuvans and Khoton.

2.8. Stipa Grassland Nature Reserve Park

The Dornod Mongolia Steppe is located in the eastern corner/part of Mongolia which represents the steppe ecosystem of Central Asia. This steppe ecosystem is very common in Mongolia but quite rare in neighboring countries. This kind of wild and dry steppe landscape is very rare throughout the world. About 70 percent of Mongolian white gazelles are found in the steppe region. It represents the globally rare stipa grassland ecosystem and is home to the globally threatened Mongolian gazelle and many other endangered species.

While the Mongolian stipa grassland is considered as part of the extensive Euro-Asian arid steppe it is also unique. It comprises eastern Mongolian steppe grassland and Mongolian Daurian steppe. It covers 28.2% of the territory of the country and lies over 444,548 square km. 9.6% of this region is designated as state protected areas. It provides the core habitats for Mongolian gazelle (Procapra guttorosa) where herds consist of several hundreds and thousands of gazelle individuals. Unique ecological phenomena, migration of hoofed mammals, can be observed in the Eastern Mongolian stipa grassland.

139500 people live in the proposed Stipa grassland nature reserve park. This proposed park covers a total of 12.1 million ha area and overlies the administrative regions of 37 soums from Khentii, Dornod, Sukhbaatar and Govisumber aimag.

2.9. Great Gobi Strictly Protected Area

This area is located in the northern part of the great desert of Central Asia, and is an important area for protecting the vulnerable Gobi ecosystem and habitat of world endangered wildlife which are registered in the International and Mongolia’s Red Book, such as wild camels, wild horses, black tailed gazelles, Gobi bears, snow leopards, argali sheep, ibex and many others. There is much potential to exchange research information to protect and conduct researches/surveys on the

Gobi/desert ecosystem of Central Asia at the international level through the approval of the International Biosphere Reserve in 1990.

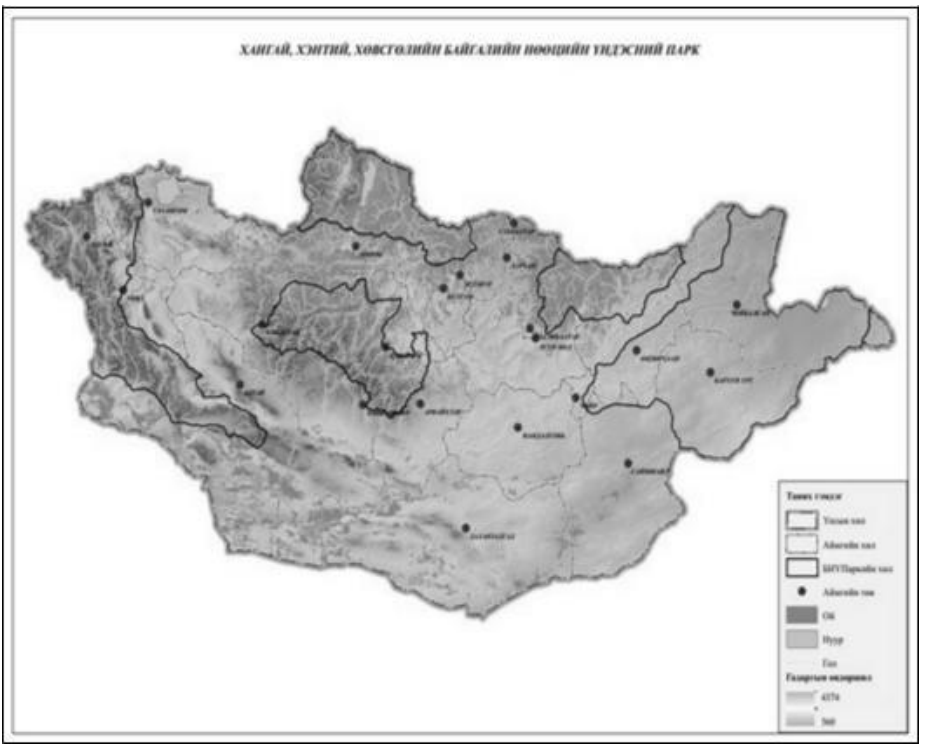
The Great Gobi Strictly Protected Area is divided into the two main parts of "A" and "B," which encompass a total of 53,000 square km. The Great Gobi Strictly Protected Area is the 15th largest protected area in the world. The A and B parts of the Great Gobi Strictly Protected Area are separated by "Aj Bogd" mountain and more than 150 km of wide ranges, which are different from each other in their landscape and ecological regions.

Great Gobi A lies in the southwestern part of Mongolia in an arid region of the Gobi desert. The vegetation is dominated by desert and desert steppe. Great Gobi A is a habitat of endangered mammals, such as wild camels which are registered in the International Red Book.

Great Gobi B is a nature reserve in Gobi desert, situated in the south-western part of Mongolia which represents the eastern part of Zuungar – Kazakhstan desert under Midlle Asia, Kazakhstan and Central Asia. These areas are desert steppe, arid mountains, deserts and semi-deserts. The climate in the very eastern part is quite mild.

All of the above mentioned features show that it is possible to gain the status of a World Park (see the marked area in Figure 3). Thus, if a condition of a special conservation is created through this initiative of conserving Protected Areas in Mongolia by issuing/accrediting for the special status of a World Park, then there are many places which have historical, cultural and natural heritages. Also some of these heritages cover vast lands along with many places which cover small unique areas.

Figure 3. Proposed protected areas for World Park status are highlighted in black lined areas.



III. Situations In Protected Areas

3.1. Introduction about Mongol Daguur

Using Mongol Daguur SPA as an example, we have made an assessment of the changes in landscapes occurring from 1992 to 2011. We determined the chief

causes of these changes and outlined the principal management tasks regarding specially protected natural territories, focusing on minimizing the level of negative effects. We examine the ecological problems faced by the SPA, and the associated hazards, and suggest recommendations on an optimization of management of the SPA with a view to decrease the possible occurrence of challenging ecological hazards.

The Mongol Daguur SPA is located in the northeastern border area of Mongolia. The SPA extends over parts of the soums Chuluunkhoroot, Gurvanzagal and Dashbalbar of Dornod Aimag. The total area of the SPA is 109,016 ha. The State Great Khural of Mongolia approved border areas of the Mongol Daguur SPA by its Resolution No. 26 in 1995.

This SPA is divided into two parts: "A" and "B." The part "A" is located in Chuluunkhoroot soum. The northern border of SPA is duplicated with the state border. The part "A" is located between the north latitude of 114030'-115030', east longitude of 49045'- 50015' that borders the Russian Federation along the Yanlah River Valley. Total area is 87780 ha. The part "B" of Mongol Daguur SPA is located along the Ulz River Valley between northern latitude of 114055'-115037', eastern longitude of 49038'- 49044' through the borders of Chuluunkhoroot, Gurvanzagal, and Dashbalbar soums. Total area is 15,236 ha.

The Mongol Daguur SPA occupies the northern part of the Daurian steppe eco-region, which has been acknowledged as one of the most significant sites for conservation of the planet's biodiversity, within the Global 200 list, on the border between two of its components, the Mongolian-Manchurian steppe and the Daurian forest-steppe. The steppe sites are currently poorly represented in the World Heritage list. The Daurian steppe is one of the vastest and well-preserved examples of steppe natural complexes on Earth, comprising intra-zonal wetlands and forest-steppe landscapes that are of great significance for conservation of the universal biodiversity. A virtually complete historical set of plants and animals that are typical of the Daurian steppes and forest-steppes is represented at this site. Almost all types of vegetation associations are characteristic for the region, as well as a complex distribution of mammalian and bird species (50 and 327 species, respectively) being present here.

The species structure diversity and abundance of birds and mammals, as well as the number of rare species at this site, are considerably higher compared to the same figures at the other steppe territories of Eurasia and the planet in general. This can be attributed to a number of factors: its biotope diversity (the entire range of landscapes and biotopes that is typical of the Daurian eco-region is located here), its location situated at a place where the migration flyways of the birds become narrow and at the place of junction of large bio geographical units, as well as its variability of ecosystems caused by climate cycles.

The East Asian-Australasian flyway of waterfowl, semi-aquatic, and passerine birds becomes narrower in the Torey hollow; therefore, it is the key resting site for these birds. The Torey lakes with the mouths of the Imalka and Ulz rivers, as well as a part of the Ulz river floodplain, are inscribed on the list of wetlands of international importance and important bird's areas. Up to 3 million migrating birds stop here. Among the avian species observed at the site, more than half are vagrant birds. A total of 15 globally endangered species inscribed on the IUCN Red List (2011) have been observed in this territory: one critically endangered, three endangered, and 11 vulnerable. In addition, about 40 species have been inscribed on the Red Data Books of the Russian Federation and Mongolia. The site is of special significance for conservation of the crane species. Six crane species inhabit the territory: up to 20% of the total world population of the Demoiselle Crane, up to 12% of the world population of the Hooded Crane, 5% of the White-naped Crane, and up to 1% of the Siberian Crane accumulate in the Torey hollow before the autumn migration. The Torey lakes are one of the four breeding sites known in the world of the Relict Gull (over 20% of the world population); the lake hollow and the adjacent regions are the habitats of approximately 13% of the total world population of the Eastern Great Bustard. It is one of the last Paleoarctic regions still inhabited by numerous herds of wild ungulates — dzerens (Mongolian gazelles). The territory is of key importance for conservation of natural massive transboundary migration routes of dzeren, which is the last grandiose phenomenon of this type in Central Asia. The total number of migrating dzerens annually staying for winter

at this region is as high as 100,000 individuals (5–8% of the total number of the species); the number of non-migrating dzerens is 7–8 thousand individuals (Kiriluk *et al.*, 2013).

This territory is an outstanding example of evolutionary processes: the natural communities of the Torey hollow and the adjacent regions were formed under conditions of periodic climate change, which was the reason for the development of a number of adaptations to continuous deep changes in existence conditions at the level of species and communities. Under contemporary conditions, the climatic cycles during which an arid phase replaces the wet phase occur over relatively short periods of time (approximately 30 years), thus causing substantial and relatively swift rearrangement of steppe ecosystems and a drastic rearrangement of wetland ecosystems. The periodic transformation of wet biotypes into dry and back provides the optimal conditions for the existence of a number of species with different (sometimes opposite) ecological requirements within the same territory. The site is of an undoubted scientific significance as an example of adaptation of the species and ecosystems to the continuously changing climatic conditions and is an important object for monitoring these processes (Kiriluk *et al.*, 2013).

3.2. History of Economic Development

Mongol Daguur (Daurian) region was sparsely populated until the 1940s. The economy engaged by local residents was traditional animal husbandry and it was free of any other economic activities and outside disturbances. However, a railway between Choibalsan in Mongolia and Borj in Russia was built in 1956 and Ereentsav border custom point and Chuluunkhoroot Soum were established and settled by humans. A state farm Ereentsav was set up based on Chuluunkhoroot Soum and it provided a basis for use of its vicinity for farming and cultivation. In the 1980s, it was one of the important state farms in the country as it had 20,000 ha rotational cultivation land (A map on Ereentsav farmland). However, during the transition

to the democracy and market economy in the country, the state farm was closed down and farming or cultivation no longer took place in Chuluunkhoroot territory. At present, the abandoned farmland is being restored to its natural state.

Some game species e.g. Siberian/Mongolian marmot, roe deer, Mongolian gazelle, red fox, and grey wolf are hunted by local residents in small numbers for subsistence or household purpose. No commercial hunting of the wild species takes place in the region. The Mongolians have no tradition to hunt birds, so birds are not hunted at all. However, there were some reports on bird hunting by specialists and officers from the Soviet Union, who worked at the Mardai uranium deposit in the 1980s. They came to Ulz River valley and Lakes Galuut, Duruu, and Khukh in spring and autumn to hunt water birds. According to previous research papers, water birds were largely hunted in Tari Lake and the lower part of Ulz River in Russia at the beginning of the 19th century.

3.3. Changes in Landscape Structure PA in Dauria

Our investigation into the dynamics of landscape cover used digital satellite images acquired by Landsat-TM and Landsat-ETM, which were converted to the synthesized scan pattern referenced to the topographic map. The ERDAS IMAGINE software package was employed for a classification of land use units on satellite images. The software used included the ESR1 Inc. products: ArcMap G1S desktop package, ERDAS Imagine, I1WIS, and ENVI. The analysis also used the most significant cartographic publications (Oyungerel and Munkhdulam, 2011), and other cartographic and statistical materials.

Data from analyzing the satellite images intimate that along the border between two of its components, the Mongolian-Manchurian steppe and the Daurian forest-steppe, forests steppe were replaced to a significant extent by steppe with meadow and bog-meadow associations, while the meadow steppes gave way to shrub birch steppe (see Table 3). There is severe deflation of sands, especially near the mouths of

smaller rivers along the lake's left shores, such as the Baruun Tari Lake.

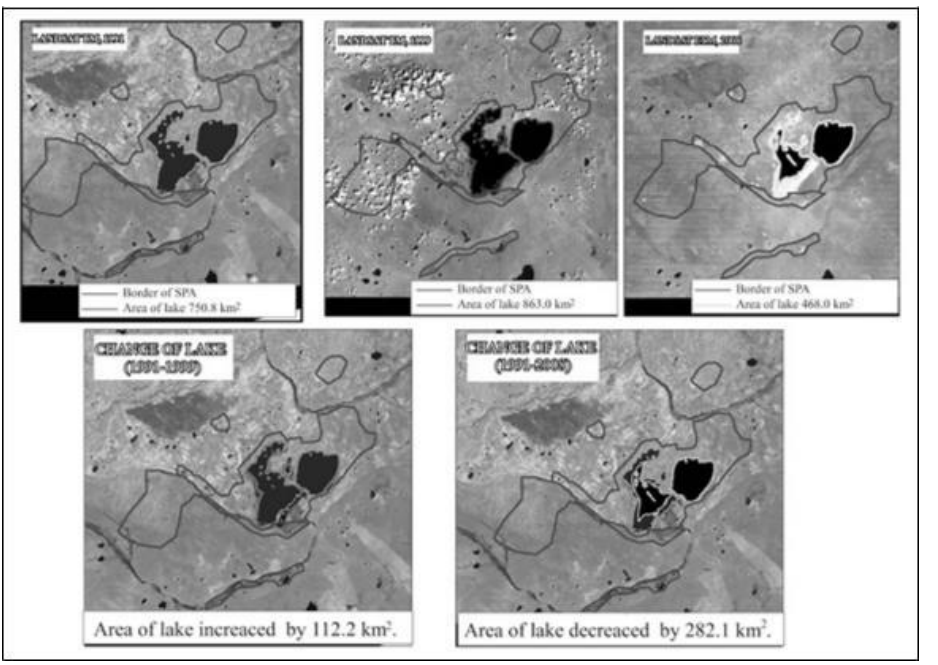
Table 3. Land cover changes in 1991-2008

Landscape types	Area, km2		Change	
	1991	2008	km2	%
Lake	7.8	0.0	7.8	0.05
Wetland	61.8	14.4	47.4	29.8
Meadow	12.1	49.9	37.8	23.7
Steppe	26.3	34.6	-8.3	0.05
Bare land	30.3	35.5	-5.2	0.03
Grope field	4.2	0	4.2	0.02
Sand	0.3	0	0	0
Dried lake		0.44	0.44	0.003

Overall, our investigation shows that the main factors that are responsible for changes in the park's landscape cover are due to global warming (by 60%) and are determined by anthropogenic impacts, including overgrazing and the 40%-excess of the utilization of steppe resources.

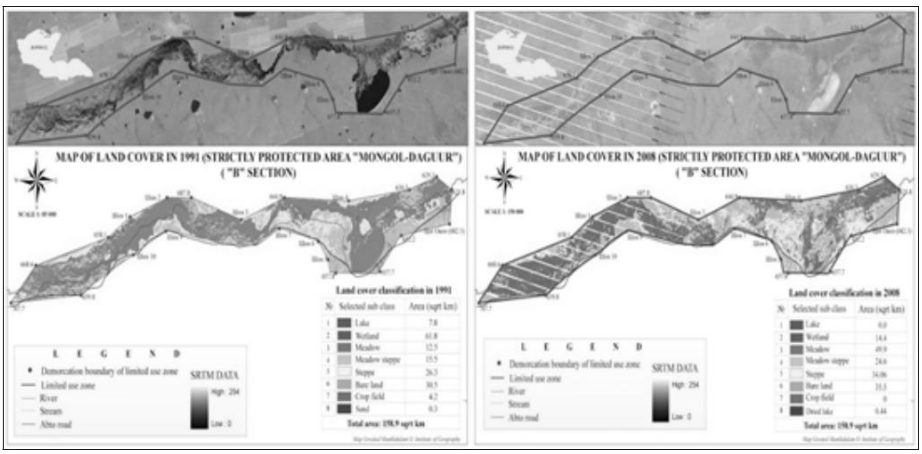
For example, the water surface area of Lake Baruun Tari has increased over recent years (see Figure 4). This is due to two factors, one of which is global climate change. Currently there is taking place an intensification of global processes influencing the dynamics of the largest glaciers, which leads to a water level rise in the lake. The studies show that in the transition zone between the Daurian steppe and the Central desert zone, warming is quite conspicuous. Annual average air temperature is around – 0.9 to 1.5oC in the eastern part of Mongolia. Probably an instance of absolute high and low temperature occurs once in every 20 years. The variation of many years' air average temperature shows the area warmed up to 0.6-1.9°C since observations began in the region.

Figure 4. Water surface changes of Lake Baruun Tari (1991-1999 and 1991-2008)



The other reason lies in severe anthropogenic impacts. The findings attest that in the Daurian steppe with pasturing, the change in the landscape area of Dauria SPA was 101.8 km2 in total for the period from 1991 to 2011 (Figure 5).

Figure 5. Land cover of Mongol Daguur PA in 1991 and 2008



With the transition to a market economy, some stock raisers have begun to increase their own herds which have a negative influence on the state of the pasture lands. While 18,000 head of livestock used the territory of the SPA for grazing in 1991, their numbers have now increased to 32,000, or nearly twice. Overgrazing has caused a degradation of vegetation and soil cover, which promotes permafrost thawing, sanding and desertification. Comparison of areas with and with no vegetation revealed that soil temperature is lower in the former case.

Fluctuations in climate humidification cause dramatic changes in water ecosystems. Disturbances of an anthropogenic origin have a negative influence on the state of the rivers flowing. A very commonly occurring kind of such an impact is pollution from loads on pastures, and from yurts located nearby water sources.

IV. Organization of Management and Economic Impact of Protected Areas

In this context, the principal missions of protected areas are: protection of pristine natural territories for the preservation and conservation of biological diversity, and for maintenance of the protected natural complexes and objects in a natural state; organization and conduct of scientific research, including the keeping of the "Chronicles of Nature"; conduct of ecological monitoring and educational activity; assistance in training scientific personnel and specialists in the field of environmental protection; encouraging local residents to participate in environmental protection measures with prospects for presentation of ecological forms of nature management using the park as the base.

The scope and functions of the park listed above suggest that the park's future management can be formulated as follows. To refine the zoning arrangement requires taking into account the representativeness of landscapes, and updating, reconciliation and approval of zoning changes, and the expansion and establishment of protected zones based on monitoring results on rare animal species and on the state of landscapes should become the immediate top-priority measures. To optimize the layout of the park's territory, it is imperative that assessments be made of natural and anthropogenic factors affecting the natural complexes of the protected area, with the relevant investigations repeated on a regular basis, and that a data bank be created and the new management plan be worked out.

It will be necessary to raise the degree of staff training as well as to improve material and technical equipment of the park. Ecological education and involvement of the local population and administrative bodies in decision-making is a main concern for the park's biodiversity conservation. Considering that illegal mining is underway even within the protected areas, and especially in light of the current situation of minerals, it is necessary to foresee the possible outcome of the existing situation and propose the optimal ways to resolve emerging conflicts.

It is important to step up the involvement of local residents in the protection of especially valuable natural sites, including in the protection of forests, rivers, lakes, the flora, and the fauna, with the participation of volunteer inspectors by foreseeing payment of the relevant remuneration to them. It will also be important to proceed to implementation of the cooperation agreement between Mongolian National Park and the adjoining Park on the Russian and Chinese side.

The achievement of all the goals formulated above will facilitate optimization of the park's territory ma¬nagement, a strengthening of transboundary collabo¬ration between Mongolia and Russia as well as China, and an impressive increase in the flow of tourists on both sides.

It is not enough for us to know that parks contribute significantly to local and national economies; our stakeholders, public and governments must also understand this and invest in parks accordingly (Kiriluk *et al.*, 2013).

The wider economic benefit of parks encompasses the broad range of assets that contribute to our present and future quality of life and prosperity, including the value of ecosystem services such as water, soil, climate regulation and pollination; direct economic returns from tourism and the socio-economic benefits attached to recreation, the impact on people's physical and mental health, as well as cultural health. Some of these values are more easily quantified than others such as tourism.

Based on conservative calculations and estimate outlines some of the additional potential revenue is from park entry fees. This forecast excludes potential revenue from additional state allocations from better business planning and using the economic justification for parks, tour operator fees, allowing all parks to charge entrance fees, daily vs entrance fees, the establishment of a concession system, any return from land use fees, mining and biodiversity off-sets, a return from ecosystem services, corporate sponsorships, new tourism opportunities, debt for nature swaps and it assumes that the current level of investment by donors remains the same.

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