Ministry of Environment and Green Development of Mongolia

GOVERNMENT OF MONGOLIA

NATIONAL SNOW LEOPARD ECOSYSTEM PROTECTION PRIORITIES (NSLEP) MONGOLIA (2014-2021)

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Importance of Snow Leopard Conservation and Snow Leopard Ecosystem

The Mongolian snow leopard (Panthera uncia) population is 2nd largest in the world and has an about 1000 individuals, is distributed in Mongolian Altai, Gobi Altai, Khangai mountain ranges, Harhiraa and Turgen mountains, near oasis, in low elevation mountains and hills of Trans-Altai Gobi and southern edge of Sayan Mountain. The total area occupied by snow leopards in Mongolia is approximately 103,000 km^2 (Map 1). The species is included in the Mongolian Red Data Book (1987, 1997, 2013) and protected as very rare by Mongolian Law of Wildlife (2012).

The habitats of snow leopards in Mongolia represent a set of different ecosystems in the elevation range from 600 and 4200 m above sea level. Optimal snow leopard habitat in Mongolia is located within very broken and moderately broken terrains in the mountains with clearly defined ridge lines and massive cliffs. Siberian ibex inhabits these areas as well as other ungulates – the snow leopard's main prey. In addition to traversing open slopes, snow leopards travel and hunt in the edge scarce forests for roe deer, wild boar, hare etc. Marmots and snow cock are important prey of snow leopards in high mountains.

Since it is a top predator of the mountain ecosystem of Mongolia and Central Asia, it is an umbrella species for conservation of other species and habitats in mountain-steppe, mountain-tundra and mountain-forest-steppes, including livestock husbandry, cultivated here since ancient times and that are vital to the survival of nomadic herders. These habitats have been used for livestock pasture for thousands of years and income from livestock products is the main source of income of nomadic herders in Mongolia. Money from sale of 4.5 tons of cashmere provides herders of 21 provinces with about 205 million USD each year; 1/3 of this cashmere is collected in areas with snow leopards.

Until the 1990s, the areas were also rich in hunting resources, unfortunately during the decade after the collapse of socialism in Mongolia when the border with China was opened, many species of wildlife were hunted without any management and illegally exported for use in eastern medicine. Springs started in these mountains form the biggest rivers and lakes in Mongolia and Russia, go to northern ice ocean. Glaciers play an important role in regional climate regulation and water balance of mountainrivers. Also snow leopard habitats represent excellent recreation areas and potential for tourism development, including ecotourism, rafting, trekking, horseriding and climbing.

For many Asian people the snow leopard is a symbol of strength, nobility, and power. The preservation of Mongolian population of snow leopards is an important component of efforts to save and recover Russian population of the species in the northern edge and maintain gene flow with Chinese snow leopard populations in the south.

Map 1. Distribution of snow leopards in Mongolia

Disseminating Information on the Value of the Snow Leopard Ecosystem and Generating Support for Conservation

The snow leopard conservation is ongoing actively in Mongolia for last 20 years. The activities were included, but not limited to:

- Research and monitoring of the snow leopard and the prey species
- Community outreach programs
- Environmental education programs in the snow leopard distribution range
- Workshops and seminars for the community leaders, stakeholders and local governmental authorities
- Public awareness about the Environment Law
- Environmental social awareness campaigns wildlife posters, dramas, and brushers
- Establishing and Engaging local conservation communities and strengthening governance in the snow leopard range areas
- Employment of anti-poaching team, volunteer rangers who regularly patrol wildlife protection areas
- Training border police and customs officers in how to recognize, prevent smuggling of snow leopards and wildlife parts out of the country
- Education of spiritual and religious leaders on the importance of snow leopard and its ecosystem so that they can influence and promote conservation in their local communities
- Establishment of state protected for snow leopard conservation
- Raising public awareness through numerous national and international media outlets including TV, radio, newspaper and magazines
- Projects and Public Events - Monthly, bimonthly program on national public radio of Mongolia "Do not disturb endangered snow leopards (1994-2007)

Goals of the National Snow Leopard Ecosystem Protection Priorities (NSLEP)

The primary goal of the NSLEP is to save stable snow leopard and prey population through initiatives at national and regional level in the protection and conservation of mountain and snow leopard ecosystems in Mongolia, decreasing negative threats, benefiting local communities and preserving nomadic culture, religious and economic importance of snow leopard and snow leopard ecosystem for future generations.

Vision: *"The long-term survival and conservation of the Snow leopard and high mountain ecosystem provides freshwater services in an inexhaustible manner, as well as benefits to local communities"*

Goal: Maintain a stable population of snow leopardsin the territory of Mongolia.

Objectives:

1. Address the main threats that reduce number of snow leopards.

2. Monitor regularly the threats to snow leopards, minimize the negative impact factors leading to the degradation of snow leopard habitat, improving attitude of local people for Snow leopard value and high mountain ecosystem.

Major Threats: Traditional and Emerging, in terms of Area Covered, Severity, Urgency, and Impact on Snow Leopards and their Ecosystems

A variety of natural and anthropogenic factors influence the snow leopard populations. The main threats to snow leopards in Mongolia are loss of prey base due to competition with livestock for pasture and open water sources, loss of habitat related to increasing number of livestock and intensive development of mining and transportation infrastructure, deaths caused by poachers.

The traditional pastoral production system dates back at least 4,000 years, but since the 1990s when the livestock were privatized number of livestock increased rapidly, reached more than 40 million, which became the main of reason of pasture degradation due to overgrazing. Number of herder families also increased rapidly and all suitable pasture land used under the pasture fragmenting snow leopard habitats, pushing out the wild ungulates, prey of snow leopard. Single herder family could live well with 400 head of sheep and goats, but many families has more than 1000 of them, some of them even up to 4000 livestock. Unmanaged and illegal hunting is reason for conflicts between snow leopard and herders, decreased number of wild preys (e.g. Mongolian marmot, siberian ibex, argali sheep, and snow cock) lead to snow leopard attacks on domestic livestock and snow leopards are killed by herders in retribution.

Mining sector is becoming a major and increasing contributor to the Mongolia's economy. Over the past five years, there has been a rapid rise in mineral exploration, the Oyu Tolgoi copper/gold deposit and many other coal mines were discovered, minerals are exported to China via several parallel field and packed road to China, which cut in sections populations of endangered wildlife and unique habitats. In November 2010, the Parliament of Mongolia passed "State policy on railroad transportation" and construction of 1,766 km long railroad network to link Mongolia's major coal and copper mines with China is underway.

Poverty remains widespread in the country especially in rural areas despite the growing GDP. The 2011 NHDR estimated that in 2010, 39.2 per cent of Mongolians were consideredpoor, this figure was 32.2 per cent for urban residents but 47.8 per cent for rural residents. It is clear that poverty is direct related to environment.

Snow leopard body parts are often used in traditional eastern medicine in China as a substitute for tiger parts, and the animal's fur is of great value for luxury seekers. Snow leopard skins are open confiscated at Mongolian customs and by Irbis anti-poaching team during the inspection.

The table below indicates the major threats to snow leopard in terms of area, intensity, urgency and impact on snow leopard ecosystems.

Table 1. Key threats for snow leopard in Mongolia

Threat	Area	Intensity	Urgency	Total Ranking	Comment
Category 1: Habitat & Prey Related					
Habitat Degradation	3	2	2	7	
Habitat Fragmentation	2	1	5	8	
Prey Reduction due to Illegal Hunting	4	3	4	11	
Prey Reduction due to Competition with Livestock	4	5	5	14	
Prey Reduction due to Legal Hunting	2	1	2	5	
Prey Reduction due to Disease	1	2	3	6	Not enough data
Category 2: Direct Killing or Removal					

Threat	Area	Intensity	Urgency	Total Ranking	Comment
of Snow Leopards					
In Retribution for Livestock Depredation	3	4	4	11	
Poaching for Trade in Hides or Bones	2	2	2	6	
Traditional Hunting of Snow Leopards	1	1	2	4	
Secondary Poisoning and Trapping of Snow Leopards	2	3	2	7	
Diseases of Snow Leopards	1	2	2	5	no data
Potential threat from legal hunting of snow leopards	1	2	3	6	
Category 3: Policy and awareness issues affecting conservation of snow leopards, prey and habitat					
Lack of Appropriate Policy	1	2	3	6	
Lack of Effective Enforcement	4	4	5	13	
Lack of Trans-boundary Cooperation	2	3	4	9	
Lack of Institutional Capacity	4	4	4	12	
Lack of Awareness Among Local People	4	5	5	14	
Lack of Awareness Among Policy Makers	4	4	4	12	
Category 4: Other Issues					
Human Population Growth (rapid) / Poverty (indirect threat)	2	2	2	6	
Feral dogs attacking snow leopards and prey	1	1	1	3	
General Poaching and Wildlife trade by migrant workers	1	1	1	3	
General poaching by military personnel	1	1	1	3	
Emerging Threats					
Climate Change	4	4	4	12	
Growing Livestock Populations & Intensifying Human-Wildlife Conflict	4	4	5	13	
Large-scale Development Projects -	2	4	4	10	
Direct & indirect impacts due to mineral exploration & mining (local)	2	4	4	10	
Impacts due to hydroelectric projects	1	1	3	5	
Impacts due to roads or railroads	3	4	4	11	
Threat Values: 0 or 1 = no & low threats; 2 or 3 = intermediate threat level; 4 or 5 = high threat level					
AREA: Rank each threat according to how wide-spread it is (where 5 indicates it occurs across most or all snow leopard range within country; and where 1 indicates it is extremely limited in areal extent)					
INTENSITY: Threats ranked from 5 = the most destructive impact to 1 = the least negative impact					
URGENCY: Rank each threat identifying if it needs immediate & urgent attention (very time sensitive) (value = 5) to being of least concern or urgency (value = 1)					

Snow leopard killing due to poaching

Mid 1990s was the most difficult time for the snow leopard population in Mongolia, trapped in leg-hole traps, shoot with fire arms presented the greatest danger to this predator and it is commonly used throughout almost the entire species' range in Mongolia. Since it has a predictable behavior – snow leopards follow the same trails and paths along ridges and cliff bottoms – the cats were easily targeted by

poachers and entrapped in leg-hole traps set at saddles of mountain ridges and narrow trails along valley bottoms next to cliffs or boulders. They were hunted for their pelts mostly, sometimes scull was prepared illegally together with pelt for stuffing. Skins were illegally exported to Russia and China, no information that other derivatives were sent abroad. For single field survey and patrolling several leg-hole traps were discovered and confiscated in South Gobi province, where snow leopards were traditionally hunted long time and where hunted 2 snow leopards by trophy hunters in early 1990s. The WWF Mongolian anti-poaching teams "Irbis 1" and "Irbis 2" discovered 12 cases of snow leopard illegal hunting and trade since 2001, including confiscation of 4 snow leopard skins for one inspection, from Bayan-Olgii province 15 snow leopard skins were illegally transported to Altai krai, Russia and was confiscated by inspectors.

Local residents, mainly herders and hunters who overwinter in snow leopard habitat, were the main poachers, but they were asked by people from cities for snow leopard skins, who wanted to sell them abroad, but locals getting only up to $200 per skin. High prices for citizens were offered by Chinese traders for derivatives of snow leopards, musk deer, and other species were the main reason for the trapping, it was one of the very few income sources for local residents during difficult transition time to market economy, law enforcement was almost non-existent during that period.

Snow leopard killing in retribution of livestock depredation

Persecution of snow leopards by herders due to attacks on livestock is a serious threat, resulting from a combination of increased livestock numbers, decrease in wild prey population and lax guarding practices. While these threats are relevant in all snow leopard range in Mongolia, most complaints come from southern and western Mongolia, where livestock and herders spend winter months in snow leopard habitat. Attacks occur mostly in late winter, early spring months, when the small prey of snow leopards like marmot are hibernating or wild ungulates leave the area looking for better pasture and less snow covered areas. In most cases sheep and goats are killed by snow leopards in the morning just before they ate let to pasture or when returning home in the evening and left to forage near the camp (500m) before to enter into the protective coral. Also, many animals especially sheep and goats if left at night in the pasture for some reason. Free roaming yaks and horses appear to be considered "almost like natural food" to snow leopards. Snow leopards will attack supervised livestock in some pastures and livestock corrals where cover allows the predator to approach undetected. For example, the northern wall of some corrals are provided by a 10-20 m high cliff; while inaccessible to humans, snow leopards are can come easily enter and kill the contained goat or sheep.

Increasing numbers of livestock (total livestock numbers in Mongolia reached 41.6 million by Dec of 2012) and presence of herder families in snow leopard habitat will lead not only to increased conflicts with herders, but also to the crowding out of wild ungulates which constitute the natural prey of snow leopards.

Decreases in snow leopard prey base populations

A predator's population size depends directly on the population status of its prey species, for instance 100-150 ibex are need for sustaining a single snow leopard. Thus, decreased numbers of ungulates– the snow leopard's main prey – are one of the most important factors that lead to decrease in snow leopard populations.

In 1990s and early 2000s this is also related to poaching, for example, in western most of snow leopard ranges in Mongolia the main reason for frequent snow leopard attacks on livestock is believed to be a sharp drop in wild ungulate populations in the mountains due to intensive hunting for ibex. Since 2005 the situation improved, numbers of mountain ungulates remain relatively stable or are increasing throughout their range. Trapping of wildlife almost stopped, every herder's family has 200-1500 livestock, so making a living on income from livestock husbandry and illegal hunting has decreased since the penalty for hunting of animals has increased, hunting equipment and transport will be confiscated.

Development of economic infrastructure and habitat fragmentation and destruction

Road construction in snow leopard habitat significantly increases the potential for disturbance through reduction of prey items, increasing accessibility of the habitat and increasing conflicts between cats and

herders. One example of this is the construction of a road between Khoshoot coal mine in Khovd province and China's border, for the exportation of coal to China.

Construction of a highway and planned railway from the Jinst coal mine in Bayankhongor province to China through the Tost mountain range would divide both the habitat and population of snow leopards and their prey in the area into two. Given the snow leopard's need for a large home range, resident animals may have a hard time finding sufficient wild prey food and would thus be expected to turn to livestock.

Mining can also lead to the localized destruction of key snow leopard habitat. The details of mining impact in Mongolia is not researched yet, indeed there is not much impact yet, but the mining license map shows that extensive fragmentation may occur within snow leopard habitat. Development of mining infrastructure is linked not only to habitat destruction for snow leopards but also to increased disturbance and increased poaching of ungulates and even the snow leopard itself.

Mitigating the Snow Leopard Threats

- Expansion of the state and local protected area network, establish managed recourse protected areas, improve capacity of protected area administration and staff
- Increase scientific research on the snow leopard and its prey species, develop effective short and long term conservation recommendations
- Reduce the pasture and open water source competition between livestock and wild ungulates improving grazing and pasture management in important snow leopard areas
- Improve corrals in the snow leopard-livestock conflict areas to make predator-proof (move the corals from cliff, where snow leopard easily come in) to mitigate the depredation events, which will eventually reduce killing for livestock depredation
- Conduct environmental education programs and public awareness in the mountainous areas where snow leopards exist to improve attitude of the local communities towards this elusive cat
- Increase local knowledge about the status, distribution, ecology and behavior of the snow leopard and its prey species involving in monitoring activities, encourage local communities' responsibilities to oversee and utilize natural resources in their community responsible areas within the snow leopard habitat
- Enhancement of law enforcement
- Control illegal hunting of snow leopard prey species
- Generation of income through natural resource management for the local communities to reduce poaching in the snow leopard range areas
- Support sustainable community development projects for alternative income generation for natural resource use in key snow leopard habitats
- Design of community based climate change adaptation projects for the communities in the snow leopard range areas with co-benefits in resilience to the impact of climate change and bio-diversity protection
- Make an assessment on mining impacts for snow leopard population and ecosystem
- Prevent negative impacts of mining and development/ infrastructure, encourage greater responsibility from mining industry
- Increase conservation awareness highlighting importance of the species through regular nationwide media which includes different programs as documentary film, TV debates and campaign, public forums, educational materials etc.

Snow Leopard Conservation Management

In 1994 (Mongolian Association for Conservation of Nature MACNE) started first ever snow leopard conservation project in Mongolia to involve local herders in snow leopard conservation partnering with International Snow Leopard Trust (SLT). In 1997 WWF Mongolia, consulted by snow leopard researchers, developed and started implementation of snow leopard conservation project in western Mongolia. Within UNDP/GEF funded projects in Mongolia conservation of snow leopards and its habitat were most concerned components.

The following conservation plans, for protection of snow leopards in Mongolia were developed and implemented:

- Management plan of Gobi Gurvansaikhan National Park, 1997.
- National Biodiversity conservation policy of Mongolia
- Snow leopard conservation management plan of Mongolia, 1999.
- Snow leopard conservation management plan of Uvs province, western Mongolia, 2000.
- Management plan of Uvs lake strictly protected areas, western Mongolia, 2002.
- Snow leopard conservation policy of Mongolia, 2005.
- Snow leopard conservation policy of Uvs province, western Mongolia, 2011.
- Conservation program of rare and very rare wildlife species of Mongolia, 2011

Replicating known good practices

Great majority of projects aimed for snow leopard and its ecosystem conservation in Mongolia in 1993-2013 was funded by International and National NGOs like WWF-Mongolia, Snow leopard trust, Snow leopard conservancy, Mongolian Association for conservation of nature and environment, Irbis Mongolia, Snow leopard conservation fund and several UNDP/GEF funded environment projects.

Successful practices for conservation of snow leopard in Mongolia are the following:

- Landscape-based Conservation Strategies approved and implemented at the province level (Khuvsgol and Khovd, Bayan-Olgii and Uvs provinces, through UNDP Altay Sayan Project)

- Summarized information on the population and conservation recommendations, made in number of PhD, master, bachelor thesis, completed by international and national scientists, students

- Since 1990s many new protected areas were established in potential snow leopard habitats in Mongolia, nowdays 20 state protected areas harbor snow leopards, which covers key snow habitats in Mongolia.

- Two Transboundary Nature Reserves (TNRs) were established in important snow leopard habitats at the border of Russia and Mongolia (Uvs lake SPA and Siilhem NP).

- Two inter-agency Irbis anti-poaching teams were established in western Mongolia to conduct regular patrolling in snow leopard habitat. As a result, the number of poaching incidents in 5 western provinces, in key snow leopard habitats decreased rapidly

- Initial Snow leopard monitoring program including advanced techniques (camera-trapping, genetic analysis) were done with support of WWF Mongolia and Institute of Biology/Irbis Mongolian Center to monitor key snow leopard populations in Tsagaan shuvuut, Turgen, Siilhem B, Jargalant, Munkhkhairkhan state protected areas and Altan khokhii, Baga Bogd mountains.

- School children from Bayan-Olgii province were involved in Land of Snow Leopard Festival in Altai Republic.

- More than 400 families of local herders living in the snow leopard habitats in 7 provinces of Mongolia are participating in the Snow Leopard Enterprises handicrafts project generating

> sustainable income sources with the commitment to a non-poaching contract, local conservation communities are active with support of WWF Mongolia

- Micro credit scheme has been introduced to support handicraft production with more than 100 rural households involved since 2009.

- Since 2008 a Small Grant Program has supported more than 30 local conservation initiatives.

- WWF-Mongolia pioneered the Ecoregion Conservation approach and played a convening role for biodiversity conservation by bringing together partners around common goals. The expertise expands from community based natural resources management to wildlife management, creating ecological network of protected areas, integrated river basin management and policy advocacy, etc.

- WWF Mongolia undertaken livestock insurance program titled "Buy Goat" in three model sites in western Mongolia and within the territory of Bumbat Khairkhan the Buy a Goat program delivered 21 sheep to the herders who had lost livestock to snow leopard predation last year. There were many herders interested in becoming involved with a compensation program, therefore additional surveys should be undertaken to identify suitable mechanism for conflict resolution.

- Long term snow leopard study is ongoing in Tost local protected area, local protected area was established.

- Livestock insurance program is introduced in lower scale in Tost Mountain of South Gobi Province since 2009 involving more than 30 households to mitigate human-wildlife conflict in the area.

- The nature conservancy did assess mining impact for southern Mongolian ecoregion, using indicator species and recommended areas for better protection

Policy and Legislation

Snow leopard is prohibited to hunt in Mongolia since 1972, trophy hunting was stopped in 1993, was registered in the Mongolian Red Data Book (1987, 1997, 2013) and listed in the Category very rare by Mongolian law of Wildlife (2012). In Mongolia, the key regulations concerning the conservation and use of wildlife, including snow leopards, and their habitats are contained in conservation laws, key acts, most of which were updated and endorsed by Mongolian parliament in 2012. The national program on conservation of very rare and rare wildlife species was approved by Government order in 2011. The State law of wildlife Law of protected areas is the primary legislation in this arena. It regulates relationships between enforcement and use of the wildlife overall, as well as in the framework of habitat conservation and restoration for the purposes of ensuring biological diversity, sustainable use of all components, establishing conditions for wildlife sustainability, conservation of the genetic fund for wildlife, and other protections for wildlife as an intrinsic part of the natural environment.

To a significant degree, numerous sub-legislative and agency-level regulatory acts are the working legal foundation of management and law enforcement agencies in conservation activities, regulate the use of rare and threatened species, protect habitat, and provide a regulatory mechanism with reasonably well-defined jurisdiction and distinctions between federal and regional government agencies.

However, the effectiveness of this working system for regulatory management is significantly reduced both by the absence of a sufficiently effective enforcement policy and the presence of regulatory, legal, and methodological loopholes in the system in a number of areas.

Wildlife-related Environmental impact assessments are only mandated for protected areas. Development and large-scale infrastructure projects outside of protected areas do not require the government to prepare an environmental impact report, and there is no legal basis forbidding such activity, even if it has the potential to negative impact to endangered species such as snow leopards and their habitat.

Transboundary Cooperation

The preservation of transboundary parts of the snow leopard's range at the intersection of Russia, Mongolia and China is of particular importance to conservation of snow leopard population in its northern edge of world distribution. The for-border area connects populations in western Mongolia and northwestern China to the remnant snow leopard population in Russia.

Mongolia and Russia has excellent collaboration on snow leopard conservation in Mongolia, the transboundary Uvs lake world heritage site is established, MoU for implementation of co-management is signed at Government level, research teams are working together at both side of border of countries, the cooperation activates are discussed and agreed. The first order of priority is on sustaining populations of snow leopard along the Russia-Mongolian border at Tsagaan shuvuut and Siilhem B-Chihachev ridges. Continued assessments are needed to determine the importance of other potential transboundary snow leopard corridors for supporting the recovery of the Russian populations, with the first surveys made in/around Tavan Bogd uul area. Potential corridors along the boundaries of Russia, Mongolia, China, and Kazakhstan are Tavan-Bogd uul Ridge, Southern Altai Ridge, and the mountain ridges to the north of Khuvsgol Lake.

Specific actions include:

- Develop and adopt a snow leopard conservation action plan for the Russian-Mongolian transboundary zone as well as Mongolian-Chinese border
- Develop and expand coverage of international transboundary protected areas along the Russian-Mongolian border, including the Siilhem B, Chihachev, Tsagaan shuvuut, and Tunkinsky Ridges and mountains north of Khuvsgol Lake
- Expand the "Golden Mountains of Altai" UNESCO World Heritage site to encompass all contiguous transboundary Altai mountain range in Russia, Mongolia, China, and Kazakhstan
- Coordinated actions between these four countries to interdict the movement and illegal sale of snow leopard and other rare species furs and other body derivatives. This collaboration should involve coordination and information exchange among the concerned countries' customs agencies regarding trade of wildlife parts, including monitoring and sharing of information exchange between corresponding governments and international structures like CITES and INTERPOL;
- Coordinate of research programs and development of collaborations among specialists of Russia, Mongolia, China, and Kazakhstan on snow leopard its prey. Develop joint programs for snow leopard population monitoring in the Russia-Mongolian transboundary areas is very important.
- Develop transboundary ecotourism in the habitats of snow leopards and other rare species focused to create alternative income source for local communities in Russia and Mongolia. The first step in this direction was made by WWF and the UNDP/GEF "Biodiversity Conservation in the Russian Altai-Sayan Ecoregion": the "Land of the Snow Leopard" project to develop ecotourism in local communities in snow leopard habitat in Altai, Tuva, and western Mongolia began in 2010.

Research and Training Activities

After A.G.Bannikov, who first summarized information on the status, distribution of snow leopards of Mongolia, scientists from Institute of Biology, Mongolian Academy of Sciences were studying snow leopards since 1970s, the publication was made by Dr. A. Bold in 1976, mapping snow leopard distribution in southern Mongolia, assessing the population and recommending ways to solve livestock depredation by snow leopards. In 1980s G.Amarsanaa studied the species and published couple of articles on its biology and ecology. Modern snow leopard research and conservation in Mongolia initiated

in 1990s by Mongolian Association for Conservation of Nature and the Environment (MACNE), bring to Mongolia world level technology partnering with researchers like Schaller and McCarthy, assisted by B.Munkhtsog. Snow leopard long term surveys funded by Snow leopard conservation foundation/SLT Mongolia is ongoing in southern Mongolia, WWF Mongolian program office is conducting snow leopard study in western Mongolia, Institute of Biology/Irbis Mongolia has survey and monitoring plots in Tsagaan shuvuut, Baga Bogd mountains. A lot of information was collected and results are published.

Snow leopard long term comprehensive research center named after J.Tserendeleg is functioning in Tost local protected area since 2007, where were captured, collared 18 snow leopards, tracked with telemetry and population have been monitored. The field camp is providing a lot of training for field biologists, rangers, and students, along with Jargalant field research camp in western Mongolia within snow leopard research project funded by WWF Mongolian Country Office. In recent future from this camp could be made another long term comprehensive research center in western Mongolia to study and monitor endangered species, including the snow leopard. At the Institute of Biology PhD, master, bachelor students are join the scientists in the field for several years to learn, collect data, analyze it and compile for their thesis.

Within the ongoing research, we still need to:

- Review and update current distribution, density of Mongolian snow leopard population, generate improved range map
- Expand long term snow leopard comprehensive research in Tost to surrounding mountains, including Gobi Gurvansaikhan national park
- Establish another long-term snow leopard comprehensive research station in Jargalant mountain, western Mongolia, supported by the modern methodologies, facilities, equipment, staff and provide with necessary operational funding
- Study and Identify key sites for snow leopard conservation in Khovd province within Mongolian Altai range
- Study genetic relationships, gene flow and the degree of genetic isolation/similarity of various snow leopard subpopulations in Mongolia
- Identify potential migration corridors between snow leopard populations in Russia and recommend transboundary conservation action.
- Assess the prey base distribution and its population dynamics in various parts of snow leopard range, and prepare recommendations for conservation
- Feasibility study for restoration of snow leopard in its previous range in Khuvsgol province on the border of Russia and Mongolia
- Particular attention must be paid to applied science for the development and implementation of conservation actions aimed at preserving viable snow leopard populations in intensive developing regions of Mongolia. Need to establish science and monitoring division at administration of state protected areas to study, monitor and recommend actions for conservation of bio-diversity, rare and endangered species such as snow leopard.

Scientific monitoring of snow leopard, habitat, and threats

Beginning in 1997, monitoring of key snow leopard populations in the western Mongolia has been done by staff from Uvs lake SPA, Altai Tavan Bogd and Khar us lake NP with the support of WWF Mongolia and UNDP/GEF. Park biologists were trained in 1998, 2004, 2006 on monitoring methodology. Software "Biosan" to accumulate data collected by park rangers, staff was developed by WWF Mongolian Program Office and was endorsed by Ministry of Environment and Green Development in 2007.

In monitoring of Mongolian snow leopard population, we aim to:

- Select and monitor snow leopard monitoring at sites in 4 key snow leopard areas

- Assess snow leopard and other wildlife population trends in the PAs and in selected key snow leopard habitats every 4 year
- Prepare conservation recommendations for use of decision makers, including habitat condition (both positive & negative factors).

National institutions for snow leopard conservation

To deal with current and future threats to snow leopard and its habitats different stakeholders are working together. National institutions for snow leopard conservation in Mongolia are represented by Ministry of Environment and Green Development, Province' Environment Agency, State Protected Areas, Local Protected Areas, Mongolian Academy of Sciences, International Organizations (WWF, UNDP/GEF, TNC, WCS), Regional and Local Conservation NGOs, Local Communities and others. Strengths and weaknesses of these stakeholders are explained in the Table 2.

Table 2. National institutions for SL conservation in Mongolia: strengths and weaknesses

Organization	Strengths	Weaknesses
A. Ministry of Environment and Green Development	• Real political power and direct dialog on behalf/with Government • Development of appropriate conservation policies and legislation • Establishing of new Protected Areas	• Lack of planning process • Quick rotation of government employees • Greater attention to resource exploitation • Low capacity of State protected areas
B. Province' Environment Agency	• Real rights to fight poaching in snow leopard habitats on large areas	• Lack of appropriate funding • Lack of equipment and vehicles • Only one wildlife specialist in province department and single inspectors at sum level
C. State Protected Areas	• Professional staff for protection and monitoring of snow leopard • More or less sustainable funding from central budget • Developed environmental education programs	• Limited area under protection • No Rights for inspection • No/very limited funding for snow leopard conservation and monitoring
D. Local Protected Areas	• Appropriate location and area for snow leopard conservation • Support of local people and community • Good knowledge of snow leopard distribution	• No/Lack of sustainable funding • Lack of professional staff • No/Very limited staff • No rights to stop poachers/law violation
E. Mongolian Academy of Science	• Professional research team • Advanced students for research • Long term data base • Professional equipment for advanced research programs on snow leopard	• Lack of permanent funding for research, equipment, laboratory • Low conservation implication of research programs • Limited funds for field work
F. International Organizations (WWF, UNDP/GEF), TNC	• Highly professional conservation experts • Long-term conservation programs • Transboundary cooperation in conservation • Support of local conservation communities • Good public awareness activities	• Lack of permanent funding for snow leopard conservation • Lack of fundamental scientific research of snow leopard ecology
G. National and Local Conservation NGOs	• Professional team of conservationists and researches • Good knowledge of key snow leopard and habitat • Cooperation with local government organizations	• Small number of professional experts • Lack of sustainable funding • Lack of long-term conservation programs for endangered species • Local outreach limited by accessibility & high cost field travel
H. Local Conservation Communities	• Live directly in the habitats of snow leopard • Traditional knowledge and lifestyle • Excellent knowledge of snow leopard distribution in limited areas	• Use of natural resources as a source of income • Poverty and unemployment • Lack of conservation knowledge of snow leopard • Lack of local governmental support • Lack of capacity and funding • Insufficient incentives for reducing livestock herd size • Inadequate guarding practices

Wildlife law enforcement and combating crime

Between 1997 and 2013 there were number of cases prosecuting poachers for killing snow leopards and 19 cases (in Bayankhongor province -2, Gobi-Altai -4, South Gobi -1, Khovd 7, Bayan-Olgii 4, Ulaanbaatar-1) of illegal hunting and trade of skin of snow leopards were discovered by state inspectors. The guilty parties were sentenced up to 1.6 years. Between 2000 and 2011 there were a number of instances when snow leopard pelts were smuggled to Russia (Altai Republic) from Mongolia and the violators were prosecuted.

Currently state and local nature protection agencies and inspectors have very limited or no funding, staff or equipment for effectively patrolling or monitoring border posts, local residents are known to possess a significant number of illegal and unregistered weapons used for illegal hunting. It is necessary to ensure effective work by state and provincial nature protection agencies in the fight against poaching in snow leopard habitat by allocating additional funding from the central budget. Is it also necessary to devote more attention to the fight against illegal trade in products and derivatives of endangered species. Cooperation between conservation and enforcement agencies is urgently needed to address illegal trade in snow leopards and other rare species, along with game species. WWF's extensive experience in creating and supporting interagency anti-poaching brigades can be used to advance such initiatives.

Snow leopard conservation enforcement is insufficient in most of protected and unprotected areas. A number of these require changes in status, land optimization, and strengthened enforcement regimes. Need to build up patrolling in transboundary areas in cooperation between Russian and Mongolian protected areas and border patrol institutions. Expanding of Local protected areas, establishment of resource managed protected areas in snow leopard ecosystem should be elevated with management plans financed by the local government and central budget. Otherwise these areas will remain as paper protected areas.

Legal framework for empowerment of community for co-management of wildlife and habitat

The project "Nature Conservation and Sustainable Management of Natural resources, Gobi component" funded by GTZ (1999-2006), formed Herder Communities for the purpose of increasing herders' livelihoods through collaborative community-based natural resources management. After 2001 the number of donor-supported development projects in Mongolia, especially in the countryside, increased considerably. And based on the success story in the Gobi, almost every development project has encouraged and supported herders in establishing herder associations to deliver interventions, promote pasture management and livestock production, promote income generating activities such as value added processing of livestock products or livelihood diversification into non-livestock related activities, or for arranging joint marketing of like milk and dairy products. The Mongolian government legalized "Community" as an officially recognized rural institution through the amendment of the Environmental Protection Law (2006). Under this concept, the Herder Community Organizations are allowed todesignate Community Responsible Areas for managing natural resources within their responsible territories.

In order to increase the effectiveness of snow leopard, its prey protection and ensure conservation of its habitat by local communities it is advisable to:

- Develop strategies and plans to develop community managed, resource used local protected areas, improve conditions for economic development attracting additional funding to develop tourism, small businesses, service related alternative employment, including investments and other extra-budgetary funds

- Develop sustainable pasture use management and accounts for the needs of wild ungulate species in snow leopard habitat

- Improving of corrals from snow leopards to reduce conflict with herders leading to retributive killing of snow leopards

- Minimize unguarded pasturing of livestock in snow leopard habitat
- Expand Snow Leopard Enterprises to offer incentives and help compensate herders for loss of livestock by snow leopards, educate local herders on protected status of snow leopards and the penalties for illegal hunting of this endangered species
- Create and implement community-based inspection teams to patrol and protect rare species by engaging those local residents who reside in snow leopard habitat.
- Communities enabled receiving visitor/tourists for snow leopard watch, its habitat and sign, providing them with guide, accommodation, transport, food etc.,

Priority should be given to programs and projects with minimal impact on the environment and especially snow leopard ecosystem.

Time-phased implementation program, budget, and indicators for snow leopard conservation in 2014-2021

Implementation Bodies involved in the Snow Leopard Conservation Programs in Mongolia

- Ministry of Environment and Green Development of Mongolia (MEGD)
- Department of Environment of Provinces
- Administrations of State protected areas
- Administrations of local community managed areas
- International counterparts such as Snow leopard trust, UNDP, WWF, SLC,TNC
- National NGOs Irbis Mongolia, snow leopard conservation foundation
- Local conservation communities
- Government's focal points for the International Conventions
- Institute of Biology, Mongolian Academy of Sciences
- Universities

The Department of Environment and Natural Resources, MEGD will act as leading and coordinating body for the implementation and monitoring of the NSLEP in Mongolia. However, the NSLEP working group is consisted of the representatives of the different organizations including Institute of Biology, Mongolian Academy of Sciences, WWF Mongolian Program Office, Snow Leopard Conservation Foundation/SLT Mongolia.

Priority Activities and Costs for the implementation of the Snow Leopard Conservation Actions

Cost Structure of the Snow leopard Conservation Management in the recent past

Table 2: Cost Structure of Snow Leopard Conservation Management in Mongolia					
#	Donor organization	Implementation organization	Duration of the project	Total in USD	Comments
1	Ministry of Environment and Green Development (from Central budget)	State protected areas	1993-2013	800,000	$40,000/year per protected area, average
2	International donors	MACNE	1993-1997	$100,000	T.M. McCarthy's PhD study

3	Mongolian Academy of Sciences (from Central budget)	Institute of Biology	1993-2013	300,000	$15,000/year for work space, salary of scientists, field surveys
4	International donors	WWF Mongolian Program Office	1997-2013	420,000	$30,000/year average, for development of conservation plans, research, training, snow leopard enterprises project, local community support, conservation, etc.
5	UNDP/GEF and other donors	UNDP Country office in Mongolia	1997-2013	340,000	$20,000/year for capacity building, training, conservation in State protected areas, support of communities
6	German cooperation agency	MEGD	1997-2002	$250,000	Establishment of Gobi Gurvansaikhan national park, support of communities
7	International Snow leopard trust	MACNE	1994-2001	$35,000	Field surveys, snow leopard enterprises project
8	International Snow leopard trust	Irbis Mongolia	2001-2007	$240,000	$30/year, average for field surveys, snow leopard enterprises
9	Snow leopard trust/Panthera	Snow leopard conservation foundation	2007-2013	$720,000	$120,000/year average, Snow leopard long term comprehensive study in Tost, snow leopard enterprises
10	Snow leopard conservancy	Irbis Mongolia	2008-2013	$60,000	$10,000/year average, Camera trap surveys, equipment
Total expenditure					$3,265,000 in USD
Average per year $3,265,000/ 20year = $163,250					

Table 3: Cost Structure of the Snow leopard Conservation Management in the future

First 3-year Action Plan (2014-16)

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Table 4: Necessary funding for snow leopard research and conservation in Mongolia for 2014-2021

Major Funding Gaps

As seen from the Table 4, the total funding gap between current and needed funds for snow leopard conservation in Mongolia is $458,750/year. Need to fill out this gap in cooperation with key stakeholders at international, national, and local levels. Possible solutions and sources of funding will be explored.

Monitoring implementation progress through Key Indicators

The NSLEP working group will have at least two meetings per year and will be assessing the NSLEP implementation progress using the following key indicators, and will be reporting to Ministry consul meeting every _ years.

The key indicators for the evaluation of NSLEP successful implementation are:

- Overlapping of pasture of livestock and wild ungulates are decreasing year to year

- Assessed, by camera trapping and genetic analysis, number of snow leopards at selected monitoring sites in key snow leopard habitat will be not less than 1.5 individuals per 100 km^2

- 80% of females with cubs detected by camera traps during the monitoring in key snow leopard areas have 3 cubs, shown good growth of the population

- Number and population density of key wild prey species (Siberian ibex, argali sheep, Mongolian marmot, snow cock and others) are increased

- Number of herder families, NGOs, conservation communities responsible for snow leopard conservation, those are aware on ethical and economic value of snow leopard, its conservation and involved in its protection

- Funding spent on snow leopard conservation is increased along with families, communities involved in conservation and % of positive attitude regarding the snow leopard.

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