

National Snow Leopard Ecosystem Protection Priority in Kazakhstan (NSLEP)



Snow Leopard or Irbis (*Uncia uncia* or *Panthera uncia*) is one of the most endangered animals in Kazakhstan, the estimated number of which in the country is no more than 100 - 110 animals on the habitat area of about 50,000 km².

Goals and objectives of NSLEP in Kazakhstan

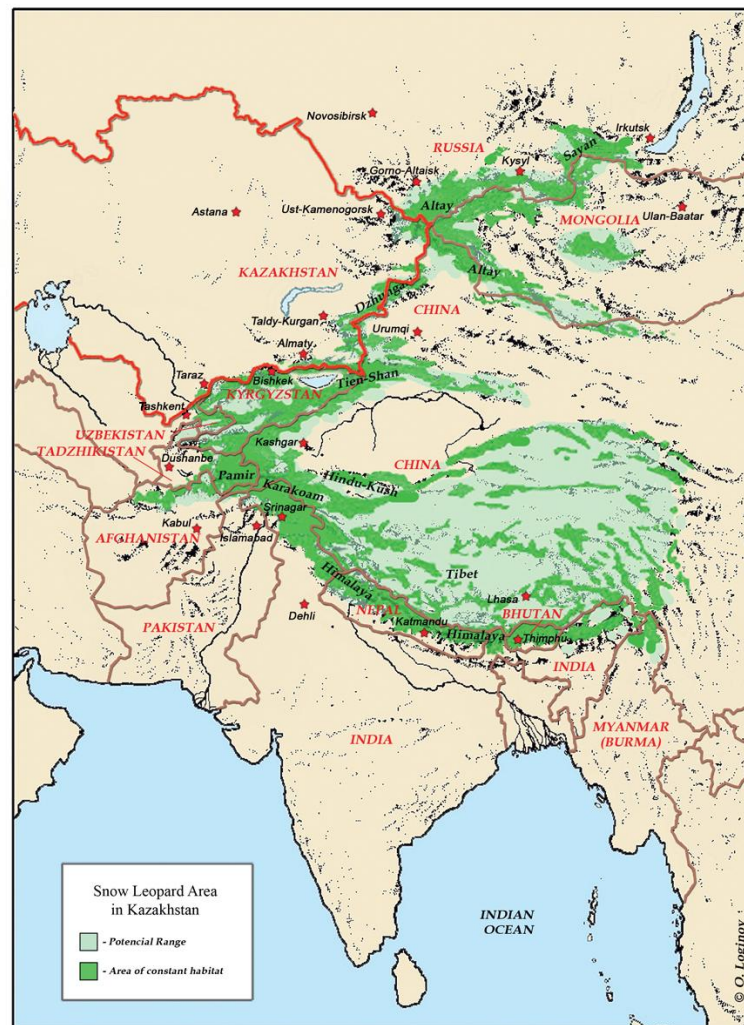
Goal

Save the snow leopard population in the long term on the territory of Kazakhstan.

Objectives

Address the main threats that reduce number of snow leopards.

Minimize the negative impact of factors leading to the degradation of its ecosystems



Map 1: Distribution of snow leopard in Kazakhstan

The peripheral northwestern part of the dissemination of the snow leopard is located in Kazakhstan. Natural habitat of species in Kazakhstan is highly fragmented, as it is in the main cross-border locations, almost anywhere entering the country for no more than 100 kilometers. Species habitat area is only about 2.7% of the total area of its distribution in the world, but this area is very important as a natural bridge to save the snow leopard within the species natural habitat.

1. The Snow Leopard Ecosystem Assessment and its role in the economy, biodiversity, spirituality / culture, expressed in quantitative terms

1.1. Symbol of Kazakhstan. Snow leopard is an official symbol of Kazakhstan, which was a suggestion of President Nursultan Nazarbayev. Thus, the symbolism of this species is an important argument and an incentive in the goal to save it for posterity. Numerous organizations, sports and tourism clubs, products and brands in Kazakhstan are using an image of a snow leopard. "Irby" was an official mascot of the Asian Winter Games "Asiada-2011", held in Almaty and Astana.

1.2. Indicator of status of mountain ecosystems. Virtually all of the major rivers of Kazakhstan and their numerous tributaries originate from the glaciers in snow leopard habitat within the country limits or in the neighboring countries: China (Ili, Irtysh), Russia (Bukhtarma, Katun) and Kyrgyzstan (Naryn-Syr Darya, Talas, Chu) and others. All in all, there are 2724 glaciers in the mountains of the Republic with an

area of 2033 km². The total volume of ice includes 100 km³ of fresh water, which is about twice as much as an annual river flow formed within Kazakhstan. Rivers feed and make fertile valleys, where half of the population is located. Agricultural land and intense industrial activity is carried out in the East Kazakhstan, Almaty, Zhambyl and South Kazakhstan regions.

One of the largest lakes in the country - Balkhash exists because of Dzhungar rivers and river Ili, flowing from China. All this is another argument in favor of maintaining the habitat of snow leopards.

1.3. Mountain's biodiversity. All the habitat areas of snow leopard in Kazakhstan are on dividing ranges, where fauna and flora of different regions are mixed, strengthening each other and forming region's exceptionally rich biodiversity, compared with arid lowland areas. These areas comprise about 75% of biodiversity in Kazakhstan. Rocky landscapes with their thin soil cover make the most fragile alpine ecosystems in comparison with other landscapes and require more attention in terms of conservation. Despite the thin soil layer, alpine meadows have a high variability and richness of flora and fauna. The majority of species included in the Red Book of Kazakhstan are in snow leopard's ecosystem, as well as important hunted animals, many of which are the prey for this predator.

1.4. Eco-tourism. Beauty and the preservation of wild, pristine nature places in snow leopard habitat attract more tourists, mountaineers and explorers from around the world every year. Further development of eco-tourism in mountain areas will increase an employment of local residents; whose work will involve monitoring of leopards and thus will contribute to its preservation. Alpine meadows, despite the harsh climate and a large diurnal temperature range fluctuations have a higher biodiversity than the neighboring semi-arid areas, and mountain landscapes of the Tien Shan, Altai and Dzhungarian Alatau and are considered to be the most beautiful, not only in Kazakhstan but also in Central Asia.

All six national parks and four reserves in the area of the snow leopard habitat in Kazakhstan have developed and are actively cultivating tourism routes through their territories. The total length of 75 routes in the protected area is about 2000 kilometers. Unfortunately, we have no data is available on the financial side and the profitability of tourism in protected areas. Many private travel companies are also developing ecotourism, as well as hunting grounds. Undoubtedly, the development of tourism is an important and promising avenue to improve an economic situation of mountain areas, involvement of local residents in business as guides, maintenance personnel, as well as in sales of traditional handicrafts, organic food for tourists etc.

1.5. Trans-boundary value of conservation of Irbis. There are important areas of snow leopard habitat on a territory of Kazakhstan, which are - Altai, Saur, Junggar Alatau and Tien Shan, which carry international importance, as regions of high biodiversity and which are important in shaping the environment. Junggar Alatau has the greatest geographical importance and uniqueness of biodiversity. This natural mountain range is extremely distinctive in this respect. There are very high levels of biodiversity and endemism of flora (180 - Kazakh endemics and 76 - Dzungarian) and fauna (Ranodon sibiricus). There are more than 2,000 plant species in Dzhungar, about 30 of them are included in the Red Book of Kazakhstan and more than 100 are included in the pharmacopoeia. The two species of amphibians, several species of nesting birds and six species of mammals are listed in the Red Book out of the more than 300 species of fauna found here.

2. Dissemination of information about the value of snow leopard ecosystems and mobilization of support for its conservation

2.2. Past activities. People living in close proximity to the snow leopard habitat, who use the gifts of nature, grazing and are engaged in hunting, are more likely to meet with a rare predator. There is a need to constantly provide people with accurate information about snow leopard as an animal, which plays an important role in nature and, thus, is not dangerous to humans. The image of the beautiful and majestic and mysterious snow leopard, "Lord of the Celestial Mountains" is the most relevant and attractive. People need to realize the importance of its preservation not only as the "Red Book" and the rare animal,

but also as a symbol of the country, national pride. In this context, souvenirs: badges, cards, posters and calendars in various formats, CD and affordable illustrated brochures and books play a very important role in Kazakhstan.

Additional environmental educational programs, which are held as extra-curricular activities in some schools and universities, have been developed and are being implemented in Kazakhstan. Regional programs for mandatory environmental training regarding the snow leopard and its role in nature are being gradually developed in schools and universities, located in Almaty, Zhambyl, South Kazakhstan and East Kazakhstan regions which are aligned with provincial and district departments of public education.

Since 1993 up (the Club IRBIS) to present time - "Snow Leopard Fund" carried out the most significant work to promote conservation of the snow leopard and its habitat, the development of public education programs and monitoring of the species. SLF published several books about snow leopard, "Snow Leopard. Symbol of Celestial Mountains" in 2009 and "Irbis - The Snow Leopard" in English in 2011 (both books were published with the financial support of the UNDP / GEF-Kazakhstan, "Spirits of the Sacred Mountains" - fairytale coloring books by Irina Loginova in 2011 in Novosibirsk (Russia), and the 2013 album - "Irbis - Snow Leopard." There were also many publications in the periodical press (an average of 20 articles per year).

2.3. Future opportunities. Environmental education programs for the population living in the vicinity of leopard habitat are particularly relevant. The following topics should be included in task-based projects to disseminate information and establish environmental consciousness:

- 1) formation of understanding of population of the role of Kazakhstan in the preservation of the world's population of snow leopards;
- 2) Formation of a positive attitude of the local people to irbis as a predator, which does not pose a serious danger to the public and understanding of a need for its conservation;
- 3) development and dissemination of "Rules of Conduct for leopard habitat" among the population;
- 4) development and implementation of targeted promotional campaigns for various social groups from leopard habitat to create a positive image of the snow leopard as a symbol of Kazakhstan;
- 5) improvement of an educational level of managerial staff and experts in the field of natural resource management, including managers and specialists for hunting grounds;
- 6) widespread promotion of exemplary biodiversity of protected areas and hunting enterprises that manage ungulate populations in the interests of snow leopards;
- 7) preservation of spiritual culture and national customs, promotion of traditional knowledge, customs and practices aimed at preservation and respect for the snow leopard,
- 8) formation of public understanding of the leading role of national reserves and national parks in preserving a unique mountain ecosystems
- 9) promotion of sustainable patterns of natural resources, preserving habitat of this predator and its prey;
- 10) formation of the population's intolerance for poaching.

3. Threat assessment, both traditional and new, coming from infrastructure development, market demand, tourism and climate change

The major threats to the snow leopard in Kazakhstan:

3.1. Poaching

This is the main threat to the existence of an extremely rare animal in Kazakhstan. Taking away even 2-3 animals from nature can lead to the disappearance of the local animal population groups. Separate Altai and Saur groups of snow leopards found in East Kazakhstan region are most scanty in Kazakhstan.

Together they make up no more than a dozen species of snow leopard. The sighting or traces of these species are not happening each year in East Kazakhstan region.

Despite an increased security measures by the state in recent years, the creation of new protected areas and a significant increase in fines for illegal hunting of leopard, poaching is not yet eradicated. It has become even more secretive.

The absence of work for local population also leads too many of them engaging in illegal hunting, including of species included in the Red Book of the Republic of Kazakhstan, as well as of animals who are pray of a leopard.

There are unintentional killings of a leopard when hunting its main prey animals or through traps or loops placed for other predators, which for obvious reasons are carefully concealed.

3.2. Conflict with livestock breeders

Cattle grazing in the snow leopard habitat can cause conflicts when a predator attacks livestock. This, traditional in all parts of the habitat threat to the leopard in Kazakhstan is also common, and in fact intertwined with poaching. Unfortunately, the shepherds and ranchers but not hunters are involved in majority cases of poaching, especially wintering shepherds; almost 100% of them have available weapons and traps.

Most often, snow leopard attacks on livestock occur when animals are grazed directly in snow leopard habitat. Other causes of this big cat attacks on livestock are unsupervised grazing and unprotected paddocks and sheep yards.

As a main measure, it is necessary to develop a procedure for financial compensation for the damage to the livestock caused by this predator, if the facts of attack on cattle are proven and cannot be questioned. It is also necessary to assist shepherds in the construction of sheltered sheepfolds and pens, closed at the top and with a solid mesh on windows, and to explain the need for oversight of grazing herds, preferably with a dog in the daytime.

3.3. Reducing the number of pray of the snow leopard

In first years following the collapse of the Soviet Union, nature conservation efforts in all post-Soviet countries have deteriorated significantly, which affected not only numbers of rare species, but also those on which hunting is permitted. Many ungulates, such as mountain sheep (in Kazakhstan 6 subspecies) and mountain goats of different subspecies, which are pray of the snow leopards, still not regained their former numbers.

In many areas, the number of not even rare ungulates has decreased markedly in the last 20-30 years. The number of animals remains stable and their safety is guaranteed only in the nature reserves and national parks, where hunting is prohibited.

There are around 700 hunting enterprises in Kazakhstan. Some ridges are almost completely covered by private hunting areas, such as ridge Ketmen (or Uzynkara), where snow leopards have been spotted before. The activities of hunting enterprises affect the conservation and reproduction of rare animals.

3.4. Degradation and fragmentation of key habitats

Habitat degradation has also influenced a decline in the number of snow leopards. Area of this species is fragmented within Kazakhstan, and despite the fact that its dwells mostly in remote areas, economic activity in some places have influenced the state of the mountain biocoenosis. Grazing cattle too much can lead and in some places has led to the degradation of the sub-alpine and alpine meadows and displacement of wild ungulates from their native habitats. This is recorded in all mountain ranges where there are no protected areas.

Many middle-altitude areas have largely been transformed over the past 30 years. Snow leopards were spotted in these areas during its migrations, both in winter and in other seasons. These are the areas of intermountain valleys, with abundant agricultural land, roads and railway tracks, as well as industrial sites of cities and towns. Thus, here the possibility of a conflict got repeatedly increased in a case of snow

leopard being near human settlements when making transitions from one area of habitat (population groups) into the other.

4. Countering threats to snow leopard

Kazakhstan has accumulated some experience in controlling and reducing main threats to the snow leopard. Some achievements are preserved from the Soviet era; many were developed in independent Kazakhstan. Very effective Soviet legal framework, which was taken as a basis for the protection of wildlife, has been improved.

Higher penalties for poaching on snow leopard were set at 2000 units of monthly index - 3.42 million tenge (\$ 22,724), and all five subspecies of wild sheep (*Ovis ammon* ssp.) - 1500 units of monthly index - 2,565,000 tenge (\$ 17 043), hunting of which was universally banned.

However, there are still a number of issues that should be solved without delay:

4.1. Strengthen measures to combat poaching. Law enforcement agencies, border patrol, hunter service of hunting enterprises, service for guarding protected areas should be more involved in protection activities concerning snow leopards.

It is important to expand the research program to study this predator in Kazakhstan, their population dynamics and distribution within the Kazakhstan habitat in five of its population groupings - 1-Altai, 2-Saur-Tarbagatai, 3-Junggar, 4-North Tien Shan and 5 - West Tien Shan. It is important to study the existence of threats to the species, to develop measures to counteract them and to create a system for constant monitoring of the state of the snow leopard populations.

4.2. A procedure for financial compensation for the damage to the population caused by this predator, if the facts attacks on cattle proven and cannot be questioned needs to be developed as a main measure to reduce conflicts with livestock. It is also necessary to assist in the construction of the shepherds sheltered sheepfolds and pens, closed at the top and with a solid mesh on the windows, and to explain the need for oversight of grazing herds, preferably with a dog in the daytime.

4.3. Take measures to increase population of species of hoofed animals, which are prey of leopards in the areas of hunting enterprises in protected areas. Establish the rules and regulations of livestock grazing in the subalpine and alpine zones of the mountains in order to save the snow leopard prey. Develop new forms of traditional land usage, which will provide a mutually beneficial combination of social and economic development for the people and conservation of the snow leopard and its habitat.

It is necessary to interest or oblige owners of hunting enterprises to participate in monitoring programs, as well as in preservation and restoration of snow leopards and their prey in order to reduce the negative impact of fixed hunting enterprises on preserving this species. It is necessary to develop and establish new rules governing the minimum and maximum population density of ungulates for each hunting enterprise.

Optimization of hunting enterprise management in order to improve the capacity of habitats. An adoption and implementation of programs to restore the population of wild ungulates is needed in order to save the snow leopard prey. There is a need to develop and implement a flexible system of regulation of hunting for wild ungulates, which would mandate the allocation of reproduction sites. In the case of force majeure, changes in the rules of hunting (extreme cold and snowy winter, and epizootic diseases, etc.), strengthening of measures against those who breach the hunting rules need to be implemented.

4.4. Take measures to reduce a negative impact of existing and being built industrial facilities and highways on mountain ecosystems. These objects should be more closely monitored by the governmental environmental control, not only as sources of environmental pollution and the destruction of landscapes, but also as places where people who can engage in illegal hunting for wild ungulates, marmots, etc., and can also get involved in poaching of the snow leopard.

4.5. Make arrangements for the protection of nature reserves and increase protected areas in the territory of Kazakhstan, to save snow leopards. At present time, the Criminal Code of the Republic of

Kazakhstan, the Law "On protection, reproduction and use of wildlife, and On Specially Protected Natural Areas regulate the protection of the snow leopard in Kazakhstan." Compliance with these laws is done throughout the country, but in practice enforcement is very difficult, so it is most effective when only in protected areas (PAs).

There were only 3 nature reserves and 5 in Kazakhstan during Soviet Union times covering snow leopard habitat. 12 state national natural parks (SNNP), half of them – 6 in the area of snow leopard habitat and one reserve - Karatausky (for the protection of the Karatau mountain sheep and unique ecosystems of that range - the spur of the Western Tien Shan) were established during the years after independence. Sightings of leopards are regularly reported in 4 nature reserves and 6 national parks on Kazakhstan part of the species range.

Thus, a key measure of protection of leopards as rare species is a system of protected areas (PAs), which can most effectively provide protection of all the key areas of leopard's habitat. About 30% of the area of snow leopard's habitat in the country is under their protection. In many protected areas, government inspectors and other staff are poorly paid and often lack the equipment, such as a modern means of communication, all-terrain vehicles, etc. This is especially true in sanctuaries of Kazakhstan, where the snow leopard could be found - Almaty, Toktin, Verhnekoksuy and Lepsinsk areas, which are located in the Zailiisky Alatau and Dzhungar mountain ranges. The protected areas (PAs) must be not less than 75% to ensure the complete safety of the snow leopard in the nature within Kazakhstan.

Organization of Tarbagatajsky National Park is underway, where snow leopard might cross. There are no protected areas in Saur, where there is a high level of biodiversity, and its a habitat of rare species of animals such as snow leopard, mountain sheep of Kazakhstan, Himalayan snow cock (a rare bird found only on the Saur region of East Kazakhstan area) and others. NGOs "Eco-Altai" (Ust-Kamenogorsk) developed a preliminary draft of the reserve's creation at Saur. Consideration should be given to the establishment of protected areas for the conservation of this important snow leopard habitat. It is also desirable to consider an establishment of protected areas in the Kirgiz Alatau in the upper reaches of the rivers Aspara, Merke and Karakystak. It is necessary to strengthen cross-border cooperation between Kazakhstan and the Kyrgyz Republic in the northern Tien Shan - between SNNP "Kolsai-Kolderi", Almaty reserve, the Ile-Alatau SNNP and Chon-Kemin National Park in Kyrgyzstan.

The optimal solution would be an establishment of ecological corridors between existing protected areas of Dzhungar mountain ranges:

- Between Toktin, Lepsinsk sanctuaries and Zhongar-Alatau SNNP, Verhnekoksuy reserve and Altyn-Emel SNNP.

Other potential areas within the range of the snow leopard in Kazakhstan for the creation of ecological corridors, reserves and sanctuaries in Almaty, Zhambyl, South Kazakhstan and East Kazakhstan regions should also be explored.

5. Organization and management of conservation program

Unfortunately, in many areas of snow leopard habitat in Kazakhstan, the local population remains in the dark about environmental laws and carried out conventions and ongoing projects. The need and motivation to preserve such a large predator, which attacks their livestock, and thus inflicts damage often not explained to local people. If there is no reserve or a national park in the vicinity of settlements in the mountains, the environmental education of the population is either absent or is at a very low level. This threat is inextricably linked with the tradition and motives to gain valuable furs in the absence of proper promotion and protection measures. Thus, in most parts of the snow leopard habitat in Kazakhstan, despite the existence of several laws and policies, inaccessible mountains best protect leopards. It's only a matter of time when there will be another fatal encounter with a man, armed with firearms, traps or loops.

6. The main activities to be included in leopard conservation program are:

No	Priority activities	Expected results
1	The deployment of monitoring system of the five population groups of the snow leopard and its prey animals with the participation of leading experts and locals	Determining the true population will help to formulate the scientific basis for conservation activities in the long term
2	Study of the influence of natural and anthropogenic factors on the population dynamics and the conversion or degradation of habitat of the snow leopard	The findings will become the basis for planning conservation measures
3	Expansion of international cross-border cooperation to improve security measures of species and its habitat	Improving security in key habitats, located directly on the state border
4	Development of ENO and feasibility studies required to address the expansion of existing areas and creation of new protected areas to protect the snow leopard	After increasing protected areas they can better protect the snow leopard population groups and ecosystems
5	Improving security measures of all kinds of animals which are prey to snow leopard outside of protected areas	Provide an increase in the number of ungulate species and other species of animals which are prey for leopards in hunting enterprises' areas and protected areas
6	The development of eco-tourism in the mountains and other forms of local employment	The development of mountain areas will be another measure of preventing people from carrying out illegal forms of exploitation of natural resources
7	Environmental education of population, promotion and dissemination of information through the media	This will help to generate both the environmental awareness of residents and a positive attitude to the snow leopards
8	Compensation Program for livestock breeders and support of the construction of secure pens for cattle	decreased number of conflicts between herders and snow leopards

7. The implementation of programs for the snow leopard conservation in Kazakhstan

Financing activities of snow leopard conservation program will be implemented through the budget in accordance with the budget legislation of the Republic of Kazakhstan. Public funds may be established in accordance with the laws of the Republic of Kazakhstan to finance leopard conservation activities as well as other sources not prohibited by laws of the Republic of Kazakhstan.

Funding of priority activities for conservation of the snow leopard in Kazakhstan
(government and local budget only)

No	Priority projects	Amount US \$	Expected results/resources
1	- The deployment of monitoring system of the five population groups of the snow leopard and its prey animals with the participation of leading experts and locals.	2014 r. – 20,000 2015 r. – 33,500 2016 r. – 33,500 2017 r. – 33,500 2018 r. – 33,500 2019 r. – 33,500	Getting missing information and scientific facts about the snow leopard, its behavior, nutrition, etc. in its habitat that will be the basis for planning of security measures and scientific expeditions / Public funding from 2015 / International financial institutions and funds of

No	Priority projects	AmountUS \$	Expected results/resources
2	- Study of the influence of natural and anthropogenic factors on the population dynamics and the conversion or degradation of habitat of the snow leopard	2014 r. – 20,000 2015 r. – 33,500 2016 r. – 33,500 2017 r. – 33,500 2018 r. – 33,500 2019 r. – 33,500	Kazakhstan
3	Expansion of international cross-border cooperation to improve security measures of species and its habitat	2015 r. – 6,667 2016 r. – 6,667 2017 r. – 6,667 2018 r. – 6,667 2019 r. – 6,667	Improving the security of cross-border population groups and key habitats, located directly on the border Public funding from 2015 / International financial institutions and funds of Kazakhstan
4	Development of ENO and feasibility studies required to address the expansion of existing areas and creation of new protected areas to protect the snow leopard	2017 r. – 33,500 2018 r. – 33,500 2019 r. – 33,500	After increasing protected areas they can better protect the snow leopard population groups and ecosystems at the level of at least 75% Public funding from 2015
5	Improving security measures of the snow leopard prey animals outside of protected areas	2017 r. – 33,500 2018 r. – 33,500 2019 r. – 33,500	Public funding from 2015 / International financial institutions and funds of Kazakhstan
6	The development of eco-tourism in the mountains and other forms of local employment	2016 r. – 40,000 2017 r. – 53,500 2018 r. – 53,500 2019 r. – 53,500	The development of various forms of employment for people living near snow leopard habitats, such as the production of souvenirs, food, participation in tourism activities will reduce the burden on natural systems and will be another measure of the environmental awareness of local residents. Public funding from 2015 / International financial institutions and funds of Kazakhstan
7	Environmental education of population, promotion and dissemination of information through the media	2015 r. – 20,000 2016 r. – 20,000 2017 r. – 20,000 2018 r. – 20,000 2019 r. – 20,000	This will help to generate both a positive attitude towards the snow leopard as to an animal which plays an important role as an indicator of mountain ecosystems. Public funding from 2015 / International financial institutions and funds of Kazakhstan
8	Compensation Program for livestock breeders and support of the construction of secure pens for cattle	2015 r. – 20,000 2016 r. – 20,000 2017 r. – 20,000 2018 r. – 20,000 2019 r. – 20,000	Decreased number of conflicts between herders and snow leopards public funding from 2015 / International financial institutions and funds of Kazakhstan
	Total - \$ US:	1,009,835	

Specific activities and funds for financing will be determined during development of sectorial programs for 2014-2019 on conservation of biological resources in RK

Implementing a set of measures aimed at the preservation of animals and its prey, as well as the environment in general, at the ecosystem level can help save the snow leopard in Kazakhstan. It is

necessary to take into account biological characteristics of the species, the nature of its spatial distribution and fragmentation of habitat. The main objective of the snow leopard conservation should be an elimination of the causes that reduce its numbers, and minimization of the negative impact of the factors leading to the degradation of suitable habitat. It is important to have an active and coordinated cooperation of regional territorial forestry and hunting inspections with the local population and with local authorities in order to convey the need to save the snow leopard habitats in the region.

Because the most important measure of protection of rare species and their ecosystems is an establishment of protected areas (PAs), in order to ensure the conservation of leopard groups in Kazakhstan in the long term, there is a need for additional protected areas. If you take look at the map of various protected areas on the territory of Kazakhstan, you can see that they are not covering many very important areas characterized by a rich biodiversity of wildlife. Sanctuaries in its protective functions are significantly inferior to nature reserves and national parks. There are no other types of protected areas such as nature reserves and ecological corridors within the habitat of the snow leopard in Kazakhstan. Functionally, the most effective type of protected natural areas is a state reserve. It corresponds to the highest category (Ia - Strict Nature Reserve: protected area managed mainly for science based on the international classification IUCN) and has a good scientific base and the most effective security functions. Ecological corridors in the situation with snow leopard and protection of its habitats in most of the areas can be a good and inexpensive solution to improve its protection.

8. Control over the implementation and results of monitoring

The laboratory of theriology of the Institute of Zoology initiated studies in the northern Tien Shan using photo-traps. In September, they received first pictures of various animals, including a snow leopard in Almatinsky reserve. Extensive research in Dzhungar mountain range and other important habitats of snow leopards in Kazakhstan is scheduled to commence.

Snow Leopard Fund began work on the monitoring of the snow leopard in the Katon-Karagai SNNP using photo-traps in October of 2012 with the support of the international agency Snow Leopard Conservancy. Research is carried out by experienced zoologists, national park rangers and volunteers, and local experts.

Monitoring of implementation using key indicators: the creation of a functional system:

- 1) expansion of protected areas to 75% coverage of snow leopard within Kazakhstan;
- 2) stabilization of population of species and its growth to the optimum of about 150 individuals;
- 3) development of tourism and other recreational infrastructure in mountainous areas;
- 4) minimization of conflicts related to predator attacks on livestock;
- 5) reduction of poaching to a minimum.

9. Cross-border cooperation with neighboring countries in snow leopard habitat

Snow Leopard is a "flagship" of the rarest animals in Kazakhstan, which promoted unity among professionals and large organizations tasked with high level planning to implement projects for the conservation of these unique species. A good example is the cross-border joint project of the Government of the RK / UNDP / GEF "Conservation and Sustainable Use of Globally Significant Biodiversity in Kazakhstan in the area of Altai-Sayan Eco-region", where the snow leopard and the Altai mountain sheep (Argali) are most important species.

In September 2011, an agreement was signed between the governments of Kazakhstan and the Russian Federation at the forum of inter-regional co-operation on an establishment of protected area "Altai", which covers the most mountainous part of the Altai with a mount Belukha, which is of great cultural significance to the people in the region. Important snow leopard habitat areas in Altai are included here.



The experience of organizing such trans-boundary protected areas needs to be carefully studied and used in the creation of similar projects in other territories. There is an urgent need to strengthen cross-border cooperation with China and Kyrgyzstan by means of carrying out joint projects and programs for the snow leopard conservation.



The most important areas for the establishment of trans-boundary protected areas and snow leopard conservation at the border with Kyrgyzstan (and China)

Khan-Tengri (Sary Jaz range in Kyrgyzstan + Bayankol river valley (Kazakhstan), where there is now a private hunting ground "Bayankol", belonging to LP "Shindal San". There is a discussion by Kyrgyzstan of creation of the national park on the slopes of Khan-Tengri peak, adjacent to the territory of Kazakhstan and China. From China part there is a protected area "Tumor Feng (Tomur)."



Map 3: Distribution of protected areas and the snow leopard in Dzhungar mountain range

PAs and promising areas for the development of cross-border cooperation at the border with Kyrgyzstan:

- Kungei ridge+ Zaili Alatau ("Chon-Kemin National Park in Kyrgyzstan + SNNP" Kolsay Kolderi "+ Ile-Alatau SNNP + Almaty reserve in Kazakhstan"



Map 4: Distribution of protected areas and the snow leopard in the Western Tien Shan

- Kyrgyz Alatau mountain range - the most important part for the snow leopard ecosystems conservation is of the high mountain range in the areas of the gorges of the rivers: Merke and its tributaries, Aspara (border with Kyrgyzstan) and the Natural Park Ala-Archa in Kyrgyzstan. There are no large protected areas such as nature reserves at this ridge of the Northern Tien Shan - just a small park Ala-Archa near Bishkek and two small reserves - Ak-Suu and Jarly Kaiyndy in Kyrgyzstan. Meanwhile, Kyrgyz Range was the main supplier of live snow leopards to zoos around the world. Animals were caught by order of Moscow zoo

complex. Vasily Smolin himself caught 54 leopards in the middle of this range. There are no PAs yet in Kazakhstan part of Kyrgyz Alatau. There is a need to speed up creation of a planned a few years ago National Park "Merke" in the Kazakh part of the ridge.

In the Western Tien Shan on the ridges: Talas Alatau and Sairam, Ugamsky and Karzhantau there are two protected areas - the oldest nature reserve in Kazakhstan organized in 1926 - Aksu-Zhabagly state reserve (128,118 ha.), and Sairam-Ugam SNNP (150,000 ha.). It is very important ecosystems reserves in order to protect snow leopards. They cover the far area of north-western boundary of this species habitat. This protected mountainous area is located at an altitude of 1300 to 4030 meters above sea level. These protected areas border Besh-Aral reserve on the Kyrgyz side, and Chatkal Reserve and Chatkal-Ugam National Park from Uzbekistan's side.

Western Tien Shan is a region of high biodiversity and was nominated for inclusion in the UNESCO list of natural heritage places, so it is very important to strengthen the development of trans-boundary protected areas to 100% to cover all of the snow leopard habitat in the region. Also, Western Tien Shan is important area for the conservation of such endangered species as the groundhog marmot (*Marmota Menzbiri*), Tien Shan or white-claw brown bear (*Ursus arctos isabellinus*), Central Asian lynx (*Lynx lynx isabellina*), Paradise Flycatcher (*Terpsiphone paradisi*), and many others animals and plants.

Table: Cross-border protected areas of Kazakhstan, where snow leopard ecosystems are protected:

№	Name of protected area (PA)/ Region	Type of PA (IUCN category)	Area (ra)
	Western Tien Shan		
1	Aksu-Zhabagly	SNR (Ia)	128 118
2	Sairam-Ugam	SNNP (II)	150 000
	Northern Tien Shan		
3	Almaty	SNR (Ia)	71 700
4	Ile-Alatau	SNNP (II)	199 292
5	Kolsai Kolderi	SNNP (II)	161 045
	Dzhungarian Alatau		
6	Zhongar-Alatau	SNNP (II)	356 022
	Saur-Tarbagataj		
7	PAs do not		
	Altai		
8	Katonkaragay	SNNP (II)	643 4177
9	Markakolski	SNR (Ia)	103 000
10	West Altay	SNR (Ia)	56 078
	Total:	50 000 km ² of snow leopard habitat includes 4 reserves and 6 SNNP	1 868 732 ra.

10. The strategy of cooperation

The following organizations will work on implementing leopard conservation program:

- Committee for Forestry and Hunting of the Ministry of Environment of the Republic of Kazakhstan.
- Committee of Science under Ministry of Education and Science of the Republic of Kazakhstan.
- Institute of Zoology of the Science Committee under the Ministry of Education and Science of the Republic of Kazakhstan.
- The regional territorial departments of leopard habitat of Forestry and Hunting Committee under the Ministry of Environment of the Republic of Kazakhstan.
- Protected areas of leopard habitat of Forestry and Hunting Committee under the Ministry of Environment of the Republic of Kazakhstan.
- Biodiversity Conservation Fund of Kazakhstan (BCFK).
- Snow Leopard Fund (SLF) and other environmental non-governmental organizations in Kazakhstan tasked with conservation of the snow leopard habitat.

- Various other international conventions, foundations and nature protection organizations.

Information sources and credits

Strategy for the conservation of the snow leopard in Kazakhstan. Kazakhstan Zoological Yearbook "Seleviniya", Almaty, 2011, pp. 7-29

- <http://moxnpn.ru/kazakhstan/82-oxrana-prirody-i-racionalnoe-ispolzovanie-prirodnix-resursov--kazaxstana.html>

- http://www.epravo.kz/urist/detail.php?ELEMENT_ID=6200

- <http://ru.government.kz/docs/253.htm>

- <http://www.moxnpn.ru/kazakhstan/65-ledniki-kazaxstana-mnogoletnyaya-merzlota.html>

Photo on page 1 - Snow Leopard, taken from 1.5 m in Dzhungar mountain range on January 11, 2010

Photo by Renat Minibaev, Tekeli, Almaty region, Kazakhstan.

Maps – O. Loginov

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