Snow Leopard REPORTS

Snow Leopard Reports 5, 2026: 26-33
http://dx.doi.org/10.56510/slr.v5.63883

SPECIAL ISSUE | THE STATUS OF SNOW LEOPARDS ACROSS HIGH ASIA

Snow Leopard (*Panthera uncia*) Status in Kyrgyzstan

CONTRIBUTORS:

Zairbek Kubanychbekov[1]*, Koustubh Sharma[2], Kubanychbek Zhumabai uulu[3], Oliver Wearn[2], Ian Durbach[6], Matt Raulerson[1], Chyngyz Kochorov[4], Tolkunbek Asykulov[5], Maxim Koshkin[1], Gulnura Zhumabay kyzy[1], Kabaev Eldiiar[1]

KEYWORDS:

snow leopard; *Panthera uncia*; Kyrgyzstan; country status; distribution; population; conservation

CORRESPONDING EDITOR: Örjan Johansson

HANDLING EDITOR: Justine Shanti Alexander

This article forms part of a Special Issue on the country-level status of snow leopards. All contributions were reviewed by members of the Snow Leopard Reports Editorial Team and did not undergo external peer review.

1 Ilbirs Foundation, Bishkek 720005, Kyrgyzstan
2 Snow Leopard Trust, Seattle, WA, 98103, USA
3 Snow Leopard Foundation, Bishkek 720011, Kyrgyzstan
4 GSLEP, Bishkek 720040, Kyrgyzstan
5 NABU Kyrgyzstan, Bishkek 720011, Kyrgyzstan
6 Centre for Research in Ecological and Environmental Monitoring, St Andrews University, Scotland, UK
* Email: zkubanychbekov@ilbirs.org

1. Distribution

Kyrgyzstan contains more than 125,000 km² of mountainous terrain above 2,000 m elevation, representing approximately 63% of the country. In Kyrgyzstan, snow leopards occur in the northern, southern, and western portions of the Tian Shan Mountain system. Within the Kyrgyz Tian Shan, the species is distributed across the Kyrgyz, Kungey, Terskey Ala-Too, Ferghana, Moldo-Too, Djetim, Kakshal, Talas, and Pskem ranges. In the Pamir–Alai system, snow leopards are present in the Turkestan, Alai, and Trans-Alai ranges.

The primary elevational range of snow leopards in Kyrgyzstan is between 3,000 and 4,000 m. However, the species has been recorded as low as 2,000 m based on camera trap data (PASK, 2024), and field evidence suggests it may occur at elevations up to 4,500 m. Key protected areas supporting snow leopard habitat include Sarychat-Eertash State Nature Reserve, Khan-Tengri State Nature Park, Kan-Achuu State Nature Park, Alatay State Nature Park, Naryn State Nature Reserve, Besh-Aral State Nature Reserve, Kara-Shoro State Nature Park, Chon Kemin State Nature Park, and Padysha-Ata State Nature Reserve. Additional snow leopard habitat is also found within designated hunting concessions.

The previous snow leopard distribution map for Kyrgyzstan was developed in 2017 by Panthera, the

Wildlife Conservation Society, the Snow Leopard Trust, and the Snow Leopard Network (McCarthy et al., 2017; IUCN range map). The updated distribution map presented here is informed by findings from the 2024 Population Assessment of the Kyrgyz Snow Leopards (PASK, 2024) (Figure 1). Like earlier maps, the polygons for the 'extant' and 'possibly extant' areas were hand-drawn based on expert opinion. However, this time we improved the hand-drawn areas by validating them against extensive field data from 2018-2024, including: i) camera trap surveys (PASK, 2024), ii) more than 40 field surveys assessing snow leopard sign, and iii) local community interviews. This approach enabled a more robust, data informed estimation of snow leopard distribution across both surveyed and un-surveyed areas.

The updated map for 2024 confirms snow leopard presence in several areas previously classified as possibly extant. In particular, the Terskey Ala-Too Range north of Issyk-Kul, within Chon Kemin State Nature Park, was reclassified as extant following multiple snow leopard detections recorded by camera traps between 2021 and 2024. Substantial portions of the Pamir–Alai system were also updated. In the Turkestan Range, camera trapping and field surveys conducted by The Nature and Biodiversity Conservation Union (NABU) within the framework of the PASK assessment confirmed snow leopard presence in and around Surmatash State Nature Reserve and Sarkent State Nature Park. Further east in the Pamir–Alai system, within the Alai Range, similar camera trapping and survey efforts conducted by Panthera confirmed snow leopard presence in and around the community-based conservancy of Bek-Tosot. Overall, ~78,800 km^2 have been identified as occupied by snow leopards (i.e. classified as 'extant') and ~14,800 km^2 have been identified as potentially being occupied by snow leopards ('possibly extant'; Fig. 1).

2. Population

In 2017, the Bishkek Declaration identified the lack of reliable information on the global abundance and

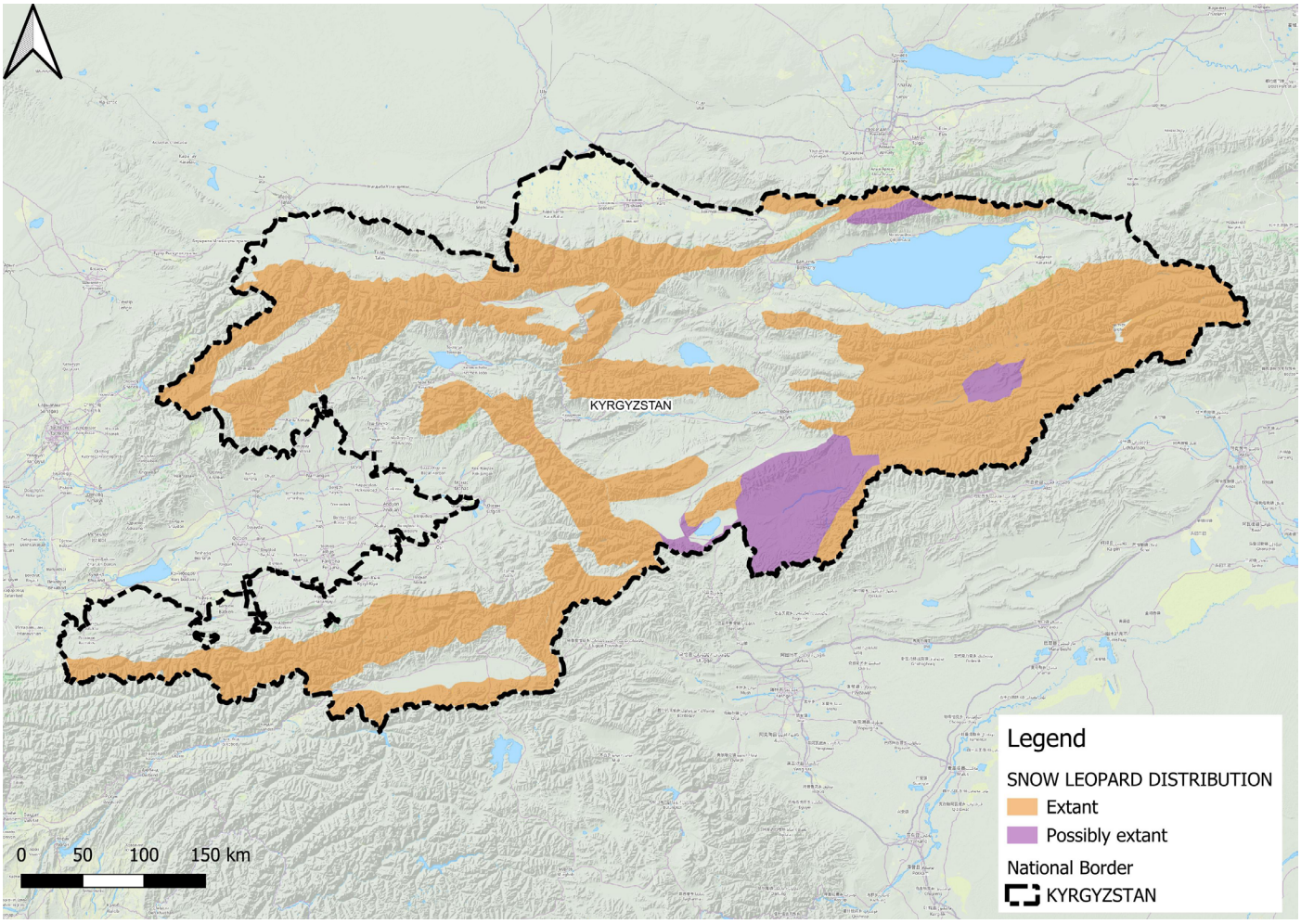

Figure 1. *Snow leopard (Panthera uncia) distribution in Kyrgyzstan based on the IUCN Red List assessment criteria. Areas shaded in orange represent extant range, while areas shaded in purple represent possibly extant range. The distribution map was informed by information from the Population Assessment of Snow Leopards in Kyrgyzstan (PASK, 2024).*

distribution of snow leopards as a critical knowledge gap. In response, a nationwide population assessment of snow leopards was conducted in Kyrgyzstan between 2020 and 2024. The resulting *Population Assessment of the Kyrgyz Snow Leopards* report was developed and approved under the framework of the Global Snow Leopard and Ecosystem Protection Program (GSLEP) (PASK, 2024). This assessment provides the first scientifically rigorous and comprehensive estimate of snow leopard abundance at the national scale (PASK, 2024).

The national snow leopard population abundance was estimated using data from 43 population survey sessions spanning the four-year study period, derived from 905 camera traps deployed across 589 locations within snow leopard habitat (PASK, 2024). Camera traps were typically deployed for periods ranging from 3 to 12 months to ensure adequate sampling coverage. In total, 372 snow leopard detection events were recorded, involving 150 unique adult snow leopards (PASK, 2024). These data were then analysed using multisession spatial capture–recapture (SCR) models which incorporated key ecological and anthropogenic variables, including elevation, terrain ruggedness, protected area status, and distance to the nearest road.

Based on SCR analyses, the estimated adult snow leopard population in Kyrgyzstan is approximately 300 individuals, with a 95% confidence interval of 246 to 366 (PASK, 2024). This estimate from the nationwide population assessment represents the most robust and up-to-date scientific basis available for national conservation planning in Kyrgyzstan and long-term population monitoring under the GSLEP framework.

The mean snow leopard density across Kyrgyzstan was estimated at 0.24 individuals per 100 km², with a 95% confidence interval of 0.20 to 0.29 (PASK, 2024). Issyk-Kul oblast supported the highest estimated abundance, with approximately 72 individuals (Fig. 2). The highest densities of snow leopards were found to be in rugged mountainous terrain within protected areas, highlighting the importance of these areas for snow leopard conservation (PASK, 2024). However, no single protected area in Kyrgyzstan is sufficiently large to support a viable population independently, defined here as at least 50 individuals. This underscores the importance of maintaining a connected network of protected areas, community-managed reserves, and functional habitat corridors to ensure long-term population persistence.

Historical estimates of snow leopard abundance in Kyrgyzstan varied widely, ranging from 600 to 700 individuals (Koshkarev, 1989) to 1,200 to 1,400 individuals (Chichikin, 1973; Geits et al., 1983; Red Book of the Kyrgyz SSR, 1985) during the Soviet period, with a later estimate of approximately 150 individuals (Koshkarev and Vyrypaev, 2000). These earlier estimates were not derived from systematically collected data and rigorous statistical analysis and are therefore not directly comparable to the latest PASK assessment.

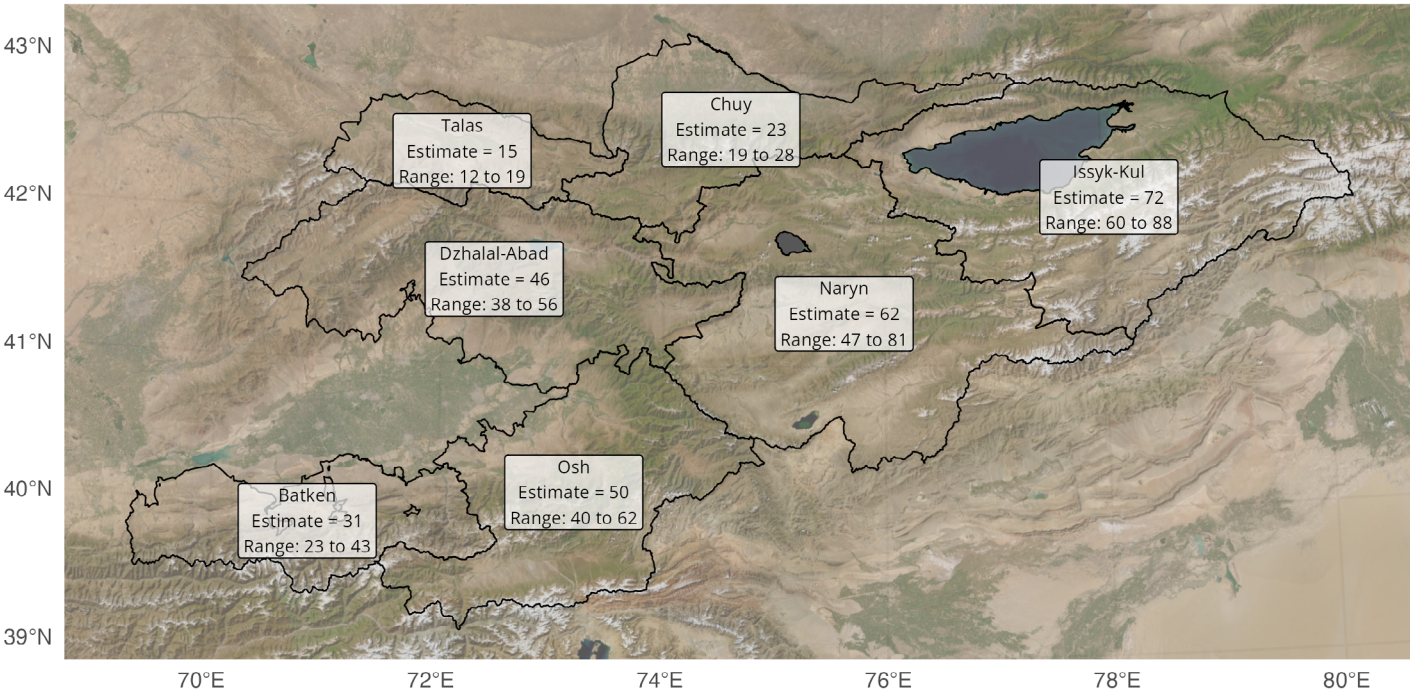

Figure 2. *Number of adult snow leopards for each administrative region in the Kyrgyzstan (including uncertainty range), as estimated using spatial capture–recapture modelling of camera trap data under the Population Assessment of Snow Leopards in Kyrgyzstan (PASK, 2024)*

3. Threats

Illegal hunting of prey species

Illegal hunting of key snow leopard prey species, particularly argali (*Ovis ammon*) and Siberian ibex (*Capra sibirica*), represents one of the most significant threats to snow leopard populations in Kyrgyzstan. These ungulates are hunted for personal consumption, commercial meat trade, and recreational purposes. As primary prey, they are critical to snow leopard survival, particularly during winter, with each adult snow leopard requiring an estimated 20 to 30 ungulates annually (Koshkin et al., 2024).

Illegal hunting pressure arises from multiple sources, including opportunistic hunters, organized sport hunting groups, and professional poachers supplying wild meat to markets. Declines in prey populations are projected to result in a 20 to 30% reduction in snow leopard numbers by 2034 if current trends continue (Koshkin et al., 2024). This threat is most pronounced in areas with weak law enforcement and high demand for wild meat, including middle-income urban consumers and customary practices in rural communities (Koshkin et al., 2024).

Effective prosecution of illegal hunting cases involving wild meat requires laboratory analysis to confirm species identity and distinguish wildlife from livestock. In Kyrgyzstan, existing laboratories are primarily equipped for livestock meat testing and lack the capacity to identify wildlife DNA. As a result, seized meat cannot be reliably attributed to protected species, limiting the ability of authorities to prosecute offenders and enabling poachers to evade legal consequences.

Retaliatory killings by pastoralists

Snow leopards are occasionally killed by herders in retaliation for livestock depredation. Direct evidence is limited due to the remoteness of incidents; however, interviews with herders and occasional confiscation of skins indicate that retaliatory killing does occur. Livestock depredation by snow leopards is reported most frequently in eastern Kyrgyzstan, particularly in the high-altitude pastures of Ak-Suu district in Issyk-Kul oblast. Additional incidents have been reported from Zheti-Oguz and Ton districts in Issyk-Kul, as well as from Naryn district.

Currently, there is no consolidated national dataset on snow leopard livestock depredation. Available information suggests that approximately 7 to 12 depredation incidents occur annually, affecting an estimated 50 to 200 livestock, primarily sheep (Ilbirs Foundation, unpublished). However, a comprehensive assessment has not yet been conducted to determine temporal trends.

Surveys conducted among herders in Enilchek, Kayindi, and Koilu, high-altitude areas within Ak-Suu district, documented 33 reported cases of livestock depredation attributed to snow leopards between 2022 and 2024 (Koshkin and Jumabaeva, in press). These data were obtained through interviews, and attribution uncertainty remains due to the lack of verified evidence distinguishing snow leopard attacks from those by other predators.

Anecdotal evidence suggests that some snow leopards have been killed in retaliation within these areas. Declining wild prey populations combined with increasing livestock numbers elevate the likelihood of human–carnivore conflict, potentially increasing retaliatory killings. Koshkin et al. (2024) estimate that up to 20% of the snow leopard population in Naryn and Issyk-Kul oblasts could be lost to retaliatory killing by 2034 if current trends persist. Enforcement capacity is limited in these remote regions, and compensation and conflict mitigation programmes remain insufficient in scale and coverage.

Illegal killing for trade

Despite high legal penalties and strengthened enforcement, targeted killing of snow leopards for skins and body parts continues at low but persistent levels. Snow leopard skins have been documented in domestic markets, and several attempted cross-border smuggling cases have been recorded over the past decade. Demand is believed to be driven by traditional medicine markets, as well as by trophy and taxidermy interests.

Although the current impact of trade-driven killing is relatively limited, it could increase if enforcement weakens, demand rises, or market access expands, particularly in connection with new infrastructure development. Retaliatory killings may also contribute to trade, as body parts from conflict-related incidents are sometimes sold.

Between 2020 and 2022, several documented cases highlighted ongoing threats from illegal killing and trade. In January 2020, an emaciated snow leopard estimated to be 11 to 12 years old was found in Jumgal and transferred to Bishkek for veterinary care after being reported by a local resident (Orlova, 2020). Additional cases involved possession and attempted sale of snow leopard skins and skulls in Bishkek, Osh, and border areas near Kazakhstan, resulting in multiple arrests and prosecutions under wildlife protection laws (Roznev, 2021; Sputnik KG, 2022; Turmush, 2022; Kaktus, 2022).

Rangers often operate under dangerous conditions with limited logistical support. Encounters with armed illegal hunters, including individuals from outside the region, are not uncommon, and resistance during arrests has

been reported. To address these risks, a national incentive programme was introduced to reward rangers and community members for identifying and apprehending poachers, particularly in cases involving snow leopards or ungulates. The programme provides financial incentives, formal recognition, and promotes cooperation between local communities and protected area authorities.

Overgrazing and livestock competition

Livestock numbers in Kyrgyzstan have increased steadily, particularly in high-altitude areas, leading to intensified competition between domestic animals and wild ungulates for forage. Combined with declining pasture productivity, this pressure contributes to reductions in wild prey availability for snow leopards. Reduced prey abundance can force snow leopards into marginal habitats or increase reliance on livestock, reinforcing a feedback loop that heightens the risk of human–wildlife conflict and retaliatory killing.

Disease transmission

Disease transmission among livestock, domestic dogs, wild ungulates, and snow leopards is an emerging conservation concern. Overlap between high-altitude livestock grazing areas and wild ungulate habitats increases the risk of pathogen transmission. Snow leopards may be exposed to diseases such as brucellosis, sarcoptic mange, rabies, canine distemper, and intestinal parasites through contact with infected livestock, dogs, or prey species. While disease dynamics in snow leopards remain poorly studied, such infections could impair health, reduce reproductive success, and cause mortality. Disease impacts on prey species may further reduce food availability for snow leopards.

Weak law enforcement

Weak law enforcement is not a direct biological threat but represents a major constraint on effective snow leopard conservation. Although snow leopards are legally protected and listed in the Red Book of Kyrgyzstan, enforcement is inconsistent and under-resourced. Rangers working in remote mountain areas face severe logistical challenges, including difficult terrain, limited transport, inadequate communication infrastructure, and harsh climatic conditions. These factors restrict patrol coverage and limit timely responses to illegal activities.

Future potential threats

Infrastructure development

Planned infrastructure development poses a potential future threat, particularly the China–Kyrgyzstan–Uzbekistan railway planned through Naryn oblast. Construction activities are expected to increase human access to previously remote habitats and may elevate demand for snow leopard body parts among temporary labour populations. Infrastructure development also risks habitat fragmentation, reduced connectivity, and restricted prey movements. In particular, the railway will cut across a critical area for the connectivity of snow leopard and prey populations between the Fergana range and Western Tian Shan. Although construction has only recently commenced and current impacts remain limited, projections suggest that by 2034, up to 20 to 30% of the local snow leopard population could be affected if mitigation measures are not implemented.

Climate change

Climate change represents a growing indirect threat to snow leopards by altering alpine ecosystems rather than through direct physiological stress. Snow leopards tolerate extreme temperatures ranging from −40°C to +40°C; however, their dependence on cold, high-altitude environments increases vulnerability to habitat shifts. According to the 2023 Climate Vulnerability Assessment conducted under the Central Asian Mammals and Climate Adaptation project, suitable snow leopard habitat in Kyrgyzstan may increase by approximately 9%, but this expansion is accompanied by reduced connectivity due to upward treeline shifts and degradation of alpine zones. Such fragmentation may isolate populations and limit genetic exchange.

Climate-driven changes are also expected to affect prey distribution and habitat quality, increasing competition with livestock at higher elevations and bringing snow leopards into closer proximity with human activity. Extreme weather events have already caused large-scale prey mortality, such as the 2022 die-off in Issyk-Kul oblast, with potential cascading effects on snow leopard survival. Additionally, climate-related shifts in pathogen distribution may increase disease exposure, particularly in areas with expanding livestock presence.

4. Conservation

Legislation and policy framework

Snow leopard conservation in Kyrgyzstan is governed by a combination of international agreements and national legislation. Kyrgyzstan is a Party to the Convention on Biological Diversity (CBD, 1992), ratified under Law No. 40 on 26 July 1996; the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1973), ratified on 30 November 2006 under Law No. 192; and the Convention on the Conservation of Migratory Species of Wild Animals (CMS, 1979), ratified on 22 November 2013 under Law No. 205. Together, these instruments form an integrated legal framework for snow leopard conservation, addressing species protection,

habitat conservation, and the prevention of poaching and illegal wildlife trade.

A major outcome of this framework was the establishment of the Global Snow Leopard and Ecosystem Protection Program (GSLEP) under the auspices of CMS. On 23 October 2013, the Global Snow Leopard Conservation Forum was held in Bishkek, Kyrgyzstan, during which 12 snow leopard range countries adopted the Bishkek Declaration, endorsed a ten-year Global Snow Leopard and Ecosystem Protection Program, and established the GSLEP Secretariat. GSLEP now serves as a transregional platform that brings together governments, non-governmental and intergovernmental organizations, local communities, and the private sector to conserve snow leopards and their high-mountain ecosystems.

At the national level, snow leopard conservation is incorporated into Kyrgyzstan's National Biodiversity Strategies and Action Plans, which serve as the primary policy instruments for implementing commitments under the Convention on Biological Diversity. These strategies prioritize biodiversity conservation, sustainable use of natural resources, and equitable benefit sharing.

Snow leopard protection is further codified in national legislation. The Law of the Kyrgyz Republic "On Wildlife" (adopted on 17 June 1999) regulates the protection of endangered species, including the snow leopard. The Law "On Specially Protected Natural Areas," last amended in 2021, establishes conservation regimes within protected areas that support snow leopard populations, including Sarychat-Eertash State Nature Reserve and Khan-Tengri State Nature Park.

Under Government Decree No. 145 (2005) "On Approval of the Lists of Rare and Endangered Animal and Plant Species," the snow leopard is listed in the Red Book of Kyrgyzstan, and all forms of hunting are strictly prohibited. Financial penalties for killing snow leopards have increased over time. Article 308 of the Criminal Code of the Kyrgyz Republic establishes fines of 500 to 1,000 calculation units (50,000 to 100,000 KGS) for the destruction of rare or endangered species listed in the Red Book, including damage to nests or eggs.

In addition, Cabinet of Ministers Decree No. 384 of 12 July 2024 increased the compensation rate for damage caused to a snow leopard to 2 million KGS, up from the previous rate of 1.5 million KGS. Offenders are liable for both criminal fines and compensation payments. Compensation rates for key prey species have also been revised, with argali set at 1.5 million KGS (previously 1 million KGS) and ibex at 300,000 KGS (previously 100,000 KGS).

The Code of Offenses of the Kyrgyz Republic further establishes penalties for violations related to wildlife protection, including damage to habitats, breeding sites, or migration routes, as well as the illegal export, transport, storage, or sale of wildlife specimens and their derivatives. In December 2023, Presidential Decree No. 369 formally designated the snow leopard as a national symbol of Kyrgyzstan.

The snow leopard is listed as Vulnerable on the IUCN Red List and is included in Appendix I of CITES, reinforcing its status as a specially protected species under both national and international legal frameworks.

Expansion and improved effectiveness of protected areas

Only 15% of the area identified as being occupied by snow leopards is currently protected. Including the 'possibly extant' area, the figure is even lower, at 13%. Recent conservation actions have focused on expanding and strengthening protected area networks and improving ecological connectivity for snow leopards and other species. One major initiative is the establishment of the Ak-Ilbirs (Snow Leopard) Ecological Corridor in Issyk-Kul oblast, covering the Sary-Jaz Valley and the Kakshaal-Too and Jety-Bel mountain ranges. The order establishing the corridor was signed on 15 April 2025. The corridor encompasses 792,050 ha and connects Khan-Tengri State Nature Park, Sarychat-Eertash State Nature Reserve, and Naryn State Nature Reserve.

In 2024, the Chatkal Ecological Corridor was established over an area of 64,105 ha to enhance connectivity between Sary-Chelek State Biosphere Reserve, Padysha-Ata State Nature Reserve, and Alatay State Nature Park.

Further expansion of the protected area network is planned for 2025, including the establishment of one state nature park (Chong-Alai) and two zoological reserves (Arka and Arpa), together covering more than 250,000 ha. The proposed Arpa reserve is intended to protect snow leopard habitat, and a new ecological corridor will connect Arpa with Kulun-Ata Nature Reserve, Kara-Shoro Nature Park, and Saimaluu-Tash Nature Park, strengthening landscape-scale connectivity for snow leopards.

Strengthening capacity of protected area and enforcement staff

The implementation of the Spatial Monitoring and Reporting Tool (SMART) across 11 protected areas and five community-based conservancies has substantially strengthened the capacity of protected area staff. SMART provides standardized tools for patrol planning, data collection, and wildlife monitoring, enabling evidence-

based management. Long-term application of the system has resulted in improved adaptive management, strengthened monitoring frameworks, and the accumulation of extensive wildlife datasets.

Capacity-building initiatives led by national and international conservation organizations have further strengthened anti-poaching and enforcement capacity. Training programmes have addressed effective patrolling, checkpoint operations, wildlife crime scene investigation, counter-wildlife trafficking, prosecution of wildlife crime, and first aid in remote areas. More than 200 protected area rangers, community-based conservancy rangers, and state inspectors have been trained, including staff from the Ministry of Natural Resources, Ecology, and Technical Supervision and the Issyk-Kul Ecological Police.

Targeted institutional support has also been provided to customs and border services. For the first time in Kyrgyzstan, sniffer dogs were trained to detect illegal wildlife products, including snow leopard and ungulate derivatives, and deployed at border checkpoints. Customs officers received training in their handling and use.

An electronic database for monitoring trade in CITES-listed species was developed in partnership with TRAFFIC. The database is accessible to customs, border control, veterinary services, and the General Prosecutor's Office, enabling verification of permits and identification of wildlife products. The system includes guidance on species identification and required documentation and is fully operational, with additional trainings planned.

A ranger incentive programme has also been established to recognize high-performing staff. Since its inception in 2014, the programme has rewarded 166 rangers across more than 150 cases.

Strengthening international and interregional cooperation

The Global Snow Leopard and Ecosystem Protection Program provides the primary mechanism for international and interregional cooperation on snow leopard conservation. GSLEP facilitates collaboration among range-country governments, scientific institutions, non-governmental organizations, and local communities, supporting cross-border cooperation, scientific data exchange, coordinated population monitoring, joint anti-poaching initiatives, and sustainable livelihood development.

Within this framework, Kyrgyzstan implements the Population Assessment of the Snow Leopard in Kyrgyzstan programme, aligned with the Population Assessment of the World's Snow Leopards initiative. PASK applies standardized methodologies, including camera trapping, genetic sampling, and spatial capture–recapture modelling, to generate nationally robust population estimates and inform management decisions within protected areas and priority landscapes.

GSLEP has identified 20 priority landscapes across the snow leopard range, including key areas in Kyrgyzstan such as Sarychat-Eertash and Khan-Tengri. Ongoing efforts focus on expanding protected area coverage, strengthening management effectiveness, and integrating advanced monitoring technologies to improve conservation outcomes for snow leopards and their habitats.

5. Acknowledgements

This country status report acknowledges the Ministry of Natural Resources, Ecology, and Technical Supervision of the Kyrgyz Republic and its partner institutions for their continued commitment to snow leopard conservation, research, and monitoring. We also recognize the contributions of national conservation organizations, protected area administrations, researchers, and practitioners in Kyrgyzstan whose work informed this synthesis.

We acknowledge the Global Snow Leopard and Ecosystem Protection Program and its Secretariat for leading the Population Assessment of the World's Snow Leopards initiative, under which the nationwide Population Assessment of the Snow Leopard in Kyrgyzstan was conducted. The IUCN SSC Cat Specialist Group and the snow leopard IUCN Red List assessment team are gratefully acknowledged for their technical guidance during the updated IUCN assessment process. Coordination of this country status report was supported by Justine Shanti Alexander, Wildlife Conservation Society Mongolia.

6. Conflicts of Interest

The authors declare no known conflicts of interest.

7. References

Code of Offences of the Kyrgyz Republic (2021) No. 128, 28 October.

Criminal Code of the Kyrgyz Republic (2021) No. 127, 28 October.

Kaktus (2022) 'A man shot a snow leopard for its skull and skin. He was detained in Bishkek'. *Kaktus Media*. Available at: https://kaktus.media/doc/468122_myjchina_zastrelil_snejnogo_barsa_iz_za_cherepa_i_shkyry._ego_zaderjali_v_bishkeke.html (Accessed: 23 July 2025).

Koshkarev, E. (1989) *The snow leopard in Kirgizia.* Frunze: Ilim. 98 pp.

Koshkin, M.A., Kabaev, E., Zhumabaykyzy, G. (2024). Meat from the mountains. Assessment of threats to snow leopards in the Issyk-Kul and Naryn provinces of the Kyrgyz Republic for the next 10 years. Ilbirs Foundation/Panthera. Bishkek (version 2).

Koshkarev, E. and Vyrypaev, V. (2000) *What's happened to the snow leopard after the break-up of the USSR*. Report. International Snow Leopard Trust.

Koshkin, M.A. and Zhumabai kyzy, G. (in press) 'Addressing human–wildlife conflict and snow leopard conservation in Kyrgyzstan: challenges and solutions', in *Proceedings of the regional conference "Conflict between wildlife and humans in Central Asia"*, Almaty, March 2025.

McCarthy, T., Mallon, D., Jackson, R., Zahler, P. and McCarthy, K. (2017) 'Panthera uncia', *The IUCN Red List of Threatened Species*, 2017: e.T22732A50664030. Available at: https://www.iucnredlist.org/species/22732/50664030 (Accessed: 5 August 2025).

Mallon, D. and McCarthy, T. (eds.) (2023) *Snow leopards (2nd edn.)*. Amsterdam: Academic Press.

Orlova, M. (2020) *Another rescued leopard was taken to Bishkek*. 24.kg. Available at: https://24.kg/obschestvo/140204_esche_odnogo_spasennogo_barsa_dostavili_vbishkek/ (Accessed: 23 July 2025).

PASK Working Group (2024) *Population Assessment of Snow Leopards in Kyrgyzstan.* Bishkek: Global Snow Leopard and Ecosystem Protection Program (GSLEP).

Presidential Decree No. 369 (2023) 'On recognition of the snow leopard as a national symbol of the Kyrgyz Republic', 29 December.

Red Book of the Kyrgyz SSR (1985) *Rare and threatened species of animals and plants*. Frunze: Kyrgyzstan Publishing House. (In Russian).

Resolution of the Cabinet of Ministers of the Kyrgyz Republic (2024) No. 384, *On amendments to the Resolution of the Government of the Kyrgyz Republic "On approval of tariffs for assessing damage caused to wildlife, plant resources, mumie (shilajit)-containing mineral raw materials, and fungi by legal entities and individuals"* dated 3 May 2013, No. 224. 12 July 2024.

Roznev, I. (2021) *GKNB: A man who tried to sell snow leopard skins for USD 4.5 thousand was detained in Osh*. KLOOP.KG. Available at: https://kloop.kg/blog/2021/04/19/gknb-v-oshe-zaderzhan-muzhchina-pytavshijsya-prodat-shkury-snezhnogo-barsa-za-4-5-tys/ (Accessed: 23 July 2025).

Skrimizea, E., Crespi, A., Klisho, T., Renner, K. and Zebisch, M. (2023) *Climate risk assessment for mountainous communities of Tajikistan and Kyrgyzstan: implications for human–wildlife conflict, with a focus on snow leopards*. Bolzano, Italy: Eurac Research.

Sputnik KG (2022) *Snow leopard skin and skull were attempted to be exported to Kazakhstan*. Sputnik Kyrgyzstan. Available at: https://ru.sputnik.kg/20220119/kyrgyzstan-shkura-cherep-ilbirs-pogranichniki-1061352643.html(Accessed: 23 July 2025).

Taubmann, J., Sharma, K., Zhumabai uulu, K., Hines, J.E. and Mishra, C. (2015) 'Status assessment of the endangered snow leopard and other large mammals in the Kyrgyz Alay using community knowledge corrected for imperfect detection', *Oryx*, 50(2), pp. 220–230. https://doi.org/10.1017/S0030605315000502

Turmush (2022) *In Issyk-Kul, a snow leopard went out to hunt and was killed; the skull was recovered*. Turmush. Available at: https://www.turmush.kg/ru/news:1777468/ (Accessed: 23 July 2025).

United Nations Environment Programme (2023) *Climate change vulnerability assessment of snow leopards*. Central Asian Mammals and Climate Adaptation (CAMCA) Project.