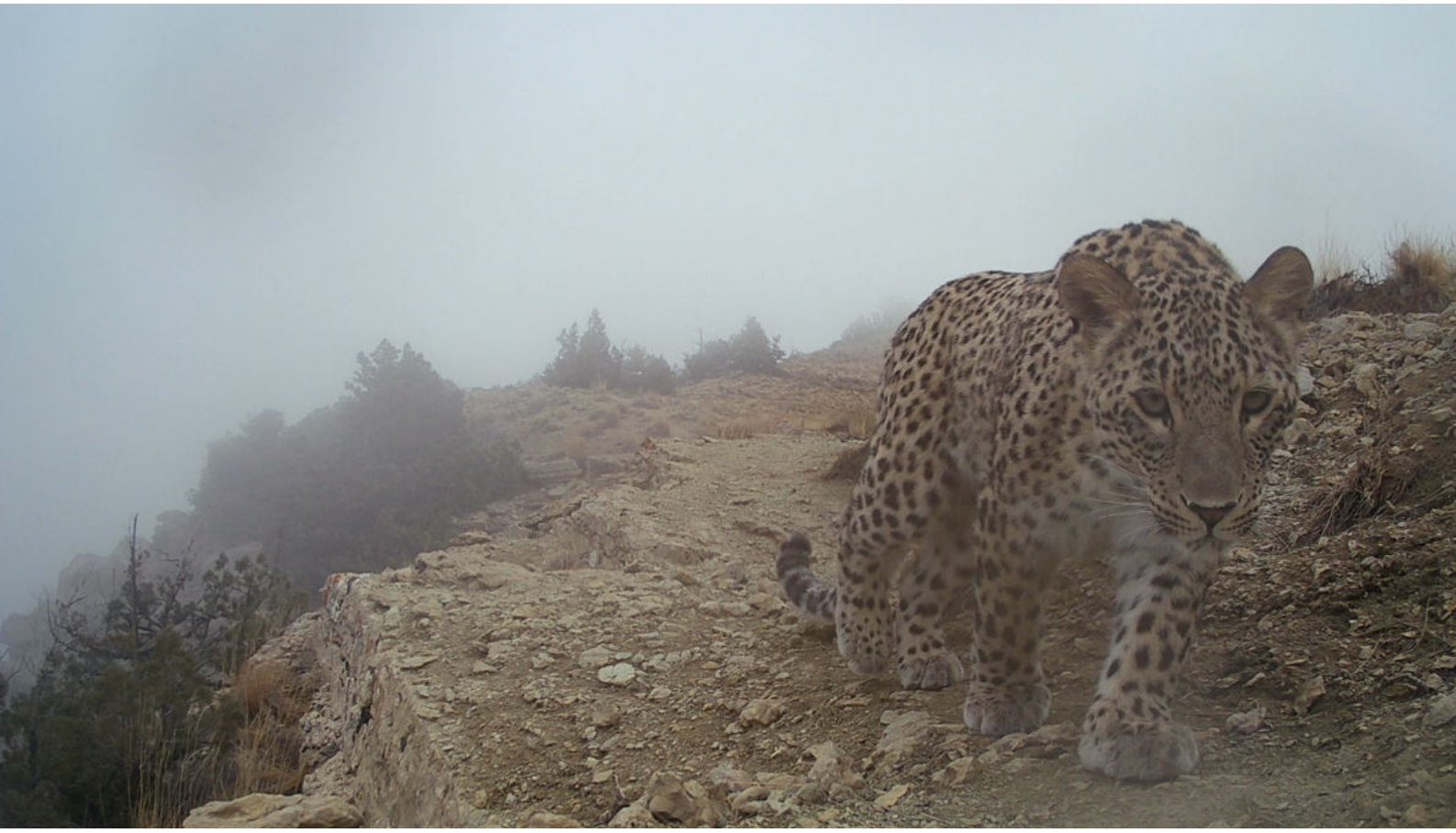
Assessment of Wildlife and Protected Areas of Turkmenistan 2025



Ashgabat, January 2026

Authors and Acknowledgments

This report was prepared with the participation of international and local experts and staff of the Ministry of Environmental Protection of Turkmenistan (Kopetdag, Badhyz, Koytendag, Kaplankyr, Sunt Hasardag State Nature Reserves and Balkan Department of Environment Protection).

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The activities conducted and results achieved so far as part of this Assessment have been possible thanks to the support and hard work of the many protected areas staff and rangers in Turkmenistan as well as the Balkan velayat Department of Environmental Protection.

We are grateful to the Ministry of Environmental Protection of Turkmenistan, the Ministry of Foreign Affairs of Turkmenistan, the State Border Services of Turkmenistan, GIZ and UNDP Turkmenistan for supporting and facilitating the work of protecting the precious nature and wildlife of Turkmenistan.

We are also thankful to the British Embassy of Ashgabat and our donors, without whose support this work would not be possible: Critical Ecosystem Partnership Fund (CEPF), Fondation Segre, National Geographic Society, BBC Natural History Unit, CBD Peace and Biodiversity Dialogue Initiative, IUCN (Netherlands and ECARO offices), Royal Zoological Society of Scotland, UNEP and Rob and Cheryl Fimbel.

Suggested citation: Tanya Rosen, Shirin Karryeva, Aliya Amanklycheva, Arazmurad Amanov, Islam Annamamedov, Atamyrad Veyisov, Aman Kurbanov, Aaron Laur, Begench Mamedov, Shaniyaz Mengliev, Tagan Nazarov, Weli Nasyrov, Gabriel Oppler, Aknabat Potaeva, Eziz Tangriguliev, Stanislav Fateyev, Michiel Hoette, Hojamurad Hojamuradov, and Nurmuhammet Hudaykuliev, 2026. Assessment of Wildlife and Protected Areas of Turkmenistan 2025, Ashgabat.

Table of Contents:

Executive Summary

This report documents a year of intensified implementation, consolidation, and tangible conservation outcomes across Turkmenistan's priority landscapes. Building on earlier policy and institutional reforms, 2025 marked strengthened enforcement, expanded wildlife monitoring, enhanced transboundary cooperation, and deeper engagement with local communities.

At the international level, Turkmenistan significantly advanced its global conservation commitments. The country operationalized its obligations under the Convention on the Conservation of Migratory Species of Wild Animals (CMS) through active participation in regional processes and contributions to the updated Central Asian Mammals Initiative (CAMI) Programme of Work (2026–2032). Turkmenistan also formally acceded to CITES in January 2025, strengthening national and regional frameworks to combat illegal wildlife trade and protect globally threatened species. Progress toward the transboundary UNESCO World Natural Heritage nomination of the Koytendag–Surkhan reserves further highlighted Turkmenistan's growing role in international conservation leadership.

At the national level, efforts focused on expanding and strengthening the protected area network and improving management effectiveness. Preparatory work advanced for the proposed Balkan protected areas cluster, encompassing over 4,500 km² including buffer zones, with critical importance for ecological connectivity in northwestern Turkmenistan. Simultaneously, emphasis shifted toward improving on-the-ground effectiveness within existing protected areas.

A cornerstone achievement of 2025 was the expansion and progress towards institutionalization of SMART (Spatial Monitoring and Reporting Tool) as the backbone of protected area management and anti-poaching operations. SMART implementation expanded to additional reserves, dedicated coordinators were appointed within the Ministry of Environmental Protection, and advanced ranger training substantially improved patrol planning, data quality, accountability, and enforcement outcomes. These gains were reinforced by IBEX baseline assessments at five sites, providing internationally recognized benchmarks for management effectiveness under the IUCN Green List framework.

Anti-poaching and enforcement capacity improved measurably across key landscapes, particularly in the Kopetdag and Balkan regions. Increased patrol coverage, integration of camera-trap data with SMART, and improved ranger capacity led to successful apprehensions of poachers and demonstrable deterrence effects, despite persistent challenges such as equipment theft and difficult terrain.

Wildlife monitoring expanded substantially through large-scale camera-trap networks. Long-term monitoring confirmed continued reproduction and dispersal of Persian leopards, including documentation of a third breeding female in the Uly Balkan range, a major conservation milestone. Based on cumulative data, the national Persian leopard population is conservatively estimated at 60–80 individuals, with protected areas serving as core breeding sites and border zones acting as critical dispersal corridors.

The report underscores the tight ecological link between large carnivores and wild ungulates, highlighting the urgency of sustained prey protection. The report also documents the status of small wild cats and other carnivores, including caracal, lynx, manul, striped hyaena, and wolf. Particularly notable were confirmations of active caracal breeding around Garabogazgol, reinforcing the area's exceptional importance for desert-adapted carnivores, and the first camera-trap record of striped hyena in the Uly Balkan range. Conversely, extremely low detections of manul indicate highly vulnerable populations requiring targeted attention.

The report also emphasizes emerging risks, notably climate change impacts such as increasing drought, habitat degradation, and wildfire. The August 2025 wildfire in the Uly Balkan range starkly illustrated the vulnerability of key habitats and the urgent need for improved climate resilience and ranger safety.

Overall, the findings demonstrate clear progress in conservation effectiveness during 2025, driven by committed protected area staff, improved tools, and stronger institutional support.

The recommendations set out in this report provide a clear roadmap to consolidate gains and address remaining gaps. They focus on strengthening legal and institutional frameworks, fully embedding SMART, expanding and connecting protected areas, restoring degraded habitats, improving transboundary cooperation, and deepening community engagement. Implemented collectively, these actions will enhance biodiversity conservation, climate resilience, and Turkmenistan's fulfilment of its obligations under CMS, CITES, and the Convention on Biological Diversity, while safeguarding the country's unique natural heritage for the future.

Urial sheep on Uly Balkan © Team Bars Turkmenistan/MoEPT/CXL

Introduction

2025 was a year of intensive implementation and consolidation for biodiversity conservation and the protection of wild places in Turkmenistan. Building on policy advances, institutional reforms, and field-based groundwork laid in previous years, conservation efforts during 2025 focused on translating commitments into practice: strengthening enforcement capacity, expanding wildlife monitoring, advancing transboundary cooperation, and deepening engagement with local communities across key landscapes.

At the international level, Turkmenistan continued to operationalize its commitments under the Convention on the Conservation of Migratory Species of Wild Animals (CMS). Active engagement in CMS-led processes throughout the year, including contributions to the development and endorsement of the updated Central Asian Mammals Initiative (CAMI) Programme of Work (2026–2032), and reinforced regional cooperation on shared conservation challenges. This framework guided action on priority threats such as illegal and unsustainable take, illegal wildlife trade, habitat fragmentation caused by linear infrastructure, and human-wildlife conflict, while strengthening synergies between CMS, and national conservation priorities.

Turkmenistan joined the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in late 2024, becoming the 185th party, with the agreement formally taking effect on January 2, 2025, to regulate trade in its fauna and flora, including endangered species like the Persian leopard, and Houbara bustard, strengthening regional conservation efforts and aligning Central Asia with global wildlife protection standards.

Significant progress was also achieved toward the transboundary nomination of Koytendag State Nature Reserve (Turkmenistan) and Surkhan State Nature Reserve (Uzbekistan) as a UNESCO World Natural Heritage site. The official inscription of the *Karst, Canyons, and Caves of Kugitang* on the National Tentative Heritage Lists of both countries represented a critical milestone in this process and highlighted the exceptional geological, speleological, and biological values of this shared mountain ecosystem.

At the national level, efforts to expand and strengthen Turkmenistan's protected area network continued throughout 2025. Preparatory and justification work advanced toward the establishment of the Balkan protected areas cluster[1], encompassing more than 4,500 km² (including 1500 km2 of buffer zone) across Uly Balkan, Kichi Balkan, and Garabogazgol/Ustyurt. This future cluster is expected to play a key role in securing ecological connectivity across northwestern Turkmenistan and safeguarding habitats critical for large carnivores, and their prey. Alongside expansion, increased emphasis was placed on improving the effectiveness of management and enforcement within both existing and proposed protected areas.

A major focus of 2025 was the consolidation and expansion of SMART (Spatial Monitoring and Reporting Tool) as the backbone of protected area management and anti-poaching efforts. Following its introduction in the Ministry of Environmental Protection,

[1] Official confirmation regarding the opening of this protected area cluster might be received while the report is being published.

SMART implementation expanded to additional protected areas, including Sunt Hasardag, while preparations were completed for roll-out in Kopetdag and other regions. Dedicated SMART coordinators were appointed and trained within the Ministry, and advanced SMART trainings were delivered to rangers, significantly improving data quality, patrol planning, and reporting. These efforts strengthened accountability and ensured that patrol data increasingly informed management decisions at both protected area and national levels.

Baseline IBEX assessments, self-assessment tools used by the IUCN Green List of Protected and Conserved Areas program, were completed in five sites. These assessments help sites evaluate management and conservation effectiveness against international standards, with Green List status serving as certification of fair and effective management for both nature and people. Achieving this status often brings global recognition and improved access to funding. The completed assessments establish critical benchmarks against which future improvements in management effectiveness and conservation performance can be measured.

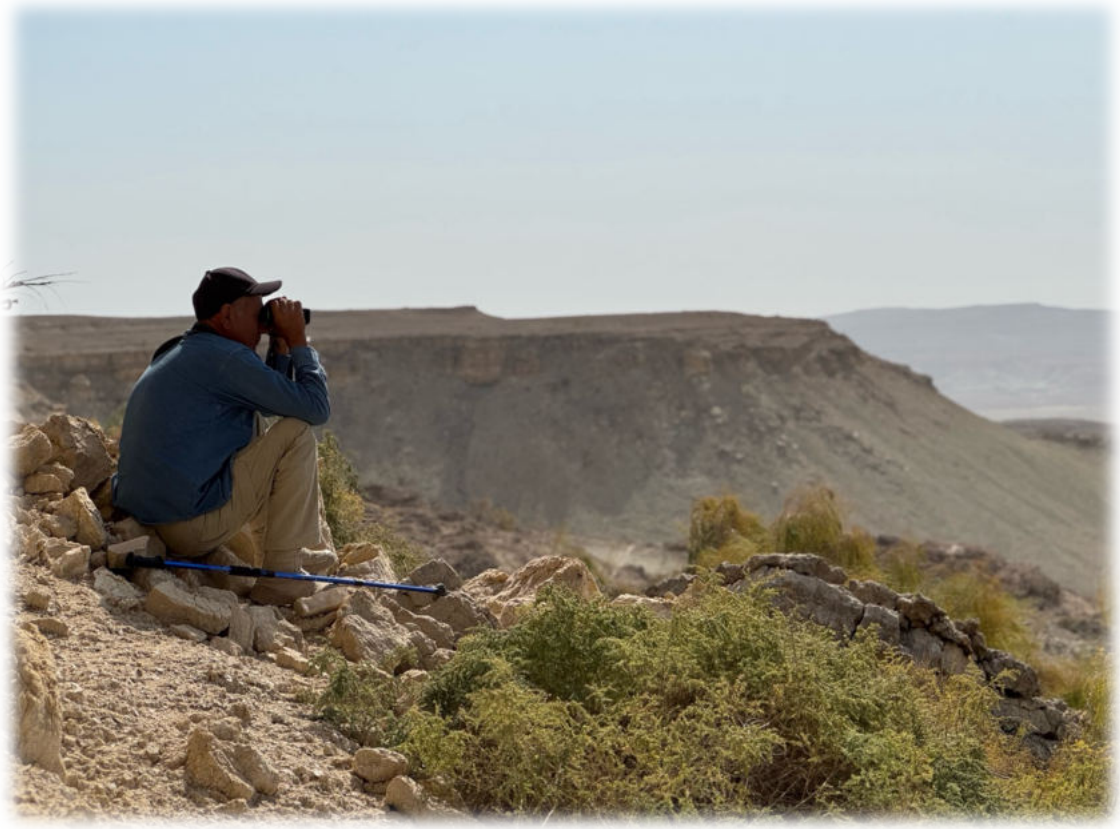
Anti-poaching efforts intensified throughout 2025, particularly in the Uly Balkan range and in key sections of the Kopetdag. Ranger capacity was strengthened through refresher trainings, regular mentoring, and improved access to equipment and mobility. Patrol activity increased steadily, and the growing integration of camera-trap data with SMART reporting enabled more targeted, intelligence-led enforcement. As a result, several poachers involved in camera-trap theft and the illegal killing of ungulates were apprehended in the Kopetdag and Balkan areas, demonstrating the effectiveness of combining technology, trained personnel, and strong institutional backing.

Side event on emerging technologies at CITES CoP20 © Gleb Sedash

These field-level gains were complemented by engagement at the international policy level. During CITES CoP20 in Samarkand, Uzbekistan, we convened a dedicated session to examine how emerging technologies are transforming conservation and enforcement under CITES across landscapes, borders, and trade chains. Drawing on examples from

Central Asia's mountain ecosystems to global trade hubs, the session highlighted how innovative tools are empowering rangers, scientists, and frontline enforcement officers to more effectively protect CITES-listed species and scale up the kinds of enforcement successes being achieved on the ground.

Wildlife monitoring activities expanded substantially during 2025 through the installation and operation of extensive camera trap networks across key habitats. Long-term monitoring confirmed the continued presence of individual Persian leopards over multiple years and documented a third breeding female on the Uly Balkan mountain massif. This finding represents a significant conservation milestone and an encouraging indicator of improving habitat quality, prey availability, and the cumulative impact of protection efforts in the region.



Nury Khudaikhuliev monitoring wildlife on Garabogazgol. © Tanya Rosen

The conservation of large carnivores remained closely linked to the status of wild ungulates, including bezoar goat (*Capra aegagrus*), urial sheep (*Ovis vignei*), markhor (*Capra falconeri*), and goitered gazelle (*Gazella subgutturosa*). Throughout 2025, anti-poaching measures, improved patrol coverage, and increased enforcement presence contributed to some early signs of stabilization or localized increases in some prey populations, reinforcing the importance of sustained protection.

Human-wildlife conflict mitigation continued to be a core component of project activities during 2025. Surveys were initiated across multiple landscapes to evaluate the effectiveness of existing conflict mitigation tools and to inform the deployment of new measures. Close collaboration with herders supported improved understanding of conflict

dynamics, reduced misattribution of livestock losses to carnivores, and strengthened coexistence strategies.

In parallel with field implementation, 2025 saw important progress in the application of IUCN frameworks to strengthen protected area effectiveness and broaden the role of conservation in addressing emerging risks. During the reporting period, the project advanced the development of a set of recommendations on the role of Protected Areas (PAs) and Other Effective Area-based Conservation Measures (OECMs) in reducing zoonotic disease risks and buffering the impacts of climate change. These assessments enabled the consolidation of insights related to governance effectiveness, potential One Health entry points, and the climate resilience functions of protected and conserved areas. A dedicated workshop was conducted with national institutions, including the Ministry of Environmental Protection and other relevant agencies, to discuss the Green List, protected and conserved area effectiveness in reducing zoonotic risk, and the role of OECMs. These discussions laid the groundwork for developing context-specific recommendations tailored to the priority conservation areas selected under the project.

In addition, staff from protected areas and regional environmental protection departments were instructed by the Ministry of Environmental Protection to take urgent measures to prevent the spread of zoonotic diseases among both wild and domestic animals. Informational leaflets were distributed to shepherds grazing livestock in areas adjacent to the Kopetdag reserve. Questionnaires were also administered to collect data on livestock numbers, vaccination status, compliance with wildfire safety regulations, and the sanitary condition of local water bodies.

Recognition of frontline conservation staff formed an important part of the year's activities. World Wildlife Day provided an early opportunity to highlight the vital role of the scientific staff in safeguarding biodiversity and supporting communities. This focus on recognition continued in July 2025, when International Ranger Day was celebrated in Turkmenistan by honoring exemplary rangers, including those directly involved in intercepting poachers and supporting enforcement actions. Together, these acknowledgments reflected the growing professionalism, confidence, and motivation among protected area staff and underscored their central role in achieving conservation outcomes.

The recommendations presented in this report are based on extensive field observations, continuous consultation with the Ministry of Environmental Protection and protected area staff, and analysis of data collected through SMART patrols, camera trapping, IBEX and Green List assessments, enforcement actions, and community engagement throughout 2025, complemented by data from previous projects dating back to 2013. Several recommendations build on those made in earlier reporting cycles, reflecting both persistent challenges and the tangible progress achieved during the year.

These recommendations are intended to further strengthen protected area management and enforcement, enhance ecological connectivity, support climate resilience, and reinforce the role of protected and conserved areas in reducing emerging risks, while supporting Turkmenistan's fulfilment of its obligations under international agreements, notably CMS, CITES, and the Convention on Biological Diversity (CBD).

Above all, the achievements documented in this report are the result of the dedication, professionalism, and resilience of protected area staff, rangers, and community partners across Turkmenistan. Working under challenging conditions and with limited resources, their commitment underpinned the progress made in 2025. It is our hope that this report contributes to greater recognition of their efforts, deeper understanding of the value of Turkmenistan's natural heritage, and sustained momentum to secure its wildlife and wild places into the future.

Caracal on Garabogazgol © Team Bars Turkmenistan/MoEPT/CXL

Monitoring and conservation efforts of wild cats and other iconic wildlife of Turkmenistan

While the primary focus of the project is the monitoring and conservation of wild cats and the ecosystems they inhabit, their persistence is inseparable from the status of wild prey populations and overall ecosystem integrity. To assess prey availability, population estimates for key ungulate species were derived across multiple sites using a standardized camera-trap–based analytical framework applying the Random Encounter Model (REM). Results are presented as population ranges to reflect uncertainty associated with detection rates, movement assumptions, and camera coverage, while remaining suitable for management and policy use.

Across project landscapes, bezoar goat (*Capra aegagrus*), urial sheep (*Ovis vignei*), markhor (*Capra falconeri*), goitered gazelle (*Gazella subgutturosa*), and Turkmen kulan (*Equus hemionus kulan*) showed highly site-specific patterns driven by poaching pressure, habitat quality, and landscape connectivity.

The recovery and persistence of these prey populations are closely linked to the observed presence of apex and mesocarnivores, including Persian leopard, as well as wolf (*Canis lupus*), Eurasian lynx (*Lynx lynx*), caracal (*Caracal caracal*), manul (*Otocolobus manul*), and striped hyena (*Hyaena hyaena*). Collectively, these findings demonstrate that wild cat conservation outcomes achieved under the project are directly contingent on sustained investments in prey recovery, anti-poaching enforcement, and the maintenance of ecological connectivity at landscape and transboundary scales.

The Cats

Turkmenistan supports a diverse assemblage of wild cat species, reflecting the country's varied landscapes and biogeographic position. Species recorded include the Persian leopard (*Panthera pardus tulliana*), caracal (*Caracal caracal*), Asiatic wildcat (*Felis lybica*), Eurasian lynx (*Lynx lynx*), jungle cat (*Felis chaus*), sand cat (*Felis margarita*), and manul (*Otocolobus manul*).

Camera trapping and field surveys conducted to date confirm the continued presence of all of these species across multiple regions.

Persian leopards, the largest leopard subspecies and a flagship species for conservation in Turkmenistan, are primarily concentrated along the Kopetdag mountain range near the border with Iran. Camera-trap data continue to indicate a significant population in the Uly Balkan range, a critical source area for recolonisation of Garabogazgol and for maintaining ecological connectivity with Kazakhstan. During the reporting period, leopards' presence was again confirmed near the southern shore of Garabogazgol, providing strong evidence of continued dispersal into historically occupied habitats.

Across all sites, leopard monitoring relies on systematic camera trapping combined with individual identification supported by the *Whiskerbook.org* platform. This web-based system integrates a centralized data management architecture with a computer-vision pipeline capable of detecting leopards and assisting with individual identification based on unique coat patterns. Continued use of this approach has allowed the team to track

individual animals over time, assess reproduction and dispersal, and better understand population structure and connectivity at national and transboundary scales. Together, these results demonstrate the critical role of sustained monitoring, prey protection, and corridor conservation in securing the species' long-term future.

Female leopard Merjen on Dushak Erekdag, Kopetdag © Team Bars Turkmenistan/MoEPT/CXL

Kopetdag. Camera-trap surveys conducted in 2025 identified a minimum of 13 Persian leopards in the Kopetdag range, compared to 15 individuals recorded in 2024. These results are based on data from 24 camera traps deployed across approximately 2,000 km², with substantial spatial gaps between camera clusters, and a total survey effort of 8,760 camera-trap nights. Several camera traps were stolen during the year, further limiting detection coverage. The slight reduction in the number of identified individuals is not considered a cause for concern, as some leopards may be transient or expanding into adjacent areas.

Of the individuals detected, nine were recorded in the Dushak Erekdag area, including a breeding female with a yearling cub and a female born in 2022. The yearling cub on Dushak has apparently died early in the summer (cause of death is unknown).

Additional detections included one individual in Karayalchi, two in Gury Howdan, and one in Uly Karanki within the Rukhabat section of Kopetdag State Nature Reserve. Individual leopards were also visually observed in Murzedag and Archabil.

*Badhyz***.** In Badhyz State Nature Reserve, four Persian leopards were detected in 2025, compared to seven individuals recorded in 2024, a figure that included three cubs. These results are based on data from 17 camera traps deployed across approximately 800 km², with spatial gaps between camera clusters, and a total survey effort of 6,205 camera-trap nights. Suitable habitat beyond the border fence, currently outside the monitored area, may support additional leopards that were not detected during the survey. There are indications that the resident female, Umeda, may have reproduced again; however, no cubs have been confirmed to date. In December 2025, a second female, Mehri, daughter of Umeda, was recorded with a cub. In addition, during visual observation outside the

reserve, 25 km from the city of Serhedabad, a young leopard was spotted on Chengurek mountain.

Mehri (daughter of Umeda) and her young cub © Team Bars Turkmenistan/MoEPT/CXL

Despite continued leopard presence, the reserve's carrying capacity remains constrained by a limited prey base, driven by persistent poaching pressure and habitat degradation.

Balkan range and Garabogazgol. In the Uly Balkan range, a total of nine Persian leopards were detected, including four females, including one with cubs born in late 2024, and one young female born in 2022. This compares to 11 individuals recorded in 2024. The results are based on data from 20 camera traps deployed across approximately 1000 km², with a total survey effort of 7,300 camera-trap nights. The slight decline in detections is likely attributable to dispersal, given the limited carrying capacity of the Uly Balkan range.

On Garabogazgol we placed 11 camera traps, but no leopards have been recorded yet. Two leopards, including one that has been caught into a leg hold snare in 2024 have been observed near the southern shore of Garabogazgol.

In 2024 three cameras remained in Kichi Balkan but they did not record any leopard.

Sunt Hasardag. In the Aydere section of the Sunt Hasardag Reserve, a total of three Persian leopards were recorded, including a female, her yearling cub and a very old male. This is the same female recorded with three cubs in 2024. Leopards have also been visually observed in the Central and Chendyr sections of the Reserve.

Based on cumulative camera-trap data, field observations, and individual identification across monitored landscapes, the Persian leopard population in Turkmenistan is still conservatively estimated to comprise approximately 60–80 individuals, including animals occurring beyond the border fence in ecologically suitable but currently under-surveyed habitats. While recent detections confirm continued reproduction, dispersal, and range expansion, particularly from the Balkan range toward Garabogazgol and

northwards toward Kazakhstan, population growth remains constrained by a combination of persistent threats.

Key pressures include perceived human-wildlife conflict and associated retaliatory killing, depletion of wild prey due to poaching and habitat degradation, and the fragmenting effect of border fencing along the Iranian border. These factors collectively limit habitat connectivity, reduce carrying capacity, and increase mortality risk, particularly for dispersing individuals.

Protected areas play a central role in maintaining core breeding populations, while border zones are important for dispersal and recolonisation. Long-term conservation of Persian leopards in Turkmenistan therefore depends on sustained engagement with local communities, expansion of conflict-mitigation measures to prevent livestock losses, strengthened anti-poaching measures, and the prohibition and enforcement of bans on leg-hold snares, which pose a severe threat to leopards and other wildlife. Continued investment in prey recovery and transboundary cooperation will be essential to securing population stability and enabling future recovery.

Female leopard Jahan in Sunt Hasardag © Team Bars Turkmenistan/MoEPT/CXL

The Small Cats

The Royal Zoological Society of Scotland (RZSS) has in 2024 expanded its global conservation portfolio to support small cat research and protection in Turkmenistan, partnering with the Ministry of Environmental Protection to help fill critical knowledge gaps on elusive felids such as caracal and other small wild cats. This collaboration, co-funded by RZSS and the Pallas's Cat International Conservation Alliance (PICA), has already yielded groundbreaking insights, especially for caracal. The programme aims to improve species monitoring, strengthen local conservation capacity, and raise the profile of poorly understood small cats as indicators of ecosystem health within the broader Central Asian landscape.

At CITES CoP20 in Samarkand, Uzbekistan, a dedicated side event titled "Silk Road's Small Cats" brought together representatives from government agencies, international conservation organizations, and zoological experts to spotlight the conservation needs of Central Asia's small wild cats, including Pallas's cat, jungle cat, Asiatic wildcat, caracal, sand cat, and lynx. Our team joined participants from Uzbekistan, Kazakhstan, the CMS Secretariat, the IUCN Cat Specialist Group, RZSS and PICA to share scientific overviews of species distributions, habitat types, and major threats, emphasizing the critical lack of robust population data and the need for strengthened research and regional cooperation.

Lynx. Eurasian lynx are recorded on camera traps in Koytendag State Nature Reserve, where 20 camera traps are currently deployed. Although a formal population estimate is not yet available, camera-trap data from 2025 yielded only a small number of detections, indicating the presence of a very limited number of individuals, likely no more than a handful of animals. Lynx have not been recorded elsewhere in the country.

The persistence of lynx in this isolated, high-elevation mountain system within an otherwise arid desert landscape represents a scientifically and ecologically unique population. At the same time, its apparent small size and extreme isolation from other lynx populations render it particularly vulnerable to stochastic events, prey fluctuations, and human pressures, underscoring the need for continued monitoring and targeted conservation attention.

Lynx in Koytendag © Team Bars Turkmenistan/MoEPT/CLLC

Caracal. Caracal has been recorded at multiple locations around Garabogazgol, including the southern, eastern, and northern shores, highlighting the ecological importance of this landscape for the species. Camera-trap data confirmed the presence of an individual near the southern shore, a female with a kitten on the eastern shore, and another individual along the northern shore. In addition, evidence of a den and indications of a new pregnancy were documented, providing strong confirmation of active breeding within the area. A Caracal keeps being recorded in Kaplankyr, further demonstrating the species' continued, though highly localized, presence in Turkmenistan.

The caracal is a naturally rare and elusive species in Central Asia, occurring at low densities and requiring large, undisturbed landscapes with sufficient prey and cover. Its confirmed reproduction around Garabogazgol is therefore of exceptional conservation significance. These records underscore the role of Garabogazgol as a critical refuge for desert-adapted carnivores and strongly reinforce the decision to designate this landscape for formal protection, as its loss or degradation would likely result in the disappearance of one of the most vulnerable wild cat populations.

Caracal on Garabogazgol © Team Bars Turkmenistan/MoEPT/CXL

In November 2025, a caracal, which had not been documented for the past 15 years, was captured on a camera trap in Yeroylanduz in the Badhyz State Nature Reserve, further emphasizing the ecological importance of this landscape.

Manul. Despite continued camera-trap deployment in 2025 within the Kopetdag range and adjacent landscapes, very little additional information was obtained on manul. In 2025, a manul was recorded on camera traps on Dushak Erekdag. According to information received from Border Security service, a manul was observed in the valley Dogridere and Uly Karanky (November 2025). This lack of detections further underscores the species' extreme rarity and high vulnerability in these increasingly human-dominated mountain landscapes.

Available evidence suggests that only a very small number of manuls may persist in the Kopetdag and Balkan region, reinforcing the urgency of targeted conservation measures to address predation pressure, habitat degradation, and disturbance.

Manul on Dushak Erekdag, Kopetdag © Team Bars Turkmenistan/MoEPT/CXL

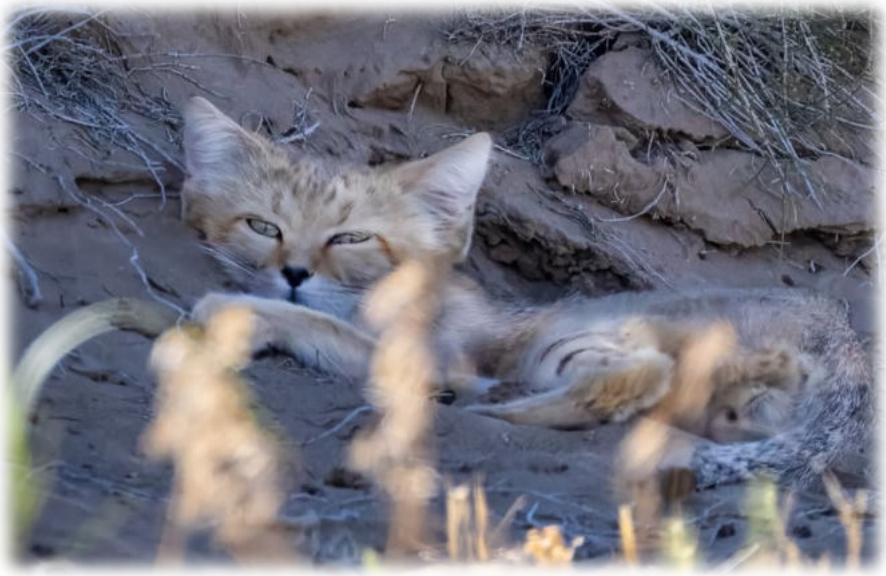
Wild cat and Jungle cat. Both jungle cats (*Felis chaus*) and Asiatic wildcats (*Felis lybica*) are continuously recorded on camera traps and through direct observations across Turkmenistan, including within multiple protected areas. Jungle cats are regularly detected in the foothills of the Kopetdag range, and Sunt Hasardag, while Asiatic wildcats are widespread across a variety of habitats. Their frequent detection indicates that both species remain relatively common and adaptable compared to other wild cats in the country.

Despite their broad distribution, these species face significant and growing threats, particularly hybridization with domestic cats, which poses long-term genetic risks, as well as mortality from vehicle collisions. In addition, both jungle cats and Asiatic wildcats are occasionally trapped by herders, either intentionally or incidentally, highlighting the need for targeted awareness-raising, mitigation measures, and improved coexistence strategies in both protected and working landscapes.

Young jungle cat in Sunt Hasardag © Team Bars Turkmenistan/MoEPT/CXL

Sand cat. A sand cat (*Felis margarita*) was observed by Atamyrad Veyisov in the Karakum Desert, providing a rare and important confirmation of the species' continued presence in Turkmenistan. Sand cats are among the least frequently recorded wild cats in Turkmenistan, owing to their naturally low densities, strictly nocturnal behavior, and strong association with remote desert habitats.

This observation underscores the conservation value of the Karakum Desert as habitat for highly specialized and poorly understood species. Given the sand cat's vulnerability to habitat disturbance, persecution, and incidental trapping, even isolated records are of high scientific significance and highlight the need for improved monitoring and protection of desert ecosystems.



Sand cat in the Karakum desert © Atamyrad Veyisov

Ungulate monitoring

Bezoar goat on Uly Balkan © Team Bars Turkmenistan/MoEPT/CXL

Overview and Methodology

This section summarizes population estimates for key ungulate species across multiple sites using a standardized camera-trap-based analytical framework. Population estimates are presented as ranges rather than single values to reflect uncertainty inherent in detection rates, movement assumptions, and camera coverage, while remaining appropriate for management and policy applications.

Population estimates were derived using the Random Encounter Model (REM), which estimates density and abundance from camera-trap data when individuals cannot be reliably identified. REM relates detection rates to expected animal movement distances and the effective detection zone of camera traps.

Key elements of the methodology applied consistently across all sites include:

- Passive camera trapping without marking or handling animals;
- Independent detection events defined by a minimum 30-minute interval;
- Conversion of detection rates (events per camera-day) to density using species-specific movement parameters;
- Standardized detection distances and assumed detection angles where calibration was unavailable;
- Use of published telemetry data for daily movement distances; and
- Abundance calculated based on suitable habitat, not total landscape area.

Uncertainty is greatest where detection rates are low, camera coverage is limited, or species are highly mobile or unevenly distributed. Estimates should therefore be

interpreted as indicative of order of magnitude and relative population size, with very low-detection sites treated primarily as confirmation of presence.

Species Accounts

Bezoar Goat *(Capra aegagrus).* Bezoar goats inhabit steep, rocky terrain in the Kopetdag range and the Balkan mountains and are regularly recorded on camera traps and through visual observations in Dushak Erekdag, westward toward Karayalchi, and across Uly and Kichi Balkan. Despite their association with cliff habitats that provide some refuge, bezoar goats are under intense poaching pressure throughout most of their range, with comparatively lower pressure likely only in areas behind border fences along the Iranian side.

2025 site-based estimates of individual animals (REM):
Uly and Kichi Balkan (combined): 120-210
Dushak Erekdag: 150-230
Karayalchi: <15

Visual observations:
Badjgiran: 70
Germap: 50-100

Urial Sheep *(Ovis vignei).* Urial sheep occupy many of the same landscapes as bezoar goats, including the Kopetdag and Balkan ranges, Garabogazgol chinks, Badhyz, Sunt Hasardag, and Koytendag. Unlike bezoar goats, urials rely less on cliff escape terrain, making them particularly vulnerable to poaching, especially in open landscapes.

Garabogazgol represents a critical risk area, where urials congregate near limited water sources and are easily targeted.

2025 site-based estimates of individual animals (REM):
Uly Balkan: 250-320
Garabogazgol: 100-150
Badhyz: 60-100
Sunt Hasardag / Tersakan: 20-30
Karayalchi: 10-25
Murzedag: 35-70
Dushak Erekdag: 210-300

Visual observations:
Badjgiran: 150-200
Archabil: 150-200

Markhor *(Capra falconeri).* Markhor occur exclusively in the Koytendag range, where they are largely confined to the Strict Nature Reserve. Like bezoar goats, they benefit from rugged cliff habitats but remain under serious threat from poaching. The population is transboundary with Uzbekistan's Surkhan Reserve, where protection levels are currently higher.

Recent work has focused on strengthening transboundary coordination to improve monitoring and enforcement consistency across the range.

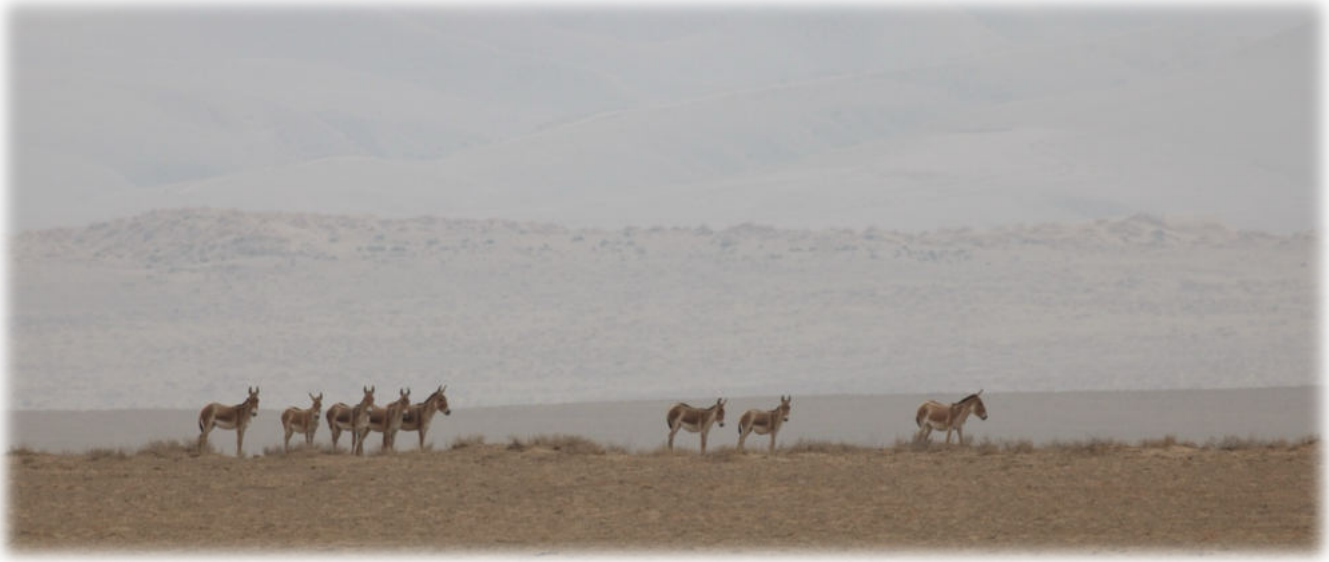
2025 estimate of individual animals (REM):
Koytendag: 250-300

Goitered Gazelle *(Gazella subgutturosa).* Goitered gazelles occur in the Kopetdag foothills in the eastern part (on the territory of Myane Chacha wildlife sanctuary and national monument Charlik), Gaplankyr, Badhyz, Amu Darya, Bereketli Karakum, Mary and Lebap/Farap forest areas, Ogurjaly Island, and parts of the Hazar Strict Nature Reserve. Presence is also suspected in Kelif Wildlife Sanctuary, although no recent detections have been confirmed. This species is under extreme poaching pressure, with many populations now fragmented and very small.

2025 site-based estimates of individual animals (REM):
Gaplankyr: 80-150
Badhyz: <30
Garabogazgol: presence confirmed by tracks only; population extremely small

Turkmen Kulan *(Equus hemionus kulan).* Kulan are extinct in the wild in Badhyz and persist only as fragmented remnants elsewhere. Small groups have been documented in Kaplankyr (beyond the border fence near Sarygamysh), Tersakan Valley, and Gury Howdan Wildlife Sanctuary. These groups are not demographically viable in isolation. In Gury Howdan, where regular protection has been established, eleven individuals are currently present. Following the introduction of a male from captivity in 2021, 1-3 foals have been born annually, indicating limited but ongoing reproduction.

2025 detections of individual animals:
Kaplankyr: 7 individuals
Tersakan Valley: 8 individuals
Gury Howdan: 11 individuals



Kulan in the foothills of the eastern Kopetdag © Aknabat Potaeva

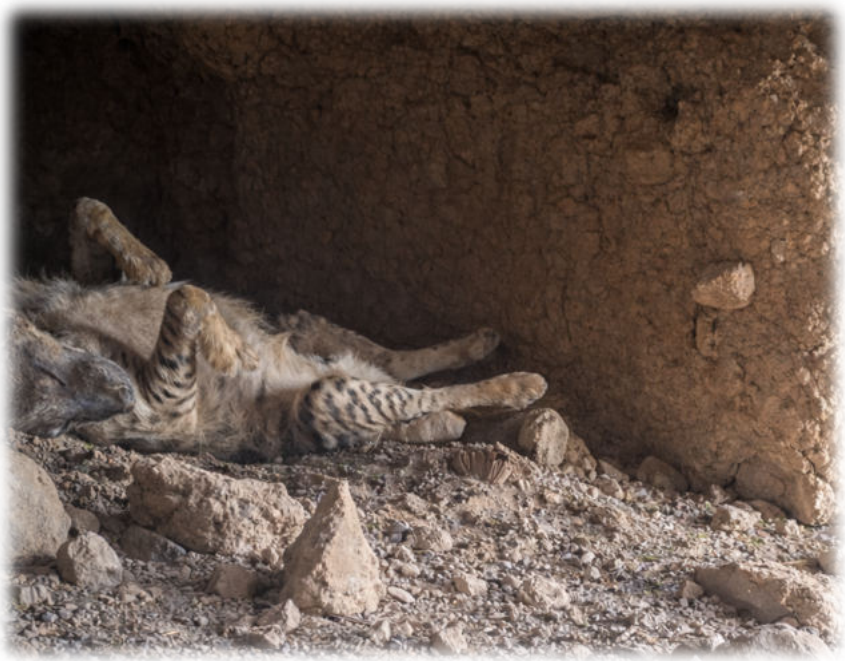
Ungulate populations across Turkmenistan remain highly uneven, with some strongholds persisting under protection and many sites showing clear evidence of decline driven by poaching, habitat degradation, and fragmentation. These trends have direct implications for large carnivores, particularly leopards, underscoring the urgent need for sustained anti-poaching measures, protection of water sources, restoration of prey bases, and improved landscape connectivity.

Goitered gazelle in Badhyz © Team Bars Turkmenistan/MoEPT/CXL

The sympatric carnivores

Striped Hyena. Camera-trap records confirm striped hyaena (*Hyaena hyaena*) presence in Badhyz State Nature Reserve, the Kopetdag range (including Gury Howdan, Bakja, Murzedag, and Bajgiran), and Sunt Hasardag. In 2025, a striped hyena was camera trapped for the first time in the Uly Balkan range, representing a significant and encouraging confirmation of continued range use in western Turkmenistan. The species has also been recorded in the Kichi Balkan range.

Despite this expanded documentation, detections remain rare and population size cannot be reliably estimated.



Striped Hyaena resting in Badhyz © Team Bars Turkmenistan/MoEPT/CXL

The striped hyena remains one of the most heavily persecuted carnivores in the region, subject to poisoning, trapping, and direct killing, often driven by negative perceptions and the demand for body parts used in traditional practices. In this context, the listing of the striped hyena on Appendix II of CITES in 2025 is a significant development, strengthening the international legal framework regulating trade in the species and providing an important tool to support national enforcement and conservation efforts. Given its extremely low detection rates, fragmented distribution, and sustained human-induced mortality, the conservation status of the striped hyena in Turkmenistan is comparable to that of the Persian leopard, warranting far greater attention and targeted conservation action.

Wolf. Wolves (*Canis lupus*) are recorded across protected areas and surrounding working landscapes in Turkmenistan and are frequently implicated in livestock depredation incidents. Despite their wide distribution and prominent role in human-wildlife conflict, there remains limited information on their ecology, population status, and spatial dynamics within the country, necessary to inform effective management and conflict mitigation strategies.

Honey badger. The honey badger (*Mellivora capensis*) is recorded on camera traps in northwestern Turkmenistan, and in the low-mountain zones of the western Kopetdag (Kulmach Range).

Honey badgers on southern shore of Garabogazgol © Team Bars Turkmenistan/MoEPT/CXL

Other carnivores. Other carnivores frequently detected through camera trapping include the red fox (*Vulpes vulpes*), corsac fox (*Vulpes corsac*), and the golden jackal (*Canis aureus*), with the latter being particularly widespread and commonly recorded across survey sites.

Other leopard prey

Wild boar (*Sus scrofa*) and **porcupine** (*Hystrix indica*) represent important prey species for Persian leopards and are regularly observed across the Kopetdag, Sunt Hasardag, Balkan ranges and Badhyz highlands. In 2025, an increase in the number of wild boars was observed in Gökdere, the forest areas of Asma Yoly, and in Archabil. Hares are also a key prey species, particularly for Eurasian lynx, caracal and likely for leopards as well. Despite their ecological importance, hare populations are under extreme poaching pressure nationwide.

Wild boars in Gury Howdan, Kopetdag © Team Bars Turkmenistan/MoEPT/CXL

Conservation Status of Protected Areas and beyond

Badhyz State Nature Reserve

Badhyz State Nature Reserve was established in 1941 to protect the region's unique relict pistachio woodlands and the Turkmen kulan. The reserve has undergone several boundary changes over time. Originally covering approximately 8,000 km², its area was reduced to 750 km² in 1951, before incremental expansions in 1962 and 1970 increased its size to 877 km². In 2014, the reserve was further enlarged to its current area of 1,404 km². When combined with the buffer zone, three adjacent wildlife sanctuaries, and designated ecological corridors, the protected portion of the wider Badhyz ecosystem complex now covers approximately 2,893.5 km².

Badhyz encompasses five main landscape features: the 18 km-long Gyzyljar Canyon; the Badhyz Plateau dominated by grasslands; a 45 km escarpment with extensive chinks; the Yeroylanduz and Namakar depressions; and the pistachio savannah of the Gezgadik Hills.

Observations during a field visit in November 2025 indicate that the conservation situation in Badhyz continues to deteriorate. Poaching pressure remains severe, and widespread illegal grazing by livestock, including hundreds of cattle, sheep, and free-ranging horses, has resulted in substantial habitat degradation within areas designated for wildlife protection. The presence of subsidiary farms also undermines the environmental protection status of the territory.

During the November 2025 visit, wildlife activity appeared minimal, likely reflecting a combination of poaching pressure, habitat degradation, and declining land productivity linked to climate change, which is increasingly affecting vegetation cover, forage availability, and ecosystem resilience across the reserve.

Nury Khudaikuliev checking a camera trap in Badhyz © Tanya Rosen

Portions of the reserve lying beyond the border engineering barriers remain inaccessible. Paradoxically, these areas may currently offer relatively greater safety for wildlife, underscoring the urgent need to improve protection, enforcement, and management coherence in the accessible parts of Badhyz if the reserve is to fulfil its conservation mandate.

Kopetdag State Nature Reserve and adjacent areas

Kopetdag State Nature Reserve, located in the central Kopetdag Range, was established in 1976 and covers an area of 509.8 km². The reserve occupies the high-mountain belt, with elevations ranging from approximately 700 to 2,800 metres above sea level. Its rugged landscape is characterised by steep slopes, deep gorges, and numerous perennial springs. Cooler climatic conditions on the high plateau support meadow vegetation that persists even during peak summer, creating a diverse mosaic of habitats along pronounced altitudinal gradients.

The reserve is of exceptional botanical importance, harbouring more than 40% of Turkmenistan's total plant biodiversity. It supports a high number of relict, rare, and endemic plant species, many of which are listed in the Red Book of Turkmenistan and on the IUCN Red List, underscoring its significance at both national and global levels.

A substantial portion of the Kopetdag State Nature Reserve lies beyond the border fence and is not accessible. While restricted access can offer a degree of de facto protection in areas with limited enforcement capacity, it also poses serious conservation challenges. Border infrastructure disrupts ecological connectivity that is essential for wide-ranging species such as Persian leopard, urial sheep and other species to maintain genetic diversity, population viability, and long-term resilience. The risks posed by border fencing were highlighted in summer, when two urial lambs became entangled in the fence and were rescued by Border Security staff.

To the east of the reserve lie the Meana-Chaacha Wildlife Sanctuary (60 km²) and the Gury Howdan Wildlife Sanctuary (15 km²), the latter directly adjoining Iran's Tandoureh National Park, which supports one of the region's densest known Persian leopard populations, estimated at approximately 30 individuals. Together, these areas form a transboundary conservation landscape of high strategic importance for large carnivores and their prey.

Rangers of the Kopetdag State Nature Reserve play a critical role in protecting not only the reserve itself but also adjacent sanctuaries and neighbouring areas such as the Dushak Erekdag forest, which currently lacks formal protected status. Their efforts have led to the apprehension of poachers and a modest reduction in poaching activity during periods of active patrolling. Camera-trap data and field observations confirm that these unprotected areas support reproducing female leopards as well as key prey species, including bezoar goat and urial sheep.

Example of coexistence on Dushak Erekdag, Kopetdag: Persian leopard Juma drinking water from the bucket of two horses grazing behind him © Team Bars Turkmenistan/MoEPT/CXL

One such area is Karayalchi, designated as a Natural Monument, where continued monitoring has consistently recorded the presence of Persian leopards. This highlights the conservation value of areas outside formal protected boundaries and reinforces the need to strengthen protection, ecological connectivity, and coordinated management across the wider Kopetdag landscape.

To protect wild animals, an additional watering holes and daily patrols were organized in the Murzedag area in the summer of 2025.

Balkan and Garabogazgol

The proposed protected areas of Uly Balkan (approximately 1,100 km²) and Kichi Balkan (approximately 250 km²) encompass a rugged mountain system of high ecological value. The northern boundary of the Uly Balkan massif is formed by limestone and sandstone formations, with steep northern slopes and deeply incised southern slopes shaped by numerous dry streambeds, some reaching depths of 40–50 metres. The plateau-like ridge is dissected by gorges running in all directions. The highest peaks are Mount Arlan (1,883 m) and Mount Chilgezat (1,408 m).

Below 800 metres, desert, semi-desert, and mountain-steppe landscapes dominate, characterised by xerophytic vegetation and very sparse, open juniper stands. The area experiences an exceptionally dry and strongly continental climate. Surface water is scarce, with the hydrographic network consisting mainly of seasonal streams, small springs, and limited groundwater outflows. Numerous caves, some extending tens of metres deep, and a system of karst wells in the foothills further define the area's distinctive geomorphology.

The proposed Garabogazgol/Ustyurt protected area encompasses approximately 1,900 km² of a globally unique ecosystem, supporting distinctive biological communities that

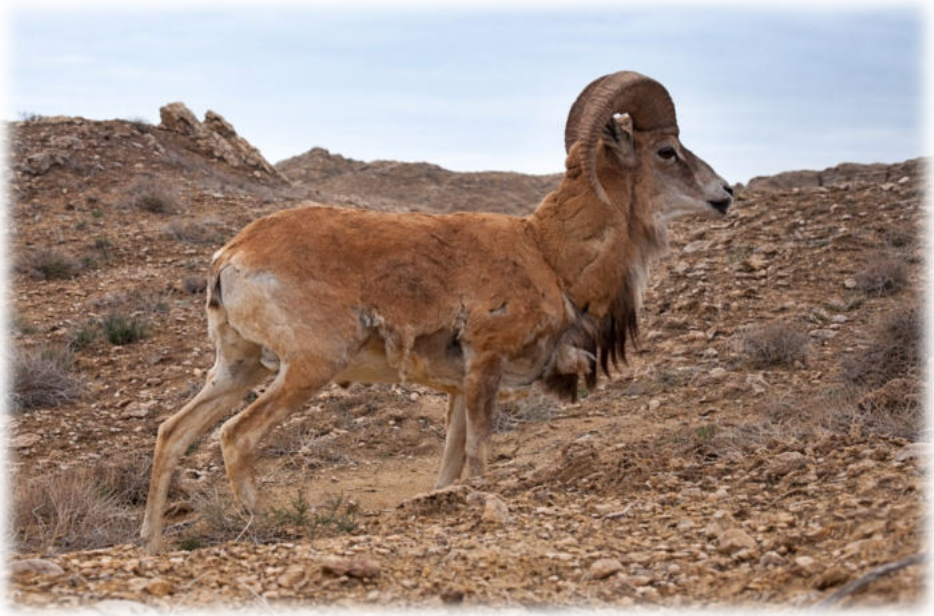
include both temperate and desert-adapted species. The area functions as a critical ecological corridor for the Persian leopard, facilitating northward dispersal toward Kazakhstan, and supports high biodiversity, with more than 40 mammal species and over 30 reptile species recorded.

A baseline IBEX assessment, conducted for the proposed Balkan protected areas, scored the site at 39%, indicating low management effectiveness at baseline. The assessment identified exceptionally high ecological value and strong commitment from field staff, but highlighted significant gaps related to the absence of formal protected area designation, limited enforcement capacity, severe poaching pressure, particularly on ungulates, insufficient infrastructure, and weak monitoring and management systems.

Despite their ecological importance, both the Balkan ranges and Garabogazgol continue to experience severe poaching pressure, particularly targeting ungulates. Along Garabogazgol, virtually all water sources show clear signs of intensive poaching activity, underscoring the vulnerability of wildlife congregating at these critical points.

The regional Balkan Department of Environment Protection has demonstrated exceptional commitment in addressing poaching and other violations. Although small in size, the unit remains highly active, regularly apprehending offenders. Rangers have fully adopted SMART for patrol planning and reporting, with quarterly patrol reports produced consistently. Camera traps are also used to support enforcement and identify poaching activity, although theft of equipment remains a persistent challenge.

To further strengthen protection, work is underway with the Balkan Department of Environment to establish a point-to-point camera surveillance network on Uly Balkan, aimed at improving real-time detection of illegal activity and ultimately serving as a deterrent to poaching. These efforts are central to securing the long-term viability of the Balkan and Garabogazgol landscapes as core habitats and movement corridors for large carnivores and their prey.



An urial sheep on Garabogazgol that lost part of his limb in a foothold snare set by poachers. Despite the loss of the limb, he survived. © Team Bars Turkmenistan/MoEPT/CXL

In January 2025, a UNEP technical team conducted a field visit to this area, as part of efforts to expand the UNEP Vanishing Treasures programme to include the Persian leopard in Turkmenistan. The visit focused on understanding the ecological characteristics of the landscape, climate change impacts, human–wildlife conflict dynamics, and the role of protected areas. UNEP representatives met with herders, local civil society actors, and the Balkan Department of Environment, and visited camera-trap sites and key habitats. The mission helped inform the development of a climate-smart conservation concept, highlighted the urgency of addressing climate-driven pressures on wildlife and communities, and reinforced the strategic importance of the Balkan region for leopard conservation and ecological connectivity.

In August 2025, a major wildfire broke out on Uly Balkan, burning approximately 15 km² of high-biodiversity mountain habitat during peak summer conditions. The fire, which is believed to have been ignited by poaching activity and rapidly intensified by extreme heat and strong winds, highlighted the growing risks posed by climate change in this exceptionally dry landscape. Rangers from the Balkan Department of Environment Protection, in cooperation with the staff of the Fire and Emergency Departments managed to contain the fire despite having only rudimentary tools and no protective equipment, placing themselves at considerable personal risk. In response, and recognising the urgent need to strengthen preparedness, IUCN Netherlands, through its Green Life Action Fund, has supported an emergency initiative to equip rangers and local partners with basic wildfire response and safety equipment, mobility, and training. This support represents a critical step toward building climate resilience, protecting key leopard habitat and prey populations, and ensuring safer working conditions for frontline conservation staff in the Balkan range.

Sunt Hasardag State Nature and adjacent areas

Sunt Hasardag State Nature Reserve was established in 1979 with an original area of 398 km² but has since been reduced to its current size of 265 km². The reserve is now fragmented into three disjunct sections: the Central section (134 km²), encompassing the southern slopes of the Sunt Hasardag ridge; the Aydere section (36 km²), centred on the Aydere gorge; and the Chendyr section (95 km²), covering the northern slope of the Palvan ridge. This fragmentation poses significant challenges for wildlife movement and effective management.

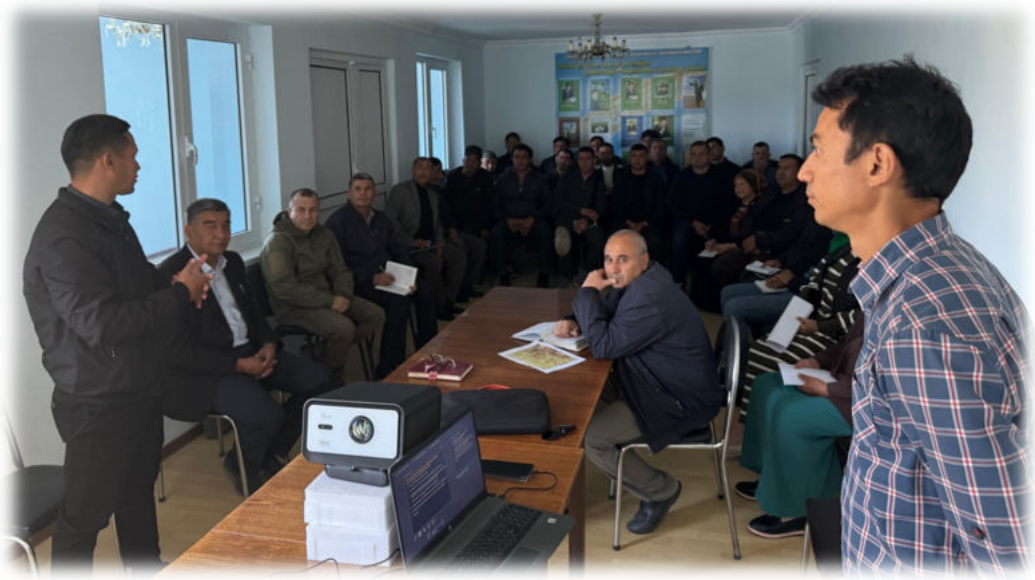
Sunt Hasardag remains a key conservation area for Persian leopards. The first leopard was camera trapped in the reserve in 2019, confirming its importance as leopard habitat. In autumn 2024, a female leopard with three cubs was recorded in the Aydere section, demonstrating continued breeding within the reserve. Earlier in 2024, a brown bear sow with a cub was also documented, further highlighting the site's role for large mammals.

Camera-trap monitoring in 2025 also regularly recorded other carnivore and mammal species, including jungle cat, sand cat, striped hyena, and porcupine, underscoring the reserve's broader biodiversity value.

A baseline IBEX assessment scored Sunt Hasardag at 58%, indicating moderate management effectiveness with significant gaps remaining. The assessment highlighted strengths in legal designation and basic protection, but also identified weaknesses related

to reserve fragmentation, limited enforcement capacity, pressures from poaching and grazing, and insufficient ecological monitoring, particularly for key prey species.

In late 2025, the reserve began the introduction of SMART as a standard tool for patrol planning, data collection, and reporting, in line with broader national efforts to strengthen protected area management. The adoption of SMART is expected to improve the effectiveness of patrols, enhance detection of illegal activities, and support more systematic monitoring of key species across the fragmented reserve.



SMART training in Sunt Hasardag. © Islam Annamamedov

Adjacent to the reserve, the Tersakan Valley continues to support a small and isolated kulan population. This further emphasises the importance of coordinated monitoring and protection at the landscape scale, beyond the formal boundaries of Sunt Hasardag State Nature Reserve.

Kaplankyr State Nature Reserve

Kaplankyr State Nature Reserve was established in 1979 with an original area of 5,700 km² but was later reduced to its current size of 2,757 km². Despite this reduction, it remains the largest protected area in Turkmenistan. The reserve is flanked by two wildlife sanctuaries: Sarygamysh Wildlife Sanctuary (5,414 km², established in 1980) and Shasenem Wildlife Sanctuary (1,090 km², established in 1983), together forming an extensive protected landscape in northwestern Turkmenistan.

Kaplankyr was recently designated as part of the UNESCO World Heritage Site “Cold Winter Deserts of Turan”, together with other protected areas in the region. As part of this process, the reserve has received increased institutional support, including uniforms and equipment for rangers, and is currently benefiting from a UNDP-funded project that has the potential to substantially strengthen management capacity and on-the-ground protection.

A baseline IBEX assessment scored Kaplankyr at 55%, indicating moderate management effectiveness. The assessment highlighted the reserve’s strong legal status, large size, and

growing institutional support, while identifying remaining gaps related to enforcement capacity, monitoring coverage, and pressures associated with poaching and transboundary movements of wildlife.

Caracal in Kaplankyr reserve © Team Bars Turkmenistan/MoEPT/CXL

Camera-trap data and field observations confirm that kulan continue to occur beyond the border fences, moving between Turkmenistan and Uzbekistan, underscoring the transboundary importance of the landscape. Goitered gazelles are regularly recorded on camera traps within the reserve, and caracal has been re-recorded, confirming the persistence of this rare carnivore within the Kaplankyr landscape.

Koytendag State Nature Reserve

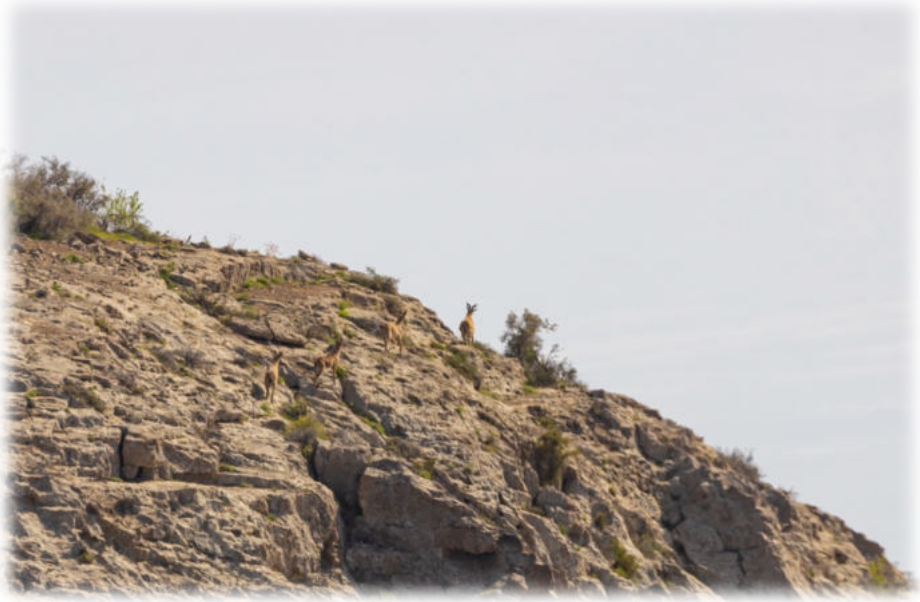
Koytendag State Nature Reserve and the four contiguous wildlife sanctuaries of Garlyk, Hojaburjybelent, Hojagaraul, and Hojeypil together cover approximately 933.4 km² and were established between 1986 and 1990 to conserve the unique mountain ecosystems, biodiversity, and geological heritage of the Koytendag (Kugitang) range. The landscape extends from the hot semi-desert plains of the Amu Darya to the snow-capped summit of Airy-baba (3,137 m), the highest peak in Turkmenistan, and is part of the broader Pamir-Alay mountain system, supporting a rich mosaic of habitats with high endemism.

Koytendag State Nature Reserve is now at the center of a transboundary UNESCO World Natural Heritage nomination jointly with Surkhan State Nature Reserve in Uzbekistan, under the title “Karst, Canyons and Caves of the Kugitang Range”. In 2025, with the support from the Michael Succow Foundation, the property was officially inscribed on the National Tentative Heritage Lists of both Turkmenistan and Uzbekistan, marking a major milestone in a long and complex UNESCO process and confirming strong political commitment from both countries. This transboundary nomination is a national priority for Turkmenistan and aims to safeguard the ecological integrity of the entire Kugitang

mountain ecosystem across borders, in line with earlier recommendations from IUCN experts to address integrity concerns through a joint submission.

With national tentative list inscriptions now complete, the UNESCO process will advance to the preliminary assessment phase, further refining boundaries, integrity, and management arrangements. This work is being informed by long-standing scientific collaboration, including the exceptional contributions of the French Speleological Society (CREI) in documenting the cave systems. The transboundary nomination not only recognizes the outstanding universal value of the Kugitang Range, but also provides a powerful framework for strengthening cross-border conservation, governance, and cooperation in one of Central Asia's most extraordinary mountain landscapes.

A baseline IBEX assessment scored Koytendag at 48% overall alignment, indicating partial alignment with the Green List Standard. The assessment recognized the reserve's outstanding natural values and strong potential for conservation but also identified significant gaps in inclusive governance, management planning, enforcement capacity, and systematic monitoring of conservation outcomes.



Markhor in Koytendag © Atamyrad Veyisov

Support from two consecutive CEPF grants and PBDI, has helped address key issues such as management capacity, ecological monitoring, human pressures, and transboundary cooperation. Capacity building for reserve personnel, improved biodiversity monitoring, and enhanced engagement with counterparts in Surkhan Reserve have been major focuses. A SMART system has been introduced and continues to produce regular patrol data and quarterly reports, greatly improving operational monitoring and enforcement.

Ecologically, markhor populations remain comparatively secure within the Strict Nature Reserve and across the border where protections are comparable, whereas urial sheep continue to be impacted by poaching and livestock grazing in adjacent wildlife sanctuaries. The ongoing presence of domestic livestock within protected areas remains problematic, degrading habitat and creating conflict.

Recommendations:

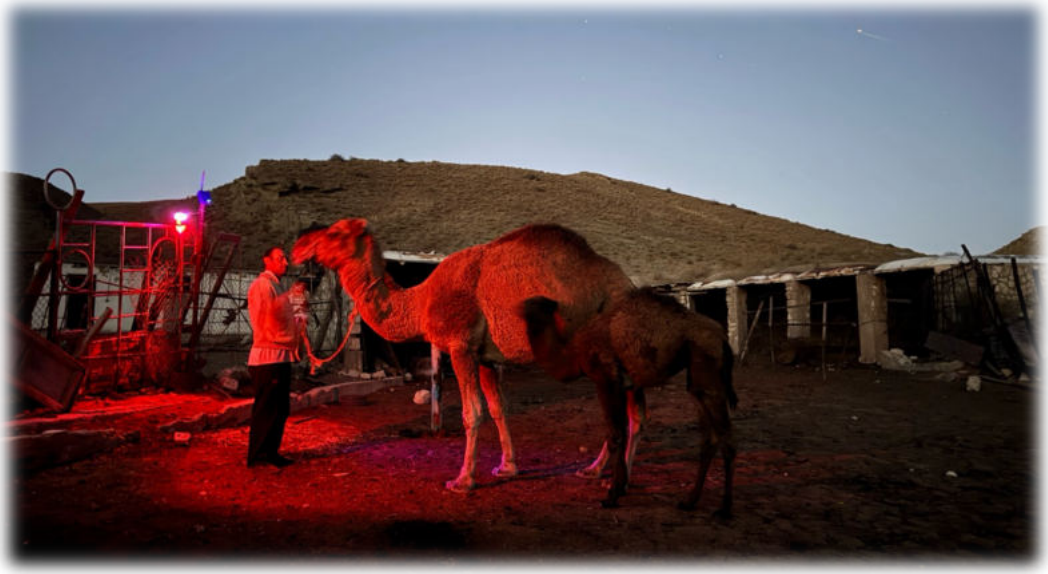
A ranger of the Balkan Department of Environment patrolling Garabogazgol © Tanya Rosen

The formulated recommendations for consideration by the Ministry of Environmental Protection of Turkmenistan are based on extensive observations, discussions with Ministry of Environmental Protection and protected area staff, and data from camera traps.

General:

- Develop, agree on, and approve "Model Regulations on Ecological Corridors, Buffer/Protected Zones" in accordance with the Law "On Special Protected Natural Areas";
- The definition of “Other Effective Area-Based Conservation Measures (OECM)” must be enshrined in regulatory and legal acts;
- Institutionalize the SMART patrolling system in full (issue an order, amend job descriptions, appoint responsible coordinators, etc.) and subsequently extend the system to all protected areas and environmental protection agencies;
- Assist in receiving permission from the State Border Service to conduct scientific monitoring and inspection in the sections beyond the border fence of the Kopetdag, Badhyz, Kaplankyr, Sunt Hasardag and Koytendag reserves;
- Increase fines and prosecutions for illegal activities and poaching in and around protected areas for the successful implementation of environmental activities;
- Strengthen the status of rangers, equip them with modern upgraded transport, including motorcycles, mobile radio connection, and uniforms;
- Engage with Turkmen border service and counterparts in Kazakhstan and Uzbekistan to make progress, including fence modifications, to restore ecological connectivity especially for Garabogazgol/Ustyurt and Kaplankyr;
- Support work with local communities on reducing human-wildlife conflict and raising awareness about the need for protection of leopards and other wildlife;
- Build national scientific capacity (i.e., train new young mammologists, herpetologists, ornithologists, etc.);

- Conduct monitoring to study the status (species composition, habitat, number) of the Red Data Book animal species of Turkmenistan on the territory of forestry and other natural areas of the country (this data is not available, and the Ministry does not have information). In the next years plan a research work to cover forestry areas, desert areas and other mountainous areas;
- Install video surveillance in areas where camera traps are located (where terrain permits) to ensure their safety. Pay particular attention to the most vulnerable areas and zones with a high risk of unauthorized interference or theft of camera traps; and
- Develop and implement a comprehensive plan to regenerate 15 km² of burned areas on the Uly Balkan mountain range, ensuring that restoration work is carried out to prevent soil erosion and habitat degradation for the Persian leopard.



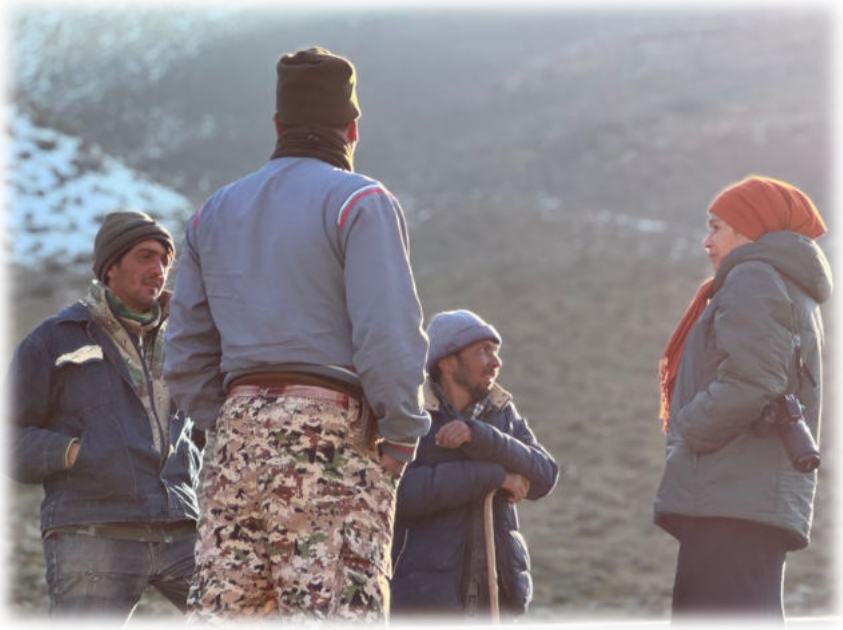
A Foxlight, a predator deterrent, is deployed in the foothills of the Balkan range to prevent human-wildlife conflict © Tanya Rosen

Badhyz:

- Remove feral horses from the strict nature reserve;
- Ban domestic cats from the ranger posts to preserve wild animal populations;
- Strongly regulate the collection of pistachio in the reserve;
- In 2026, subject to consultation, determine places (Gyzyljar or other gorges) for the further release of kulans, which are kept in the reserve's enclosure and strictly observe their safety with rangers on duty;
- Study the experience of the Kopetdag State Nature Reserve over the past four years in increasing the number of kulans in their natural habitat (within the territory of the reserve) through the use of enhanced protection measures, without the use of enclosures;
- Ensure a complete ban on grazing livestock (cows, horses, donkeys, and sheep) in the territory;
- Limit the scope of economic activities to eliminate their negative impact on the ecosystem and the conservation status of the reserve;
- Stop poaching by increasing staff numbers and strengthening infrastructure; and raising awareness of biodiversity loss in one of Turkmenistan's most valuable and oldest protected areas.

Western Kopetdag:

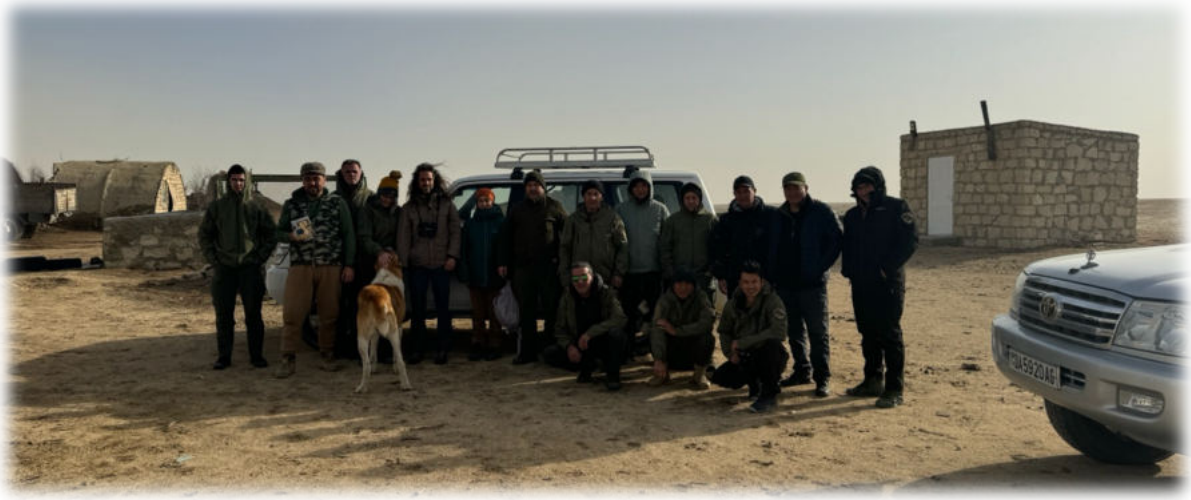
- Provide protection status to the Tersakan valley and adjacent area where kulan were spotted and include it into the network of protected areas of the Sunt Hasardag reserve; and
- Establish a ranger outpost to safeguard the remaining kulan and wildlife populations in this area.



Working with local herders and communities is key to human-wildlife harmonious coexistence © Tanya Rosen

Central Kopetdag:

- Increase the territory of the Karayalchi Natural Monument (walnut grove) or declare it a wildlife sanctuary or strict natural reserve;
- Prepare scientific and technical justification and a package of documents for submitting a proposal to the Cabinet of Ministers of Turkmenistan on expanding the territory of the Kopetdag State Nature Reserve by including the Dushak Erekdag mountain range. This measure is necessary to fulfil state obligations to preserve biodiversity and protect key habitats of rare species (the Persian leopard, manul, urial, and bezoar goat);
- Study the hydrological regime of temporary water sources in the Rukhabat section with the aim of organizing additional water points during the dry summer period to maintain the number of wild animals; and
- Organize scientific monitoring of wild ungulate and carnivore populations in the eastern part of Kopetdag, outside the protected area.



A visit to a herder on Garabogazgol to support human-wildlife coexistence.

Kaplankyr:

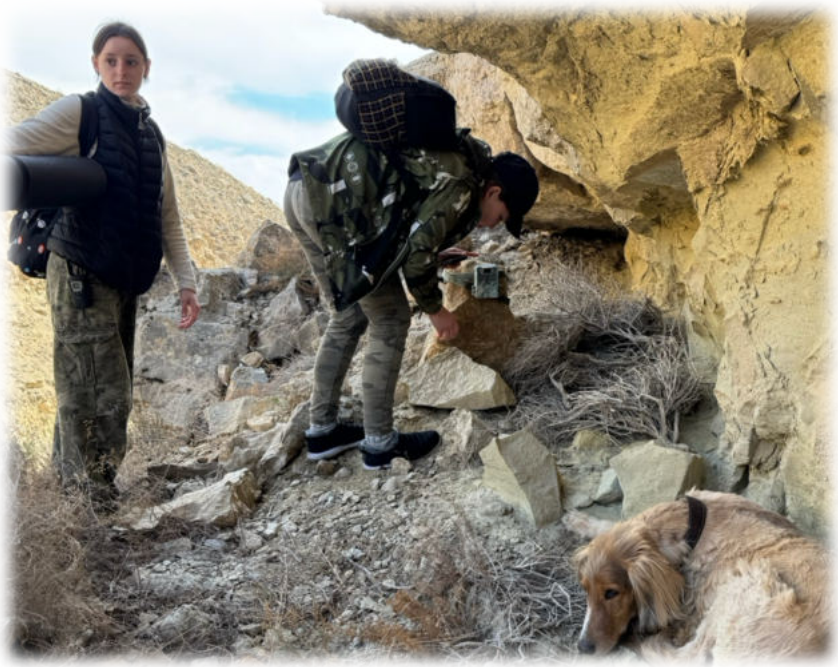
- Increase cooperation with Uzbekistan and Kazakhstan to establish the future "eco-corridor" on the Ustyurt plateau between the 3 countries; and
- Consider discussing with Kazakhstan the possibility of translocation of saiga antelope from western Kazakhstan.

Introducing the concept of IUCN Green List and working on delineating candidate OECMs © Tanya Rosen

Koytendag:

- For the successful consideration of the new nomination dossier entitled "Karst, Canyons and Caves of Kugitang" for inclusion in the UNESCO World Heritage List, comprehensive work must be done on the recommendations and proposals of IUCN experts (2015), which were made during the expert evaluation mission of the previous nomination dossier "Koytendag Mountain Ecosystem". The main areas of work include:

- Revise the territories of the nomination dossier of the Mountain Ecosystem of Koytendag (MEK) in accordance with the recommendations of IUCN experts (2015) as well as coordinates and GIS data collected during the RSPB and CEPF projects, and agree on and approve these territories, including buffer zones;
- Include the Kaptarkhana Cave in the buffer zone;
- Strictly control livestock grazing and tourist flows within particularly vulnerable areas. Improve the management and protection system to minimize anthropogenic impact on critical ecosystems; and
- Expand the territory of the existing Khodzhepil Wildlife Sanctuary to include the nearby villages of Sayat and Khodzhepil, with the aim of increasing its representativeness for more effective protection of the habitat of urial, lynx, wild boar, porcupines, wolves, and other wildlife, as well as to more effectively regulate vandalism and degradation of the "Dinosaur Plateau" paleontological monument, overgrazing, pollution from household waste, and mass unorganized tourism.

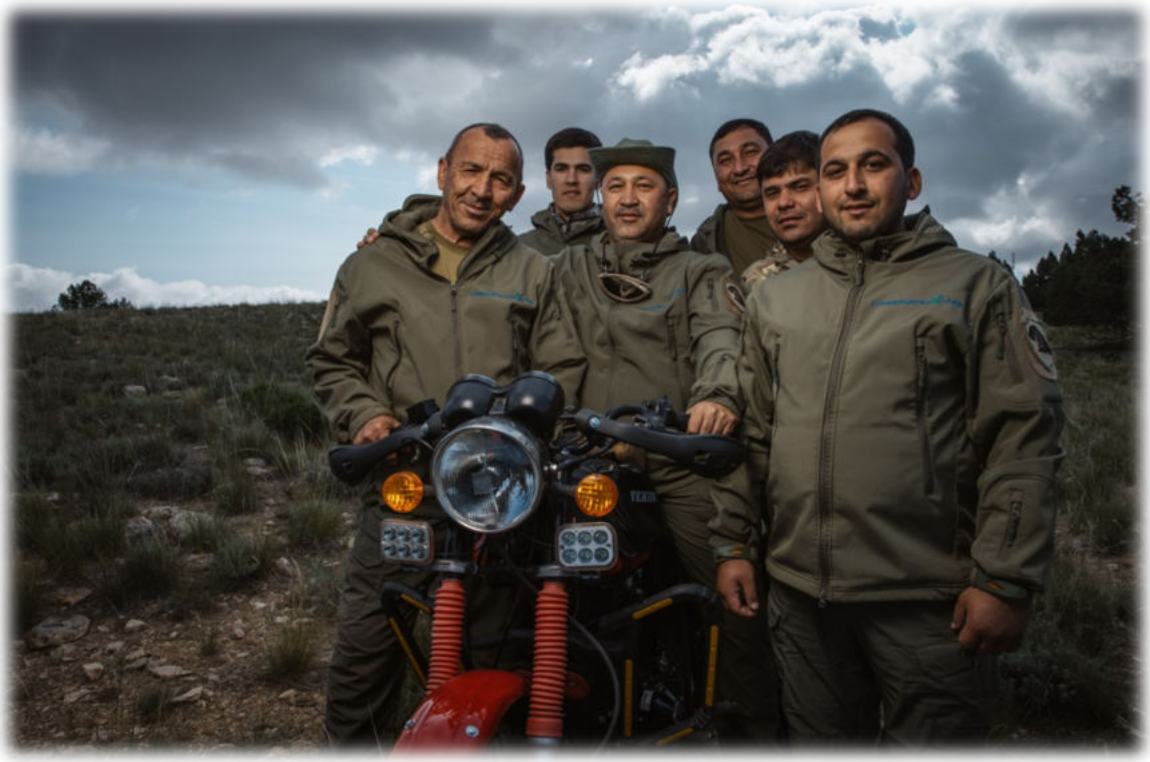


Involving young people in wildlife monitoring in the Balkan region © Tanya Rosen

On management of Koytendag:

- Create well-designed wildlife passages through the fence within the Koytendag Nature Reserve to facilitate movement and ensure genetic diversity of wildlife, including genetic exchange between populations of urial and other ungulates, as well as to preserve the overall integrity and connectivity within the reserve (in accordance with the CMS Central Asian Mammal Conservation Initiative Work Program for 2026–2032);

- Organize regular patrols of the “Dinosaur Plateau”, especially on weekends and holidays;
- Install a barrier at the foot of the “Dinosaur Plateau”, a post for inspectors, and establish control in cooperation with law enforcement agencies;
- Ensure the installation of fencing around the perimeter of the “Dinosaur Plateau” paleontological monument in order to prevent unorganized tourism and unauthorized cattle grazing. Equip the area with a video surveillance system to ensure round-the-clock control and preservation of unique footprints;
- Temporarily close the "Dinosaur Plateau" to tourists until management measures are put in place to better preserve public access to the dinosaur footprints such as upgrading parking, improving trails, and activating a surveillance and tourist awareness plan to inform people about their fragility and better control walking on or touching the tracks and trackways, as well as prohibiting graffiti and leaving garbage;
- Appoint site chiefs throughout each sanctuary and reserve to increase responsibility and oversight;
- Strictly control grazing in the Hojeypil and Hojagaraul Wildlife Sanctuaries; and
- Improve the pasture areas adjacent to the protected areas including drilling 3-4 wells in territories adjacent to the protected areas and promoting more sustainable and rotational use of pasture lands with local shepherds.



Rangers of the Balkan Department of Environment Protection