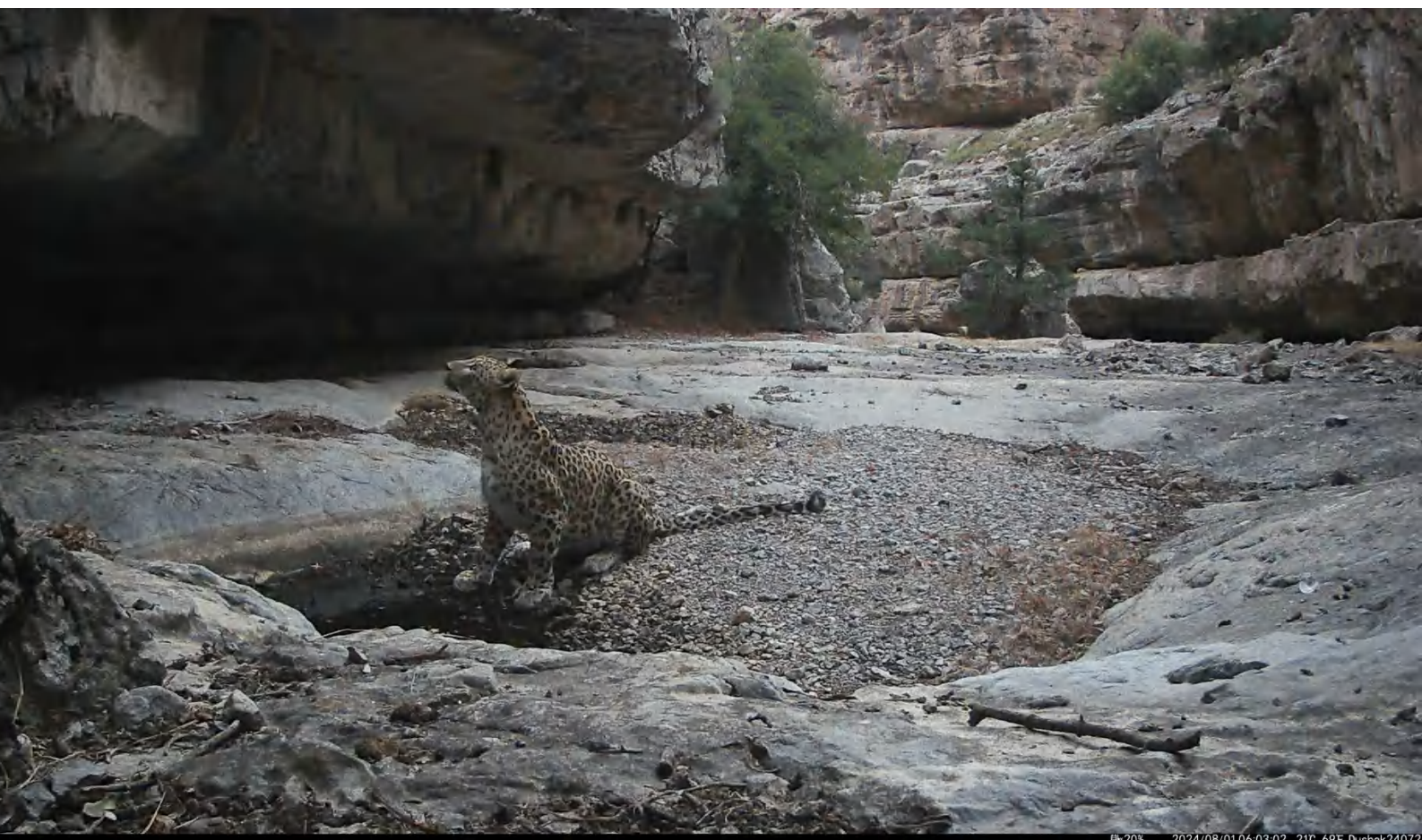




Assessment of Wildlife and Protected Areas of Turkmenistan 2024



Ashgabat, December 2024



Authors and Acknowledgments

This report was prepared in the frame of the projects “Connectivity, Capacity, and Cats: Building Resiliency in the Mountain Ecosystems of Koytendag, Turkmenistan, “Improving Capacity and Connectivity Between Reserves in Turkmenistan and Uzbekistan”, “Cores Corridors and Cats across Central Asia”, and “Snow Leopards and Persian Leopards: A Shared Strategy to Save Them and their Habitats” with the participation of international 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)

Members of the team include:

Coordinating members: Tanya Rosen, Arazmurad Amanov, Islam Annamamedov, Shirin Karryeva, Shaniyaz Mengliev, Aknabat Potaeva, Hojamurad Hojamuradov, Nurmuhammet Hudaykuliev, Weli Nasyrov, and Eziz Tangriguliev.

Science Support: Jumamurad Saparmuradov, Begench Atamuradov, Petra Kaczensky, Aaron Laur and John Linnell

Technical Support: Serdar Choliev, Stanislav Fateyev, Begench Mammedov, Selbi Jumayeva, Tagan Nazarov, Aman Kurbanov, Atamurad Veyisov, and Michiel Hotte.

Volunteers: Yegor Chaiko, Vasil Chaiko and Misha Pereverziv.

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 and UNDP Turkmenistan for supporting and facilitating the work of protecting the precious nature and wildlife of Turkmenistan.

We are also thankful to our donors, without whose support this work would not be possible: Critical Ecosystem Partnership Fund, National Geographic Society, Fondation Segre, Royal Zoological Society of Scotland and Rob and Cheryl Fimbel.

Suggested citation: Rosen, Tanya, Arazmurad Amanow, Islam Annamamedov, Begench Atamuradov, Serdar Choliev, Stanislav Fateyev, Hojamurad Hojamuradov, Michiel Hotte, Nurmuhamet Hudaykuliev, Selbi Jumayeva, Shirin Karryeva, Petra Kaczensky, Aman Kurbanov, Aaron Laur, Begench Mamedov, Shaniyaz Mengliev, Weli Nasyrov, Tagan Nazarov, Aknabat Potaeva, Jumamurad Saparmuradov, Eziz Tangriguliev, Atamurad Veyisov, and John Linnell. Assessment of Wildlife and Protected Areas of Turkmenistan 2024. Ashgabat. 2024.

Table of Contents:

Authors and Acknowledgments 2

Executive Summary 4

Introduction 8

Monitoring and conservation efforts of wild cats and other iconic wildlife of Turkmenistan 9

The Cats 9

The Ungulates 14

The sympatric carnivores 16

Other leopard prey 17

Conservation Status of Protected Areas and beyond 17

Badkhyz State Nature Reserve 17

Kopetdag State Nature Reserve and adjacent areas 19

Balkan and Garabogazgol 20

Sunt Hasardag State Nature and adjacent areas 21

Kaplankyr State Nature Reserve 22

Koytendag State Nature Reserve 23

GIZ, UNDP, Conservation X Labs and CLLC workshop on SMART in the Ministry of Environmental Protection of Turkmenistan 24

Recommendations: 27

Executive Summary

2024 has been a year of great strides in the conservation of species and protection of wild places in Turkmenistan. The country has

- ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in doing so helped close a critical gap in Central Asia that will ensure better protection of CITES listed species and understanding of legal and illegal wildlife trade;
- signed the Memorandum of Cooperation for Wildlife Conservation on the Ustyurt Plateau with Kazakhstan and Uzbekistan, which will facilitate efforts to enhance ecological connectivity on the Plateau as well as cross-border collaboration, and creation of new transboundary protected areas;
- participated for the first time as Party in the 14th Conference of Parties of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and supported the listings in the Convention of manul and lynx; and
- prepared and submitted the justification document for the establishment of the more than 3000 km² Balkan protected areas cluster (encompassing Uly Balkan, Kichi Balkan and Garabogazgol/Ustyurt) and it is expected that the cluster will be signed into law in 2025.

In this report we will discuss activities (monitoring and conservation) carried out throughout 2024 in different areas across Turkmenistan. The project is primarily focused on monitoring and conservation of the Persian leopard, their prey, and sympatric carnivores, and — within the scope of the CEPF grant — on strengthening the management of Koytendag State Nature Reserve.

The formulated recommendations for consideration by the Ministry of Environmental Protection are based on extensive observations, discussions with Ministry of Environmental Protection and protected area staff, and data from camera traps collected within the frame of this ongoing project and a set of previous projects stretching back to 2013. Some of the recommendations mirror those provided in the 2023 Report.

General:

- ⇒ Develop, agree on, and approve “Model Regulations on Ecological Corridors, Buffer/Protected Zones, and OECMs” in accordance with the Law "On Special Protected Natural Areas";
- ⇒ Grant permission to conduct scientific monitoring and inspection in the sections beyond the border fence of the Kopetdag, Badkhyz, 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, and uniforms;
- ⇒ Institutionalise SMART monitoring in the Ministry of Environmental Protection based on the Decree of the President for digitalisation of activities (allowing Ministry staff members to become involved in site protection management based on periodic SMART patrol reports);
- ⇒ Integrate the use of SMART in the management of all protected areas;

- ⇒ Appoint a dedicated SMART Coordinator in the Department of Flora and Fauna Protection of the Ministry of Environmental Protection who will be designated to receive all SMART reports (for now from Koytendag and Balkan Department of Environmental Protection) as discussed during the May 2024 workshop;
- ⇒ 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; and
- ⇒ 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 mammalogists, herpetologists, ornithologists, etc.); and
- ⇒ 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.

Badhyz and Koytendag:

- ⇒ Start enforcing the full ban on livestock (cows, horses, donkeys, and sheep) inside the Strict Nature Reserves; and
- ⇒ Stop poaching, by:
- ⇒ increasing manpower and infrastructure; and
- ⇒ Raise awareness for the loss of biodiversity in one of the most precious and oldest protected areas in Turkmenistan.

Badhyz:

- ⇒ Remove feral horses from the strict nature reserve;
- ⇒ Regulate the collection of pistachio in the reserve (Ministry continues to allow local people to harvest most of pistachio from the strict nature reserve to increase income);
- ⇒ Ban haying in the reserve for additional feeding of wildlife during dry seasons); and
- ⇒ In 2025, subject to consultation, determine places (Gyzyljar or other gorges) for the further release of kulans, which are kept in the reserve's enclosure (6 kulans) and strictly observe their safety with inspectors on duty.

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 Kopetdag region; and
- ⇒ Establish a ranger outpost to safeguard the remaining kulan and wildlife populations in this area.

Central Kopetdag:

- ⇒ Increase the territory of the Karayalchi Natural Monument (walnut grove) or declare it a nature reserve or strict natural reserve (prepare documents and submit proposals by 2025); and
- ⇒ Develop a project draft and submit documentation to the Ministry of Environmental Protection (with deadline 2025) for the inclusion of the territory of Dushak Erekdag into the Kopetdag State

Nature Reserve for the conservation and restoration of the Red Data Book species of animals of Turkmenistan (Persian leopard, Pallas's cat, urial sheep, bezoar goat, etc.).

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.

Koytendag:

For the success of the UNESCO World Heritage Site Nomination Dossier, the nomination dossier of the Mountain Ecosystem of Koytendag (MEK) should be brought into line with the recommendations of IUCN experts (2015) including recommendations on the integrity of the territory, protection, management, nomination boundaries, criteria, grazing monitoring, tourism, transnational cooperation, etc. as follows:

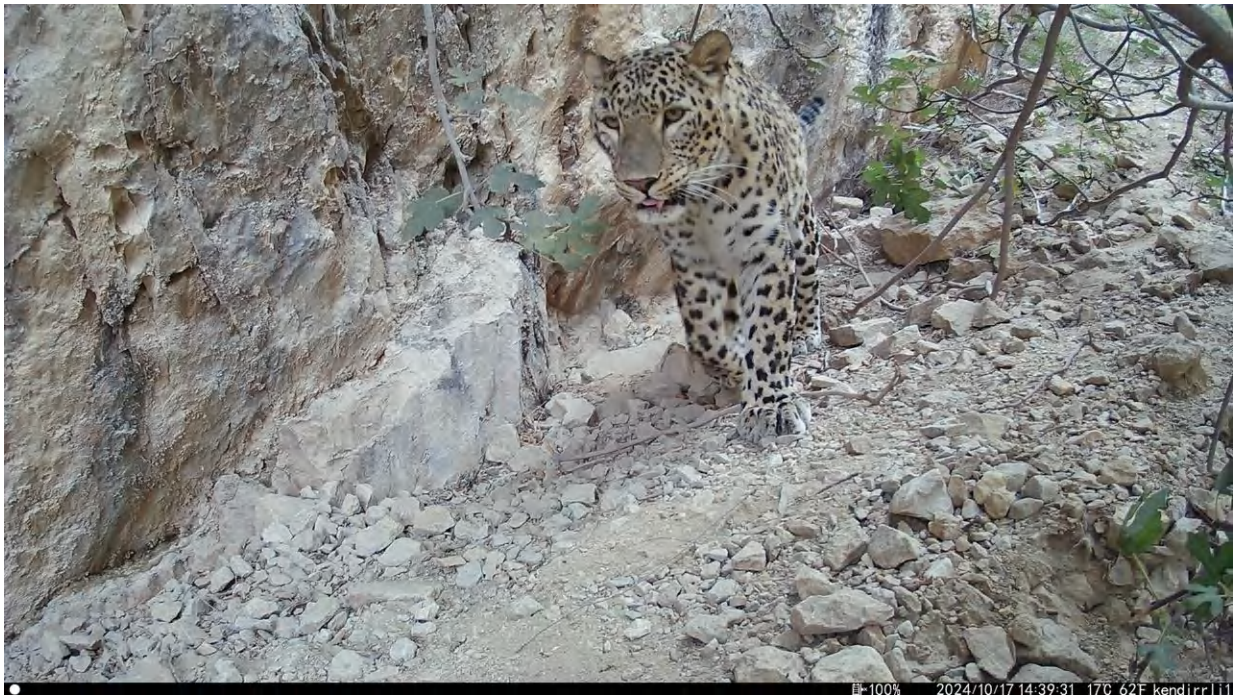
- ⇒ Revise the territories of the nomination dossier of the Mountain Ecosystem of Koytendag (MEK) in accordance with the recommendations of IUCN experts (2015) and agree on and approve these territories, including buffer zones;
- ⇒ Exclude Garlyk Wildlife Sanctuary from the dossier;
- ⇒ Include in the villages of Sayat and Hojeypil into the Hojeypil Wildlife Sanctuary;
- ⇒ Expand the territory of the existing Hojeypil Wildlife Sanctuary toward enhancing the representativeness to better protect the habitats of urial, lynx, wild boar, porcupine, wolf, and other animals, as well as to better regulate vandalism and degradation of the paleontological monument "Dinosaur Plateau", overgrazing of livestock, pollution from household waste, and mass unorganized tourism;
- ⇒ Create passage ("Bili-synyk") through the border fence inside the Koytendag Reserve to better facilitate the movement and resulting genetic diversity of wild animals -including exchange within ungulate populations (markhor, urial), and to preserve overall integrity and connectivity within the reserve;
- ⇒ Establish an ecological corridor "Airibaba" (Koytendag-Surkhan Reserve /Uzbekistan) with a main objective of conserving the movement and genetic diversity of populations of markhor, argali, and other species;
- ⇒ Formalize the amended boundaries of the reserve and sanctuaries (See Resolution of the Cabinet of Ministers on the change of territories) based on GIS coordinates and data obtained within the framework of projects (RSPB, CEPF / CLLC); and
- ⇒ Include Kaptarkhana Cave in the buffer zone.

On management of Koytendag:

- ⇒ Organize regular patrols on the “Dinosaur Plateau”, especially on weekends and holidays.
- ⇒ Install a barrier at the foot of the “Dinosaur Plateau”, a ranger station and establish control by law enforcement agencies.
- ⇒ 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 a site chiefs and appropriate inspectors throughout each reserve and sanctuary 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.



Persian Leopard in Uly Balkan in 2024 © Team Bars Turkmenistan

Introduction

2024 has been a year of great strides in the conservation of species and protection of wild places in Turkmenistan. The country has

- ratified the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and in doing so helped close a critical gap in Central Asia that will ensure better protection of CITES listed species and understanding of legal and illegal wildlife trade;
- signed the Memorandum of Cooperation for Wildlife Conservation on the Ustyurt Plateau with Kazakhstan and Uzbekistan, which will facilitate efforts to enhance ecological connectivity on the Plateau as well as cross-border collaboration, and creation of new transboundary protected areas;
- participated for the first time as Party in the 14th Conference of Parties of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and supported the listings in the Convention of manul and lynx; and
- the justification document for the establishment of the more than 3000 km² Balkan protected areas cluster (encompassing Uly Balkan, Kichi Balkan and Garabogazgol/Ustyurt) has been prepared and submitted and it is expected that the cluster will be signed into law in 2025.

In this report we will discuss activities (monitoring and conservation) carried out throughout 2024 in different areas across Turkmenistan. The project is primarily focused on monitoring and conservation of the Persian leopard, their prey, and sympatric carnivores, and — within the scope of the CEPF grant — on strengthening the management of Koytendag State Nature Reserve

The formulated recommendations for consideration by the Ministry of Environmental Protection are based on extensive observations, discussions with Ministry of Environmental Protection and protected area staff, and data from camera traps collected within the frame of this ongoing project and a set of previous projects stretching back to 2013. Some of the recommendations mirror those provided in the 2023 Report¹.

The recommendations are intended to strengthen protection measures and management of protected areas, as well as fulfill the obligations under international conventions, specifically the Convention on the Conservation of Migratory Species of Wild Animals (CMS), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD).

Most of the staff across the described protected areas (and patrolling future protected areas) continue to show incredible commitment, enthusiasm, and resilience to do their work, including supporting monitoring and apprehending violators. Their commitment is even more important given the limited resources they have available and the sheer size of the challenges. We hope that this report can

¹ Rosen, Tanya, Arazmurad Amanov, Islam Annamamedov, Begench Atamuradov, Serdar Choliev, Stanislav Fateyev, Hojamurad Hojamuradov, Michiel Hotte, Nurmuhamet Hudaykuliev, Shirin Karryeva, Petra Kaczensky, Aman Kurbanov, Aaron Laur, Begench Mamedov, Shaniyaz Mengliev, Weli Nasyrov, Tagan Nazarov, Aknabat Potaeva, Jumamurad Saparmuradov, Calese Stoddard, Eziz Tanghriguliev, Begench Tayliev, Atamurad Veyisov, and John Linnell. Assessment of Wildlife and Protected Areas of Turkmenistan 2023. Ashgabat. 2023.
<https://static1.squarespace.com/static/56047ac1e4b0612d66a56646/t/65b01a7109d9eb0b320ccb8e/1706039928815/2023+Assessment+of+Wildlife+and+Protected+Areas+of+Turkmenistan-.pdf>

contribute to increased knowledge of the beauty, value and uniqueness of Turkmenistan's nature and wildlife, as well as continue to catalyze action and resources to address the challenges.

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

While the major focus of the project is the monitoring and conservation of wild cats and the ecosystems they inhabit, their conservation is dependent on abundant populations of wild prey, including the bezoar goat (*Capra aegagrus*), urial sheep (*Ovis vignei*), markhor (*Capra falconeri*), and goitered gazelle (*Gazella subgutturosa*). The presence of leopards is potentially an indicator of presence of other large sympatric carnivores such as the wolf (*Canis lupus*), the Eurasian lynx (*Lynx lynx*), and striped hyena (*Hyena hyena*). A bear (*Ursus arctos*) with cubs has been observed again in the Kopetdag region of southwestern Turkmenistan sometime in the spring. Finally, the Turkmen kulan (*Equus hemionus kulan*) was once an abundant species in Turkmenistan and is included in this report because its future is now dependent on urgent conservation actions.



Aknabat Potaeva, Hojamurad Hojamyradov, Nury Hudaikuliev and Atamyrat Veyisov. © T. Rosen

The Cats

Turkmenistan is home to several species of wild cats. They include the Persian leopard (*Panthera pardus tulliana*), caracal (*Caracal caracal*), Asiatic wild cat (*Felis lybica*), Eurasian lynx (*Lynx lynx*), Jungle cat (*Felis chaus*), Sand cat (*Felis margarita*), and Manul (*Otocolobus manul*).

Persian leopards, the largest of all leopard species and one of the most awe-inspiring cats, are found mostly in the border areas along the Kopetdag mountain range between Turkmenistan and Iran. The population in Uly Balkan is growing and becoming more significant for purposes of expansion to the north on Garabogazgol as well connectivity with Kazakhstan. 2 leopards have been in fact observed near the southern shore of Garabogazgol. To the south, close to the border with Iran, a female with 3 cubs of the

year was observed in the Sunt Hasardag reserve. A small number of leopards, including the female “Umeda” with her 3 cubs was recorded in Badhyz State Nature Reserve on the border with Iran and Afghanistan.

Based on camera trapping and support from the [Whiskerbook.org](https://whiskerbook.org) online platform, which includes a web-based data management architecture and a computer vision pipeline for the detection and individual ID of various species of large cats, we continue to identify individual leopards.

Kopetdag. Camera trapping efforts in 2024 identified **a minimum of 15 leopards compared to 10 in 2023** in the Kopetdag range. This result is based on 37 camera traps spread over 2,000 km² (with significant gaps between clusters of cameras) for a total of 13,505 camera trap nights. Of those, **11 individual leopards (including a female with two cubs of the year; and a female born in 2022)** have been recorded in Dushak Erekdag; **3** in Karayalchi (including one female); **1** in Gury Howdan, **1** in Murzedag of the Germap section, and **1** on Uly Karanki of the Rukhabat section of Kopetdag State Nature Reserve.

On Dushak Erekdag, on 6 April at 4:40 in the morning, while a leopard named “Melegush” was feeding on a horse carcass (the horse died naturally), he was attacked by a leopard named “Serdar”. They fought very aggressively for an hour, when Serdar left slightly limping. It was not clear immediately how badly injured was Melegush. We were able to confirm that both leopards survived. Intraspecific aggression is a common characteristic of felids, often leading to serious injury or even death². Farhadinia et al³ documented for the first time for Persian leopards *P. p. tulliana*, four cases of intraspecific killings in Iran. All cases were discovered after the aggression ended (two of the dead leopards were collared) and two involved leopards were killed in the proximity of a killed prey. Nevertheless, how such aggressions unfold have not been observed in Persian leopards to date.

Data from the Eastern part of Kopetdag: according to interviews with border guards in 2024, on the territory of the Charlak Natural Monument (pistachio grove) in March 2022 a leopard was seen chasing a wild boar. A wild cat was also observed

In an article we submitted for publication in the peer-reviewed Cat News we conclude that across the range and in Turkmenistan, Persian leopards navigate an increasingly fragmented landscape that has suffered significant wild prey loss. While no mortality has been documented to date from intraspecific aggression, it is possible that resource availability can provoke intraspecific aggression and potentially also mortality. Protection efforts aimed at reducing poaching pressure, leading to prey increase, can possibly reduce such aggression and associated mortality.⁴

² Macdonald, D. W., Loveridge, A. J., & Nowell, K. (2010): Dramatis personae: an introduction to the wild felids. Pp. 3–58. In D. W. Macdonald & A. J. Loveridge (Eds), *Biology and Conservation of Wild Felids*. Oxford: Oxford University Press.

³ Farhadinia M., Mahdavi A. & Hosseini-Zavarei F. (2009). Reproductive ecology of the Persian Leopard, *Panthera pardus saxicolor*, in Sarigol National Park, northeastern Iran: (Mammalia: Felidae). *Zoology in the Middle East* 48, 13–16.

⁴ Tanya Rosen , Stas Fateyev, Nurmhammet Hudaikhuliev, Aknabat Potaeva, Atamyrat Veyisov and Arash Ghoddousi. First observation of intraspecific aggression between two Persian leopards. *Cat News* (in press).



“Serdar” and “Melegush” fighting over territory, mating and food resources © Team Bars Turkmenistan

In the spring of 2024, a video appeared online of a dead young leopard. Those responsible were never apprehended.

Badhyz. In Badhyz State Nature Reserve we have observed **7 leopards in 2024 compared to 8 leopards in 2023** based on 20 camera traps placed over 800 km² (with gaps between clusters) for a total of 7,300 camera trap nights. Areas beyond the border fence, considered important habitat, may be home to more leopards. However, given the limited prey base in Badhyz, due to poaching pressure and habitat degradation, the carrying capacity for leopards remains somewhat limited.



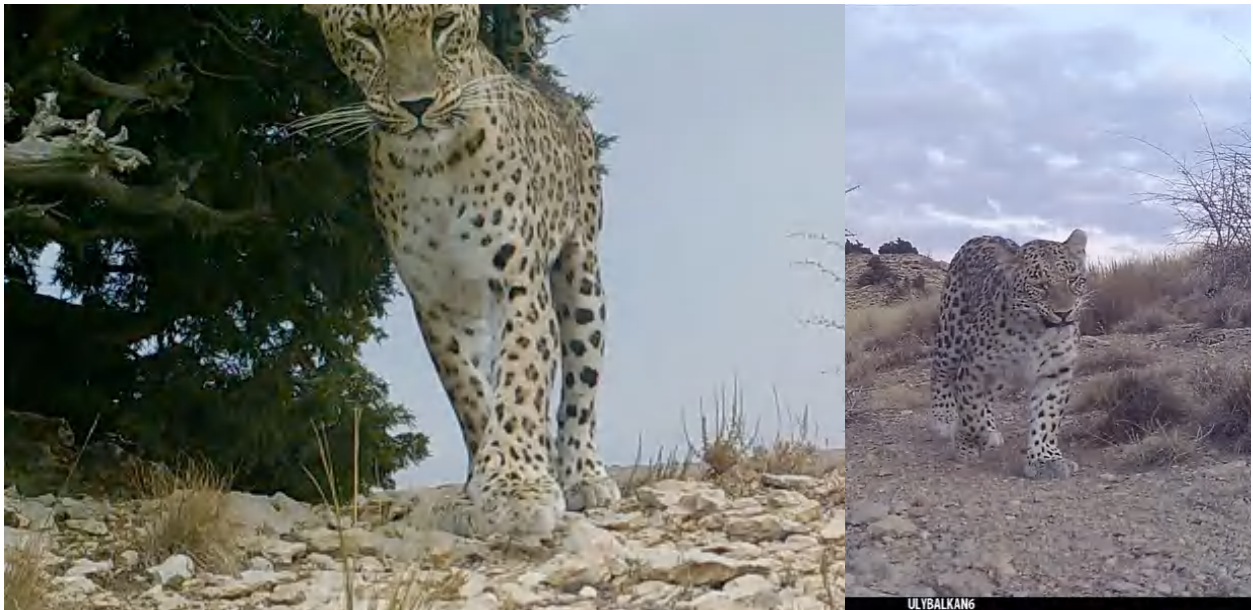
One of Umeda’s cubs playing with a hedgehog © Team Bars Turkmenistan

Umeda (“Hope”) and her 3 cubs have been observed throughout the end of summer. She is now likely around 8 years of age.

The individuals who have killed a leopard near Mary have been identified thanks to a TikTok video posted online but still remain to be apprehended.

Balkan range and Garabogazgol. On Uly Balkan we have observed **a total of 11 leopards (including two females with 1 cub and 2 cubs respectively born in 2023), up from 5 leopards** from 14 cameras traps placed over 100 km² for a total of 5100 camera trap nights. We estimate that there are somewhere between 11-15 leopards in this area.

Of note is that we recorded at least two leopards from previous years. “Eziz” recorded in 2023, and “Balkan” recorded for the first time in 2019.



“Eziz” and “Balkan” during previous years © Team Bars Turkmenistan

On Garabogazgol we placed 10 camera traps, but no leopards have been recorded yet. **Two leopards**, including one that has been caught into a leg hold snare, have been observed near the southern shore of Garabogazgol.



The leopard survived without the paw. © T. Rosen

In 2024 two cameras were set in Kichi Balkan but they did not record any leopard.

Sunt Hasardag. In Sunt Hasardag Reserve, the first leopard was camera trapped in 2019 and a female with 3 cubs was recorded in 2022 in Chandyr . **In 2024 we recorded a total of 7 individuals:** a single female, a female with 3 cubs of the year and 1 male in Aydere valley as well as one additional leopard in the Sunt Hasar section.

In summary, we are looking at a population could potentially be around 60-80 leopards (including leopards beyond the border fence) in Turkmenistan. Human-wildlife conflict, retaliatory killing, the occasional demand for leopard trophies, the loss of prey base, and the border fence between Iran and Turkmenistan continue to be the threats facing this population and certainly limiting its growth. Protected areas play an essential role in protecting the leopards, as do border areas and areas where local communities have accepted some degree of human-wildlife conflict and loss. It is of critical importance to work with local communities and focus on deploying conflict mitigation measures to deter conflicts with leopards and other carnivores as well as make illegal the use of leg hold snares which maim and kill a multitude of wildlife.

An article “Dag şiri alajagaplaň” prepared by Aknabat Potaeva (dated December 28, 2024) in the “Turkmenistan” newspaper provides examples of a meeting between a leopard and herders and the noble attitude of their ancestors towards them.

Lynx. Lynx are routinely recorded on camera traps in Koytendag State Nature Reserve where 20 camera traps are currently deployed. A population estimate is still not yet available, and lynx have not been observed in other parts of the country. The presence of lynx in this isolated mountain-top ecosystem in an otherwise desert environment represents both a scientifically and ecologically unique population as well as very vulnerable population because of its inevitable small size and high degree of isolation from other lynx populations.

Caracal. A caracal was recorded on camera trap in Kaplankyr in 2024 and on Garabogazgol: an individual in Kyzyl Gup near the southern shore; a female with a kitten on the eastern shore; and another individual near the northern shore. The records from Garabogazgol are exceptional and reinforce the decision to set aside as protected this landscape.



Caracal on Garabogazgol © Team Bars Turkmenistan

Manul. A manul has been observed on camera trap on Dushak Erekdag in the summer of 2024. Around the same time, we received footage of a leopard killing a manul on Dushak Erekdag. This is the first footage of this kind, though the possibility of predation by leopard on smaller cats is something that has been reported in the literature. Manul remain the most vulnerable cats to predation by dogs. There could be very few left in both the Kopetdag and Uly Balkan.

The installation of camera traps to record manul continues in the territory of the Kopetdag State Nature Reserve and in adjacent territories.



Manul on Dushak Erekdag © Team Bars Turkmenistan

Wild cat and Jungle cat. They are both very often observed on camera traps and visually across Turkmenistan and in its protected areas. Jungle cats are found in Badhyz, the Kopetdag foothills, and Sunt Hasardag. Wild cats are everywhere, but some of the greatest threats they face is hybridization with domestic cats, and collisions with vehicles. They are also trapped by herders.

In 2019 and 2024 they were observed on the territory of the Gury Hovdan Wildlife Sanctuary, in 2021 in Novrek-Cheshme, and in 2023 - on the territory of Borme, Bakharden etrap.

Sand cat. They have not been observed in 2024. Predation by hunting (tazy) dogs might contribute to their rarity.

The Ungulates

Bezoar goat. Bezoar goats inhabits the steep cliffs of the Kopetdag range and are regularly observed on camera traps and visually in Dushak Erekdag and west towards Karayalchi. They are also found on the cliffs of Uly and Kichi Balkan. The species is however under tremendous poaching pressure across its known range with exceptions likely in the areas behind the border engineering barriers with Iran. On Dushak Erekdag the population has declined by more than 50% compared to data from 2019.

We have some localized estimates as follows:

Balkan range: 232 -280;

Dushak Erekdag: 49 - 74; and

Karayalchi: 26-47.



Bezoar goat on Dushak Erekdag @TeamBarsTurkmenistan

Urial sheep. Urial inhabit the same areas and ranges as bezoar goats. They are also found along the chinks of Garabogazgol, in Badhyz, Sunt Hasardag, Kopetdag and in Koytendag. They are also under poaching pressure, and unlike bezoar goats that have escape routes on the cliffs, urial tend to have fewer options that make them more vulnerable to poaching. They are especially under threat on Garabogazgol, where they are easily killed when they approach the limited water holes. On Dushak Erekdag the population has declined by more than 50% compared to data from 2019.

We have some localized estimates as follows:

Balkan range: 220;

Garabogazgol: 54;

Kichi Balkan: 40; and

Dushak Erekdag: 53-65.

Markhor. Markhor are only found in Koytendag and lives within the confines of the Strict Nature Reserve. Like the bezoar goat, they can seek protection on the cliffs. This population is transboundary with Surkhan Reserve in Uzbekistan, where we have recently started work aimed at strengthening transboundary coordination in conservation and monitoring efforts under the umbrella of the CEPF

project. Poaching remains a grave threat. The population overall benefits from strong protection efforts on the Uzbek side of the range.

Goitered gazelle. The gazelle is found in the foothills of the Kopetdag range, Kaplankyr, Badhyz, Amu Darya, Bereketli Karakum Strict State Nature Reserves, the Mary and Lebap/Farap forest areas, and on the Ogurjaly Island/Wildlife Sanctuary of the Hazar Strict Nature Reserve. It is present in the Kelif Wildlife Sanctuary in the foothills of the Koytendag range as well but has not been observed. 7 gazelles were also observed on Garabogazgol. This species is under extreme poaching pressure.

In May 2024, about 120 animals were counted on the territory of the Mane-Chaacha Wildlife Sanctuary, and 10 animals were counted in the Dushak River in the eastern part of Kopetdag.

Kulan. Extinct in the wild in Badhyz, Kulan is only found in Kaplankyr to the north and west of Sarygamysh Lake on Sarygamysh part of the Reserve in the “no-man’s-land” beyond the border (4 individuals were camera trapped in 2024); these individuals seem to be continuous with a larger population of an estimated 100-150 kulan on the Uzbek side. Some 10-15 individuals were documented in the Tersakan Valley west of Sunt Hasardag Nature Reserve and 6 in the Gury Howdan Wildlife Sanctuary. None of the isolated remnants are likely to be viable. In Gury Howdan there are 9 individuals, regular protection has been established there. In 2021, after receiving a male from the zoo (from Badhyz population), 1-2 young individuals were born every year.



Urial on Garabogazgol © Team Bars Turkmenistan

The sympatric carnivores

Striped Hyena. Striped hyenas were observed on camera traps in Badhyz and Kopetdag (Gury Howdan, Bakja, Murzedag, Bajgiran), as well as Sunt Hasardag. However, given the small number of observations it is difficult to make any estimate of population size. It remains a heavily persecuted species. It was not recorded on Dushak Erekdag in 2024. Only tracks have been visible on 3 occasions.

It has not been recorded on the Uly Balkan range or Garabogazgol. It is recorded on the Kichi Balkan range.



Striped Hyena in Badhyz © Team Bars Turkmenistan

Wolf. The wolf is observed across the protected areas and beyond, as it is one of the animals often implicated in depredation cases of livestock. And yet there continued to be very little knowledge on its ecology and conservation status. It is rarely observed on Dushak Erekdag, and it was observed for first time on camera traps on Uly Balkan in 2024.

Honey badger. This predator was previously caught in camera traps in Northwestern Turkmenistan (Gyzylgup Chink) and low-mountain parts of Western Kopetdag (Kulmach Range). In the fall of 2024, for the first time it was caught in a camera trap installed on the Sunt Hasardag ridge above 1200 m above sea level. Thus, this is the first case of registration of a honey badger in the territory of the Sunt Hasardag Reserve.

Other carnivores. Red fox (*Vulpes vulpes*), corsac fox (*Vulpes corsac*), and the golden jackal (*Canis aureus*) are some of the other carnivore species often observed and recorded on camera traps, with the jackal being especially common.

Other leopard prey

Wild boar and porcupine constitute very important prey for the leopard and are observed across the Kopetdag, Sunt Hasardag, Badhyz, and Balkan range. Hare is also very important for lynx and likely for leopard. Hare is under extreme poaching pressure across the country. However, in 2024 for the first time it has been observed and recorded on the plateau of Uly Balkan as well as on Garabogazgol. **This speaks to increased protection efforts.**

Conservation Status of Protected Areas and beyond

Badhyz State Nature Reserve

Badhyz State Nature Reserve was established in 1941 to protect the unique relict pistachio woodlands and Turkmen kulan population. In 1951, the original area of the Nature Reserve was reduced from 8,000

km² to 750 km². In 1962, and again in 1970, some adjacent areas were added to the west and south expanding the reserve to 877 km². In 2014 the reserve was again enlarged to its current size of 1,404 km². Including the buffer zone, the three adjacent wildlife sanctuaries, and ecological corridors, the protected part of the Badkhyz ecosystem complex covers a total area of 2,893.5 km². There are five main landscape features in Badkhyz: the 18 km long Gyzylyar canyon; the Badkhyz plateau (grasslands); a 45 km long escarpment with chinks; the Yeroyladuz and Namakar depressions; and the Pistachio savannah of the Gezadik hills.

The situation in Badkhyz continues to deteriorate. There is extensive poaching, and the presence of livestock (hundreds of cows, sheep, and feral horses) continues to degrade habitat that is designated for wildlife. Furthermore, the reserve management continues to allow local people to harvest most of pistachio from the forest, which is not only contrary to laws concerning strict nature reserves, but also limits opportunities for pistachio groves to regenerate naturally. It has happened every year for a long time as the Ministry of Environmental Protection has adopted a Decree which allow to collect pistachio in wild as income of local communities, based on the scientific justification of the National Institute of Deserts, Flora and Fauna.

Last but not least, the current management plan and the Ministry of Environmental Protection allow for a certain amount of haying in buffer zones which are close to strict Reserve. The purpose of the haying is to provide food for ungulate at times of distress in the winter and dry summer periods, as an exception to the rules, as well as feed the kulan in the enclosure.

First, the ungulates are adapted to this landscape and haying deprives the ungulates of much needed grass and calories to face the conditions of the landscape. Second, feeding ungulates creates some form of habituation which is incredibly generous in a landscape that has so much poaching. Third haying is contrary to the principles of a strict nature reserve.



One of the feral horses inside Badkhyz. © Team Bars Turkmenistan

During our visit at the end of November 2024, we observed minimal wildlife activity.

Part of the Reserve is beyond the border engineering barriers and is not accessible. One of the advantages of the situation, if the rest of Badkhyz is not secured, is that the wildlife there can still enjoy some relative safety.

Kopetdag State Nature Reserve and adjacent areas

The Kopetdag State Nature Reserve, located in the central Kopetdag Range, covers 509.8 km² and was established in 1976. The Reserve is in the high mountain belt and the landscape is characterized by deep gorges with many springs. Elevations range from 700 to 2,800 metres. The cool climate on the high plateau results in meadow vegetation, even during the summer heat. The flora is extremely diverse, containing more than 40% of the total plant biodiversity of Turkmenistan. In addition, many relic, rare, and endemic plants can be found which are included in the Red Book of Turkmenistan and the IUCN Red List.



Tangryberdy Tashliv, science collaborator of Kopetdag reserve, in Karayalchi helping set a camera trap
© T. Rosen

Much of the Kopetdag Reserve sits beyond the border fence and is not accessible. As described above, that has its benefits such as increased protection if the protected areas are not secure enough, but mostly poses challenges. Border engineering barriers obstruct ecological connectivity which is critical for species such as urial and leopard for maintaining genetic diversity and resilience. To the east of the Reserve are Meana Chacha (60 km²) Wildlife Sanctuary and Gury Howdan (15 km²) Wildlife Sanctuary, which borders with the south Iran's Tandoureh National Park, home to one of the densest leopard populations (30).

The Kopetdag Reserve rangers are doing an important job in protecting the Reserve, Sanctuaries and adjoining areas like Dushak Erekdag forest area which do not have protected status. The results are visible with poachers being apprehended and poaching activity declining when patrols are ongoing. As

evidenced by camera traps and observations, these “unprotected areas” are home to reproducing female leopards and key prey such as bezoar goat and urial.

One such area is Karayalchi designated as a Natural Monument. Here we keep recording 3 individual leopards.



Persian leopard in Karayalchi. © Team Bars Turkmenistan

Balkan and Garabogazgol

The proposed protected areas of Uly Balkan encompasses 1100 km² and the Kichi Balkan 250 km². The northern border of the Uly Balkan mountain massif is composed of limestone and sandstone. The northern slopes are steep, and the southern slopes are cut by gorges and numerous courses of dry streams (up to 40-50 m deep). The plateau-like hilly surface of the ridge is broken by gorges which run in all directions. The highest mountain peaks are Arlan (1,883 meters) and Chilgezat (1,408 meters). The desert areas (below 800 meters), semi-desert, and mountain-steppe landscapes are dominated by mountainous xerophytes and very rare open juniper forest. The site has an exceptionally dry and extreme continental climate. The hydrographic network is very poor and consists mainly of seasonal streams, small springs, and outflows of underground waters. There are many caves with depths up to several tens of meters. In the foothills there is a system of karst wells.

The proposed Garabogazgol/Ustyurt encompasses 1900 km² of a globally unique ecosystem with rather distinctive community assemblages often consisting of both tropical and temperate species.

This area is an important ecological corridor for the Persian leopard and its dispersal to Kazakhstan. It is also home to more than 40 mammal species and 30 reptile species.

Both Balkan ranges and Garabogazgol continue to be heavily impacted by poaching.

The regional Balkan Department of Environment continues to show incredible determination and commitment tackling poaching and other violations. Despite being such a small unit, it is constantly on the move to apprehend violators. Rangers are using SMART and every quarter reports are being prepared. Camera traps have also been used as tools for identifying poachers, though cameras continue to be stolen.

In both the Balkan ranges and Garabogazgol, ungulates are poached. Along Garabogazgol, all water sources bear signs of intense poaching activity.

We are currently working with the Balkan Department of Environment to set up a point-to-point camera network on Uly Balkan to facilitate detection of poaching and eventually to deter it completely.



Hojamurad Hojamuradov and ranger Husein
checking a camera trap on Garabogazgol © T. Rosen

[Sunt Hasardag State Nature and adjacent areas](#)

The Sunt Hasardag Nature Reserve was established in 1979, initially covering 398 km². However, it was gradually reduced to its current size of 265 km² and is fragmented into three disjunct parts: the 134 km² Central part (covering the southern slopes of the Sunt Hasardag ridge), the 36 km² Aydere part (covering a gorge of the same name) and the 95 km² Chendyrsky part (covering the northern slope of the Palvan ridge). Sunt Hasardag is a very important area for leopards and urial. A sow with a cub was recorded earlier in 2024. The first leopard was recorded here on camera trap in 2019. In the fall of 2024, a female with 3 cubs were recorded in Aydere section. A Jungle cat, Sand cat, Striped Hyena and Porcupine were

regularly recorded in 2024. During autumn of 2024 no urial sheep were recorded in Aydere section. It is important to monitor and record number of urial sheep in different parts of the reserve and identify threats (anthropogenic and natural). Nearby in Tersakan Valley there continues to be a small kulan population of approximately 10-15 individuals.



One of the leopard cubs recorded © Team Bars Turkmenistan

[Kaplankyr State Nature Reserve](#)

The Kaplankyr Reserve was established in 1979 with an original size of 5,700 km² but was reduced to 2,757 km². It remains the largest reserve in Turkmenistan and is flanked by two wildlife sanctuaries: Sarygamysh (5,414 km² established in 1980) and Shasenem (1,090 km² established in 1983).

The Reserve was recently designated as a UNESCO World Heritage Site together with the other protected areas that form the Cold Winter Deserts of Turan network as part of the process, it has received significant support (uniforms and equipment) and is currently the beneficiary of a UNDP-funded project which can greatly contribute to the management of the Reserve. Kulan have been observed beyond the border engineering barriers moving between Turkmenistan and Uzbekistan. Goitered gazelle continue to be captured on camera traps. Caracal has been re-recorded in two separate locations on two occasions.



Kulan © Team Bars Turkmenistan

Koytendag State Nature Reserve

Koytendag State Nature Reserve and the four contiguous Wildlife Sanctuaries of Garlyk, Hojaburjybelent, Hojagaraul, and Hojeypil, covering 933.43 km², were established between 1986-1990. The objective is to protect and preserve the mountain ecosystem of the Koytendag region and maintain the ecological balance between the environment and increasing economic activities. Of particular importance was the protection of rare species such as markhor, important habitats such as pistachio and juniper forests, and the impressive “Dinosaur Plateau” at Hojeypil.

The Reserve and Wildlife Sanctuaries extend from the hot, dry semi-desert plains of the Amu Darya to the snow-capped peaks of Airy-baba. Rising to 3,137 meters, this is the highest mountain in Turkmenistan. The Koytendag ridge (former Kugitang) is a continuation of the Gissar ridge -- itself the south-western end of the Pamir-Alay Mountain range – extending for over 800 km from the Pamirs to the Tien- Shan.



Shaniyaz Mengliev and Serdar Choliev checking a camera trap in Surkhan Reserve in Uzbekistan during ranger exchange

© I. Annamamedov

Supported by two consecutive CEPF grants, the second jointly with Uzbekistan, we have sought to address six issues: weak management, human pressures, a missed opportunity with the World Heritage designation, economic development, transboundary cooperation, and civil society.

We have worked to build the capacity of Koytendag SNR personnel and improve monitoring systems along with looking at ecological issues, development threats, and cooperation with Uzbekistan.

Markhor is generally less impacted by poaching as it stays within the confines of the Strict Nature Reserve and travels across the border to Uzbekistan where protection systems are similar. However, the urial population seems to be more impacted by poaching, as well as by displacement by livestock grazing intensively in the Wildlife Sanctuaries.

Domestic livestock - largely belonging to the Reserve itself - is still allowed to graze in the Reserve and this is very problematic. This degrades habitat that should be exclusively used by wildlife, creates human-wildlife conflict, and sends the wrong message to other livestock owners who see the Reserve management breaking the rules, which is disincentivizing any possibility to persuade them to reduce their impact on the Wildlife Sanctuaries.

One of the most visible outputs is the introduction of the Spatial Monitoring and Reporting Tool (SMART). Despite some early challenges related to the technology and telephones, Serdar Choliev, Deputy Director for Enforcement at Koytendag SNR, has been incredibly dedicated and successful in arranging collection of quality patrol data and producing excellent quarterly reports detailing efforts, wildlife observations, and violations.

In December 2024, we organized a ranger exchange with the Surkhan Reserve in Uzbekistan. Shaniyaz Mengliev, Serdar Choliev, Mahmud Dosov and Islam Annamamedov traveled to Surkhan and shared experiences and challenges with a view of planting the seeds for stronger cooperation and collaboration to protect the Kugitang mountain ecosystem.

[GIZ, UNDP, Conservation X Labs and CLLC workshop on SMART in the Ministry of Environmental Protection of Turkmenistan](#)

In May 2024, together with UNDP and GIZ we co-organized a workshop in Ashgabat that brought together SMART users from Turkmenistan and from across Central Asia to explore challenges and opportunities with the use of SMART. Presently central conservation authorities in Central Asia, with the exception of Kyrgyzstan, have not yet developed a capacity for SMART work and are still fully depending on support from local and international NGOs and consultants who usually provide support as part of short-term projects. It is important that the central agencies become more involved and eventually develop a capacity for all aspects of SMART work. Institutionalisation of SMART by the Ministry in Turkmenistan could take various forms.

Participants explored three possible levels.

Level 1 - Getting involved in protection management based on period SMART patrol reports

An initial and modest form of institutionalisation by the Ministry would be that Ministry staff members become involved in site protection management based on periodic SMART patrol reports. Concretely this would involve; 1) the staff from the Ministry receive the periodic reports that describe patrol efforts and results from SMART sites (or better; they get involved in the production of these reports), 2) they evaluate these reports and provide feedback to the site managers, 3) they get involved in setting patrol targets for the next reporting period, 4) they check to what extent these targets are met and follow up (e.g. they provide praise when targets are met and ask critical questions when they are not met).



Participants during workshop © T. Rosen

Level 2 – Developing a capacity for all SMART work except SMART Connect

The second step/level in institutionalising would be that the Ministry develops a capacity for all aspects of SMART work with the exception of SMART Connect. This would include a capacity for; designing tailor-made SMART systems for new sites, write data collection manuals, lead data collection training for inspectors and database operator training workshops, check and manage data quality, and lead all other steps in the introduction of SMART to a new site as well as conducting in-depth trend analyses when SMART data for several years are available from sites.

Level 3 – Creating a capacity for SMART Connect

The third level would be to develop a capacity for managing SMART with SMART Connect. Using SMART Connect would mean that all SMART databases of the protected areas in the country with SMART are uploaded to a computer server that can be accessed with a login and password from any location with internet. One of the two main advantages of SMART Connect is that stakeholders (e.g. SMART sites, the central agency, NGOs, consultants) no longer need to make arrangements for exchanging patrol data. When new patrol data have been imported to database on a computer at a SMART site, then these data are automatically uploaded to SMART Connect, after which they are available to all stakeholders. The second main advantage of SMART Connect is that tailor-made patrol report formats can be developed and uploaded. Reports can show any type of SMART data, for instance patrol efforts (e.g. routes and time spent on patrols), data on camera-trap work or data on various wildlife observations. These reports can

be produced in a very simple way selecting a report format and a time-period. Using this function, protection managers (e.g. site managers and managers from the Ministry) who have not learned to work with the SMART computer program, can view useful maps, figures and tables depicting patrol efforts and results at any moment from any location.

In order to achieve the 2nd and 3rd level of institutionalisation, the Ministry would need to establish a SMART Unit with at least 2 full-time staff members with excellent technical and management skills.



Koytendag rangers and staff with CXL outfitted uniforms © I. Annamamedov

Recommendations:

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, and OECMs” in accordance with the Law "On Special Protected Natural Areas";
- ⇒ Grant permission 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, and uniforms;
- ⇒ Institutionalise SMART monitoring in the Ministry of Environmental Protection based on the Decree of the President for digitalisation of activities (allowing Ministry staff members to become involved in site protection management based on periodic SMART patrol reports);
- ⇒ Integrate the use of SMART in the management of all protected areas;
- ⇒ Appoint a dedicated SMART Coordinator in the Department of Flora and Fauna Protection of the Ministry of Environmental Protection who will be designated to receive all SMART reports (for now from Koytendag and Balkan Department of Environmental Protection) as discussed during the May 2024 workshop;
- ⇒ 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; and
- ⇒ 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.); and
- ⇒ 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.

Badhyz and Koytendag:

- ⇒ Start enforcing the full ban on livestock (cows, horses, donkeys, and sheep) inside the Strict Nature Reserves; and
- ⇒ Stop poaching, by:
- ⇒ increasing manpower and infrastructure; and
- ⇒ Raise awareness for the loss of biodiversity in one of the most precious and oldest protected areas in Turkmenistan.

Badhyz:

- ⇒ Remove feral horses from the strict nature reserve;

- ⇒ Regulate the collection of pistachio in the reserve (Ministry continues to allow local people to harvest most of pistachio from the strict nature reserve to increase income);
- ⇒ Ban haying in the reserve for additional feeding of wildlife during dry seasons);
- ⇒ In 2025, subject to consultation, determine places (Gyzyljar or other gorges) for the further release of kulans, which are kept in the reserve's enclosure (6 kulans) and strictly observe their safety with inspectors on duty.

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 Kopetdag region; and
- ⇒ Establish a ranger outpost to safeguard the remaining kulan and wildlife populations in this area.

Central Kopetdag:

Increase the territory of the Karayalchi Natural Monument (walnut grove) or declare it a nature reserve or strict natural reserve (prepare documents and submit proposals by 2025);

- ⇒ Develop a project draft and submit documentation to the Ministry of Environmental Protection (with deadline 2025) for the inclusion of the territory of Dushak Erekdag into the Kopetdag State Nature Reserve for the conservation and restoration of the Red Data Book species of animals of Turkmenistan (Persian leopard, Pallas's cat, urial sheep, bezoar goat, etc.);

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.

Koytendag:

For the success of the UNESCO World Heritage Site Nomination Dossier, the nomination dossier of the Mountain Ecosystem of Koytendag (MEK) should be brought into line with the recommendations of IUCN experts (2015) including recommendations on the integrity of the territory, protection, management, nomination boundaries, criteria, grazing monitoring, tourism, transnational cooperation, etc. as follows:

- ⇒ Revise the territories of the nomination dossier of the Mountain Ecosystem of Koytendag (MEK) in accordance with the recommendations of IUCN experts (2015) and agree on and approve these territories, including buffer zones;
- ⇒ Exclude Garlyk Wildlife Sanctuary from the dossier;
- ⇒ Include in the villages of Sayat and Hojeypil into the Hojeypil Wildlife Sanctuary;
- ⇒ Expand the territory of the existing Hojeypil Wildlife Sanctuary toward enhancing the representativeness to better protect the habitats of urial, lynx, wild boar, porcupine, wolf, and other animals, as well as to better regulate vandalism and degradation of the paleontological monument "Dinosaur Plateau", overgrazing of livestock, pollution from household waste, and mass unorganized tourism;
- ⇒ Create passage ("Bili-synyk") through the border fence inside the Koytendag Reserve to better facilitate the movement and resulting genetic diversity of wild animals -including exchange

within ungulate populations (markhor, urial), and to preserve overall integrity and connectivity within the reserve;

- ⇒ Establish an ecological corridor "Airibaba" (Koytendag-Surkhan Reserve /Uzbekistan) with a main objective of conserving the movement and genetic diversity of populations of markhor, argali, and other species;
- ⇒ Formalize the amended boundaries of the reserve and sanctuaries (See Resolution of the Cabinet of Ministers on the change of territories) based on GIS coordinates and data obtained within the framework of projects (RSPB, CEPF / CLLC); and
- ⇒ Include Kaptarkhana Cave in the buffer zone.

On management of Koytendag:

- ⇒ Organize regular patrols on the "Dinosaur Plateau", especially on weekends and holidays.
- ⇒ Install a barrier at the foot of the "Dinosaur Plateau", a ranger station and establish control by law enforcement agencies.
- ⇒ 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 a site chiefs and appropriate inspectors throughout each reserve and sanctuary 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.



© Alp Club Mert/Team Bars Turkmenistan