CAT news

N° 81 | Fall 2024

SPECIES SURVIVAL COMMISSION

CAT SPECIALIST GROUP

ASEF REZAEIAN[1,2*], ALI SHAMS[2,3] AND PEGAH JABERI[2]

Investigation of felid guild presence in non-government-al reserves of northern Iran

Studying elusive animals like the Felidae family is difficult given their cryptic life history and low detectability. Monitoring these species beyond government-protected areas is challenging due to limited access to sufficient human resources and equipment, as well as accessibility and security concerns. In these circumstances, researchers can complement their gathered data by incorporating the extensive information collected by Local Ecological Knowledge. Jashlobar and Neyzevaa Private Conservancy represent two non-governmental reserves located in northern Iran. While the former operates within the private hunting zone protocol established by the National Department of Environment, the latter is characterised by a collaborative conservation plan involving the concerted efforts of NGOs and local communities. The coexistence of locals with wildlife in these areas is marked by persistent conflicts between them, their livestock, herder dogs, and wildlife. This symbiotic equips them with comprehensive information on wildlife and conflict records that could assist our research. In this study, we attempted to gain information on three felids coexisting in these areas; the Persian leopard *Panthera pardus tulliana*, Caucasus lynx *Lynx lynx dinniki*, and manul *Otocolobus manul*. We have validated and improved our scattered camera trapping monitoring and spoor survey by using semi-structured interviews to collect Local Ecological Knowledge. We were able to collect ten records of these three species in areas from 2013 to 2021, and 50% of them delineated the Human Wildlife Conflicts. Furthermore, 80% of the gathered data from these regions pertained to Local Ecological Knowledge, which shows the importance of using this method to collect wildlife and conflict records in these types of areas as samples of private conservancy protected areas. Additionally, the collaboration with local communities in Neyzevaa revealed that it would be beneficial for feline conservation if governments were to establish independent national mechanisms, beyond private hunting zones, to support community-based protected areas.

Iran is located at the intersection of three biogeographic realms (Palearctic, Oriental and Ethiopian), and has elements of these realms (Yusefi et al. 2019). This has resulted in a high biological diversity of wildlife species including diverse felines. Currently, Iran is home to eight felid species after the extinction of the Asiatic lion *Panthera leo leo* and the Caspian tiger *Panthera tigris* (Faizolahi 2016). Iran is also home to the westernmost and the southernmost population of manul, only home to the Asiatic cheetah *Acinonyx jubatus venaticus*, and encompasses the largest population of Persian leopard in the world (Bleyhl et al. 2022). The Persian leopard is the largest subspecies of leopard in the world and can be found in most provinces of Iran (Farhadinia et al. 2019, Ghoddousi et al. 2022). This species is considered Endangered by both the International Union for Conservation of Nature (IUCN Red List of Threatened Species) and regional assessment (Yusefi

et al. 2019). Different aspects of Persian leopard ecology have been studied in different parts of the country (Ghoddousi et al. 2017, Farhadinia et al. 2019, Mohammadi et al. 2021). On the other hand, the Caucasus lynx is a subspecies of the Eurasian lynx, which has the widest distribution in the *Lynx* genus (Sunquist & Sunquist 2002). Eurasian lynx has been extensively studied in Europe but studies in Asia except for Siberia are limited. This species has been recorded in the mountainous forests and scrublands of northern and western Iran (Moqanaki et al. 2010, Mousavi et al. 2016). The species is categorised as Least Concern by IUCN globally however it has been suggested to be considered as Vulnerable locally (Moqanaki et al. 2010, Breitenmoser et al. 2015). There are a few opportunistic records available of the species, and its ecology in the region has yet to be understood. The same lack of information applies to the manul in Iran. It is mentioned in the literature that *O. m. ferru-*

gineus subspecies occurs in Iran (Farhadinia et al. 2016, Moqanaki et al. 2019). Manul is one of the least understood species in Iran, and it is considered as near threatened regionally and least concern globally (Yusefi et al. 2019, Ross et al. 2020). This species occurs in stony alpine steppes and upland hilly areas of the northeastern and south-central provinces of the country (Farhadinia et al. 2016).

In investigating wildlife, the most commonly employed method has traditionally been observations made by humans or signs they leave behind (Sutherland 2008, Heyer et al. 2014). Among them, Local Ecological Knowledge (James 1996), or combined methods (Moller et al. 2004) are considered effective methods. Local Ecological Knowledge methods are more effective than expensive methods such as camera traps, especially when the goal is to study rare and anthropomorphic species such as felines (Van Vliet et al. 2023). For instance, In Iran, we have rare records each year of Eurasian lynx and manul (Mousavi et al. 2016, Moqanaki et al. 2019), while local people often report them as these felids have coexisted with nomads and their dogs (Nayeri et al. 2022).

In this manuscript, we report on the coexistence of Persian leopard, Eurasian lynx and manul in two private conservancies. These reserves are important for felines, safeguarded by the efforts of local communities. The process of collecting data for this report involved collaboration between local people and researchers by semi-structured interview method (Chevalier & Buckles 2008, Ayalew & Melese 2024), aligning to promote conservation efforts centered around local communities. In new methods, the presence of local people is valuable (Brockington 2004). So, this collaboration allows conservationists and local people to survey sides of common topics and actions together (Milich et al. 2021).

Methods

This study focused on two private conservancies in Semnan Province in northern Iran. The first one is Neyzevaa, a community-based protected area NCP with a size of 520 km². This area is dominated by elevated steppes as well as Juniper trees *Juniperus* spp. The average rainfall in a year is 146.8 mm. In addition, the average annual temperature of NCP is 12.1. The average elevation of the area is 1,376 m and the highest elevation in the area is 3,726 m. The NCP region is known as a free zone area that falls outside
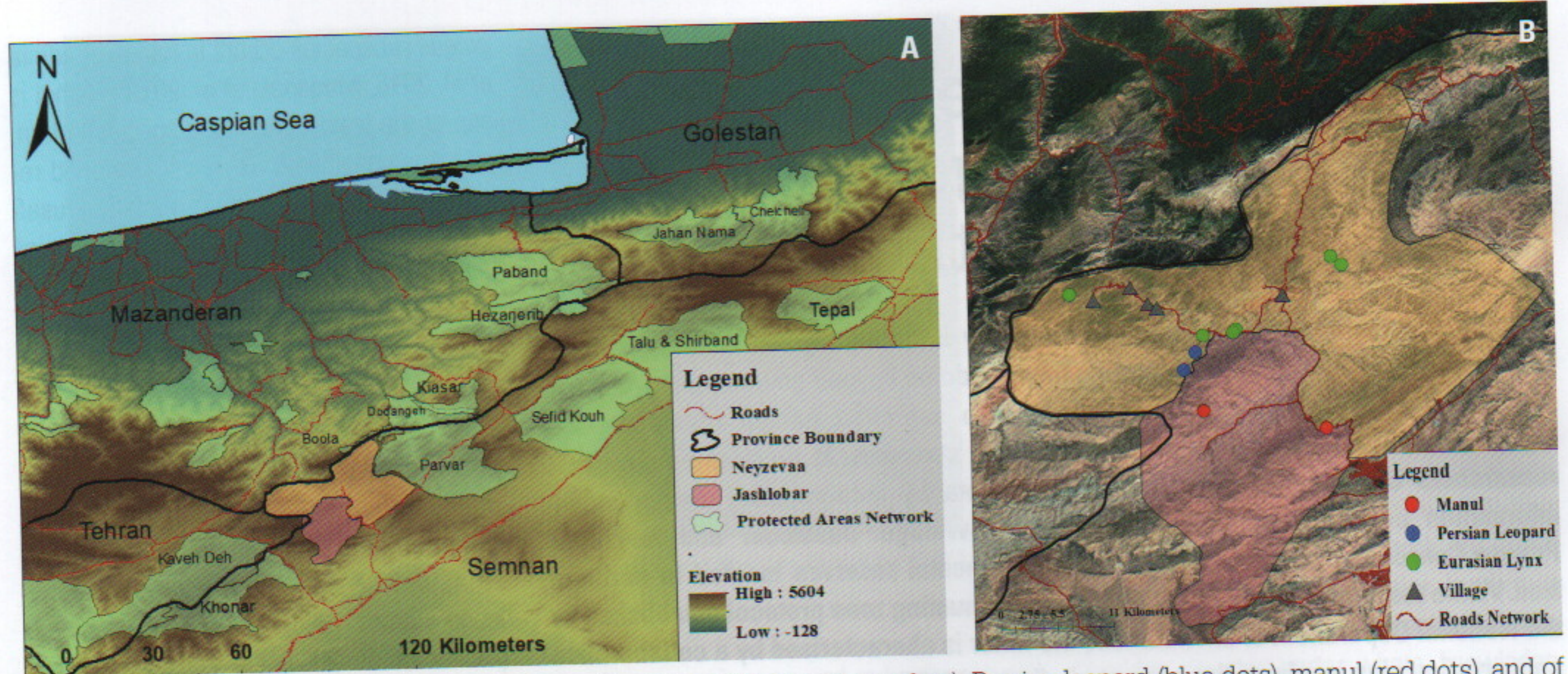
07

Fig. 1. A) Location of study sites, and B) of records of Eurasian lynx (green dots), Persian leopard (blue dots), manul (red dots), and of villages (gray triangle) in the study sites.

the government laws managing protected areas. Unofficially safeguarded by the Iranian Wildlife Shepherds NGO since 2016, by local participation approach, owing to the significance of its biodiversity. The second area, Jashlobar Hunting Zone Area JHA is in the south of NCP. The area size is estimated at 220 km². The average rainfall is 139.1 mm, and the average temperature is 9.6 °C. The northern region has a high density of juniper trees, this area is the zone of Chashm village. Since 2021, the Department of Environment has allowed individuals or organisations to use and protect JHA under the Private Hunting Zone Protocol for five-year periods. In the south of both areas, nomads of Sangesar live. Overgrazing of livestock is a threat in both areas, yet it is more alarming in the south of JHA. Moreover, despite the network of local people that we have mobilised in recent

years to conserve the area, poaching of prey species like wild sheep, wild goats, and wild boar is still a rampant threat. In addition to felines, we have identified different species such as brown bear *Ursus arctos*, grey wolf *Canis lupus*, bezoar goat *Capra aegagrus*, urial *Ovis vignei*, and wild boar *Sus scrofa*. Also, based on observations of elder members of nomads, red deer *Cervus elaphus* had a historical distribution in parts of NCP. Although these areas don't have high-densities of large prey, they seem to have acceptable densities of lagomorphs. Afghan pica *Ochotona rufescens* is known as one of the main prey items of manul across its range (Farhadinia et al. 2016, Moqanaki et al. 2019, Ross et al. 2020).

In this study, we conducted semi-structured interviews with 48 local indigenous people about their observations of felines in 5 vil-

lages (Fig. 1). We validated their records with a species identification picture test. However, we restricted the small cats' records more than other felines to the direct photos because feral DSH cats live in the buffer of the villages and farmland. We augmented the data collected by the local people with opportunistic camera trapping from 2016 to 2021. To detect feline species in the area, we used three camera traps (one Stealth Cam G42N and two Agitato A323 Trail cameras). After investigating paths in NCP and JNA, we chose 12 points and set the camera traps from May 2016 to March 2021 in four sessions. All of the cameras were infrared, and all the time set in video mode. Due to the presence of nomads in the area from June to September, we limited our camera trapping and avoided using them during this period. Our camera trapping periods

Table 1. Felid records in NCP and JHA from 2016–2021 in Northern Iran.

Common name	Global conservation status[1,2]	National conservation status[2,3]	Reliability[4]	Record type	Sex	Record date
Caucasus lynx	LC	VU	C1	Carcass (cause of death unknown)	Female	27 May 2019
			C1	Carcass (drowning in the farm pool)	Female	24 February 2020
			C1	Direct photo	-	Historical[5]
			C1	Camera Trap	-	28 Nov. 2020
			C3	Interview	-	19 March 2020
			C3	Interview	-	August 2018
Manul	LC	NT	C1	Interview (Fig. 3)	-	3 October 2013[6]
			C1	Roadkill	-	31 July 2019
Persian leopard	EN	EN	C3	Scats	-	28 Jan. 2021
			C3	Conflict report[7]	-	14 July 2021

[1] IUCN (2021); [2] LC = Least Concern; NT = Near Threatened; VU = Vulnerable; EN = Endangered. [3] Yusefi et al. (2019). [4] C1 = hard evidence, C3 = probable evidence. [5] The person captured a picture could not exactly remember a date. [6] This record was obtained from an interview in 2016. [7] Three attacks on the herd in the same place and the same husbandry in 2 weeks.

08

Fig. 2. The first camera trap picture from Caucasus lynx in NCP, the north of Iran, taken on 28 November 2020 (Photo Iranian Wildlife Shepherds NGO).

Fig. 3. Only hard evidence of manul after interviewing nomads and native people to identify small cats, North of JHR. This relates to C1 Interview in Table 1 (Photo M. Besharati Rad).

were between 26 to 28 days. Also, during these four sessions of camera trapping, we conducted spoor surveys within a radius of 700 meters of each station to collect footprints and mark signs of felines. Finally, we combined the data collected by the local people with the data we recorded ourselves.

Results

We were able to collect one record of felines through scattered camera trapping and one footprint recorded by local communities (Table 1). Moreover, we collected eight records based on Local Ecological Knowledge. Of these ten records, five were related to human-wildlife conflicts, which included road kills, attacks on herds, drowning in a farm pool, and unknown factors. All the records of Persian leopards in the area were historical notes by some elder members of nomads. But while running this study and after 5 years of working with local people, in the winter of 2021 we received two Persian leopard observation reports. Finally, we found a Persian leopard scat at an altitude of 2,700 m in NCP (Supporting Online Material SOM Fig. F1). Then in the summer of 2021 when nomads came to the region, we received reccords of three leopard attacks in the same location from NCP in two weeks and considered them as one record to avoid skewing the data (SOM Fig. F2). However, after our camera trapping, we were not able to capture any Persian leopard. This report came from our native network. After our field survey, we realised that some of the conflict was related to human error because the shepherd lost several sheep in the fog and found three carcasses after the attack.

In May 2019, we received a report and found a female carcass of lynx. Since a lot of time passed after its mortality, we could not identify the cause of death (SOM Fig. F3).

In February 2020, we received a report from people that one female lynx died in a farm pool. After we checked the stomach contents of the carcass, we identified Afghan pica and Eurasian magpie *Pica pica* remainings (SOM Fig. F4). Lastly, on 28 November 2020 after 327 trap nights, we captured a lynx at 3,200 m elevation (Fig. 2). In addition, we gained some historical lynx records from our interviews with our local people network (Table 1).

Concerning manul records, we received some historical records from the local people in our areas (Table 1, Fig. 3). On 20 October 2013, we got a roadkill report of a manul near an active colony of Afghan pika in NCP (SOM Fig. F5). This colony was located on the side of the road. Afghan pikas have a high density in both study areas, and we identified many other colonies next to the Chashm road.

Discussion

Based on the results of this study, we were able to collect ten records of felines in private conservancies by combining the scattered camera trapping, spoor survey and Local Ecological Knowledge. The results of the semi-structured interviews were 80% of the total information collected and added human-wildlife conflict data that was not accessible with the scattered camera trapping and spoor survey method. This demonstrates the effectiveness of integrating costly techniques like camera trapping with local ecological knowledge to document the presence of elusive felines, particularly gathering data on their conflicts with local communities. These findings align with the recommendation of Moller and colleagues (2004) as well as Van Vliet and colleagues (2023) to leverage local ecological knowledge or a combination of methods. Also,

we managed to record the first lynx with camera traps in Iran. A previous study was not successful in documenting this species in the northwestern of Iran (Moqanaki et al. 2010). Before this study, it was believed that Khosh Yeilagh Wildlife Refuge was the only region in Semnan province that has manul (Ziaie 2008). However, in recent years Farhadinia et al (2016) revealed reports from western Semnan near Shahmirzad County. With our current records, we found NCP and north of JNA could be important habitats for manul and can act as a corridor for the western manul population. Given the fact that Northeastern Iran hosts a source for the manul (Farhadinia et al. 2016, Mohammadi et al. 2022).

Habitat loss and fragmentation, as well as poaching and prey depletion, are considered the main threats to all felid species (Mousavi et al. 2016, Farhadinia et al. 2016, Ghoddousi et al. 2022). Moreover, free-ranging dogs are another threat to the Caucasus lynx and manul (Nayeri et al. 2022). Although manul has recently been downlisted from near threatened to least concern, still more studies and conservation initiatives are needed (Ross et al. 2020). NCP is connected to the Parvar Protected Area in the east. In the east of this protected area there are Kiasar National Park and Dodange Wildlife Refuge. In addition, in the north of NCP, there is Boola Protected Area (Fig. 1). This means that with an improvement in the conservation of NCP and JHA, a corridor across these protected areas will be formed that can be used by Persian leopard, Caucasus lynx, and manul. While international guidelines have been established for managing community-based protected areas to preserve biodiversity (Mitchell et al. 2018, Palfrey et al. 2022), many regions, including our study country in this research, continue to rely on national laws and

government oversight based solely on the goals of hunting zone areas. We believe that emphasizing the welfare of local communities in the broader public interest, rather than catering to a limited demographic, and exploring alternative livelihood solutions aligned with sustainable development goals such as fostering ecotourism (Hiwasaki 2006) can be viable strategies to advance the conservation of these areas and their valuable species, such as endangered felines. The findings of this research underscore the potential of governments to formulate comprehensive guidelines and monitoring methods for the collaborative conservation of such areas. This approach could facilitate higher-quality research and protection planning, encouraging broad participation from local communities and non-governmental organisations.

References
Ayalew M. Z. & Melese G. T. 2024. Effects of human-wildlife Conflicts on Local People's Livelihoods and Wildlife Conservation in and around Alitash National Park, Northwest Ethiopia. Wildlife Biology, e01083.

Bleyhl B., Gerngross P., Askerov E., Farhadinia M. S., Ghoddousi A., Heidelberg A., ... & Kuemmerle T. 2022. Mapping the distribution and habitat of Persian leopard across its historical range. Cat News Special Issue 15, 9–18.

Breitenmoser U., Breitenmoser-Würsten C., Lanz T., von Arx M., Antonevich A., Bao W. & Avgan B. 2015. Lynx lynx (errata version published in 2017). The IUCN Red List of Threatened Species 2015: e.T12519A121707666. Downloaded on 26 June 2023.

Brockington D. 2004. Community conservation, inequality and injustice: myths of power in protected area management. Conservation and society 2, 411–432.

Chevalier J. M. & Buckles D. J. 2008. SAS2: A guide to collaborative inquiry and social engagement. SAGE Publishing India. 316 pp.

Faizolahi K. 2016. Tiger in Iran–historical distribution, extinction causes and feasibility of reintroduction. Cat News Special Issue 10, 5–13.

Farhadinia M. S., Moqanaki M. E. & Adibi M. A. 2016. Baseline information and status assessment of the Pallas's cat in Iran. Cat News Special Issue 10, 38–42.

Farhadinia M. S., McClintock B. T., Johnson P. J., Behnoud P., Hobeali K., Moghadas P., ... & Macdonald D. W. 2019. A paradox of local abundance amidst regional rarity: the value of montane refugia for Persian leopard conservation. Scientific Reports 9, 14622.

Ghoddousi A., Abolghasemi H., Arianejad M., Mozafari G. G., Joolaee L., Mousavi M., Nayeri D. & Sepahvand P. 2022. Distribution and status of the Persian leopard in its western range. Cat News Special Issue 15, 36–41.

Ghoddousi A., Soofi M., Hamidi A. K., Lumetsberger T., Egli L., Ashayeri S., ... & Waltert M. 2017. When pork is not on the menu: assessing trophic competition between large carnivores and poachers. Biological Conservation 209, 223–229.

Heyer R., Donnelly M. A., Foster M. & Mcdiarmid R. 2014. Measuring and monitoring biological diversity: Standard methods for amphibians. Smithsonian Institution. 697 pp.

Hiwasaki L. 2006. Community-based tourism: A pathway to sustainability for Japan's protected areas. Society and Natural Resources 19, 675–692.

IUCN. 2021. The IUCN Red List of Threatened Species 2021-1. iucnredlist.org [accessed 17 June 2021].

James V. U. (Ed.). 1996. Sustainable development in third world countries: applied and theoretical perspectives. Greenwood Publishing Group, Westport, United States.

Milich K. M., Sorbello K., Kolinski L., Busobozi R. & Kugonza M. 2021. Case study of participatory action research for wildlife conservation. Conservation Science and Practice 3, e347.

Mitchell B. A., Stolton S., Bezaury-Creel J., Bingham H. C., Cumming T. L., Dudley N., Fitzsimons J. A., Malleret-King D., Redford K. H. & Solano P. 2018. Guidelines for privately protected areas. Best practice protected area guidelines series 29, 100 pp.

Mohammadi A., Almasieh K., Nayeri D., Adibi M. A. & Wan H. Y. 2022. Comparison of habitat suitability and connectivity modelling for three carnivores of conservation concern in an Iranian montane landscape. Landscape Ecology 37, 411–430.

Mohammadi A., Lunnon C., Moll R. J., Tan C. K. W., Hobeali K., Behnoud P., ... & Farhadinia M. S. 2021. Contrasting responses of large carnivores to land use management across an Asian montane landscape in Iran. Biodiversity and Conservation 30, 4023–4037.

Moller H., Berkes F., Lyver P. O. B. & Kislalioglu M. 2004. Combining science and traditional ecological knowledge: monitoring populations for co-management. Ecology and Society 9:2.

Moqanaki E. M., Farhadinia M. S., Mousavi M. & Breitenmoser U. 2010. Distribution and conservation status of the Eurasian lynx in Iran. Cat News 53, 32–35.

Moqanaki E. M., Jahed N., Malkhasyan A., Askerov E., Farhadinia M. S., Kabir M., ... & Ostrowski S. 2019. Distribution and status of the Pallas's cat in the south-west part of its range. Cat News Special Issue 13, 24–30.

Mousavi M., Moqanaki E., Farhadinia M. S., Adibi M. A., Rabiee K. & Khosravi S. 2016. The largest lesser cat in Iran–current status of the Eurasian lynx. Cat News Special Issue 10, 33–37.

Nayeri D., Mohammadi A., Qashqaei A. T., Vanak A. T. & Gompper M. E. 2022. Free-ranging dogs as a potential threat to Iranian mammals. Oryx 56, 383–389.

Palfrey R., Oldekop J. A. & Holmes G. 2022. Privately protected areas increase global protected area coverage and connectivity. Nature Ecology & Evolution 6, 730–737.

Ross S., Barashkova A., Dhendup T., Munkhtsog B., Smelansky I., Barclay D. & Moqanaki E. 2020. Otocolobus manul. The IUCN Red List of Threatened Species 2020. Downloaded on 23 April 2024.

Sunquist M. & Sunquist F. 2002. Wild Cats of the World. The University of Chicago Press, Ltd., London. 452 pp.

Sutherland W. J. 2008. The conservation handbook: Research, management and policy. John Wiley & Sons.

Van Vliet N., Rovero F., Muhindo J., Nyumu J., Mbangale E., Nziavake S., ... & Quintero S. 2023. Comparison of local ecological knowledge versus camera trapping to establish terrestrial wildlife baselines in community hunting territories within the Yangambi landscape in the Democratic Republic of Congo. Ethnobiology and Conservation 12:19.

Yusefi G. H., Faizolahi K., Darvish J., Safi K. & Brito J. C. 2019. The species diversity, distribution and conservation status of the terrestrial mammals of Iran. Journal of Mammalogy 100, 55–71.

Ziaie H. 2008. A Field Guide to the Mammals of Iran. 2nd edition. Iranian Wildlife Center, Tehran, Iran. 423 pp. (In Persian).

[1] Gorgan University of Agriculture and Natural Resources, Iran
  * <rezaeianasef@gmail.com>
[2] Iranian Wildlife Shepherds NGO, Iran
[3] Institute for Communities and Wildlife in Africa iCWild, University of Cape Town, South Africa

Supporting Online Material SOM Figures F1–F5 are available at www.catsg.org.