

New data on the occurrence of *Panthera pardus* in the Talysh Mountains, Azerbaijan (Carnivora: Felidae)

Nové údaje o výskytu levharta (*Panthera pardus*) v Talyšských horách, Azerbajdžan (Carnivora: Felidae)

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Abstract. New data from camera traps in the Talysh Mountains (southern Azerbaijan) show that the Hirkan Forest is one of the last permanent habitats of the Persian leopard (*Panthera pardus saxicolor*) in Transcaucasia. It hosts about 3–5 adult individuals and the species has always existed there. This is probably the most stable micropopulation in the country. Preservation of the species in the area will be beneficial for the conservation of the leopard not only in Azerbaijan but also in the Caucasus in general.

Key words. *Panthera pardus ciscaucasica*, Caucasian leopard, distribution.

The Caucasian leopard (named also Persian leopard), *Panthera pardus ciscaucasica* (Satunin, 1914) (= *P. pardus saxicolor* Pocock, 1927) is one of the largest subspecies of the leopard in the world (GEPTNER & SLUDSKIJ 1972), judging by the published information on a 90 kg young male reported to be killed at Diyarbakir, Turkey in 2013 (ASLAN et al. 2013, SPASSOV et al. 2016). It is not entirely clear whether the so-called West Anatolian Leopard, *P. p. tuliana* (Valenciennes, 1856), recently considered extinct (which might be identical with the Sinai population; KHOROZYAN et al. 2006), is really distinct from *P. p. ciscaucasica*. If these forms are proved to be identical, the name *P. p. tuliana* must have priority over the above names according to the zoological nomenclature code.

The subspecies is classified as endangered in the IUCN Red List (KHOROZYAN 2008). Altogether, the Caucasian leopard populations are generally estimated at 870–1300 individuals. The biggest part of these populations live in Iran (about 550–800 individuals), Afghanistan (200–300 inds.) and Turkmenistan (90–100 inds.). In Turkey, probably less than five leopards survive. The number of individuals in Kazakhstan is unknown (possibly single animals), although the species has been recently detected in the country (KHOROZYAN 2008, FARHADINIA et al. 2014, SPASSOV et al. 2016, MOSTOVOJ 2018). In the Greater Caucasus in South Ossetia, a leopard reintroduction program is currently underway (ANONYMOUS 2018a, b). In Transcaucasia and the Lesser Caucasus the population is “skeletal” (Fig. 1): in Armenia 5–6 individuals moving across the border with Naxçıvan (Azerbaijan) have been registered by cameras, in Georgia only one male was confirmed by camera trapping in 2003 (ANTELAVA 2004).

In Azerbaijan, 15–17 individuals have been registered by cameras since 2007, some of them captured in the transboundary area between Naxçıvan and Armenia (see also below). In Azerbaijan, in the last fifteen years, the leopard has been observed in the areas of the Hirkan forest, Zangezur range and the arid

landscape around the Mingəçevir lake (ASKEROV 2019). The first photographs in the Talysh Mountains (south-eastern Azerbaijan) were taken in the area south of the Sym village in 2007. After a five-year break in the camera trapping, seven more leopards were registered by WWF camera traps till 2019, two of them were cubs born in the Hyrkan forest. In 2015, a male leopard which attacked livestock was killed in the vicinity of Sym (own unpubl. data). One of the males registered in the Hyrkan forest was killed in Iran, 30 km away from the last observation point in Azerbaijan (MAHARRAMOVA et al. 2018). The latest data on the local population in the Talysh Mountains were obtained in 2018 through the effort of WWF Azerbaijan, and the field expedition of the National Museum of Natural History at the Bulgarian Academy of Sciences in 2018. During these field surveys covering the forested mountainous area of the Hirkan National Park, south of the Sym village, questionnaire data were collected from the locals, cattlemen and hunters about the state of the species in the area and about its population dynamics in recent decades. Camera traps

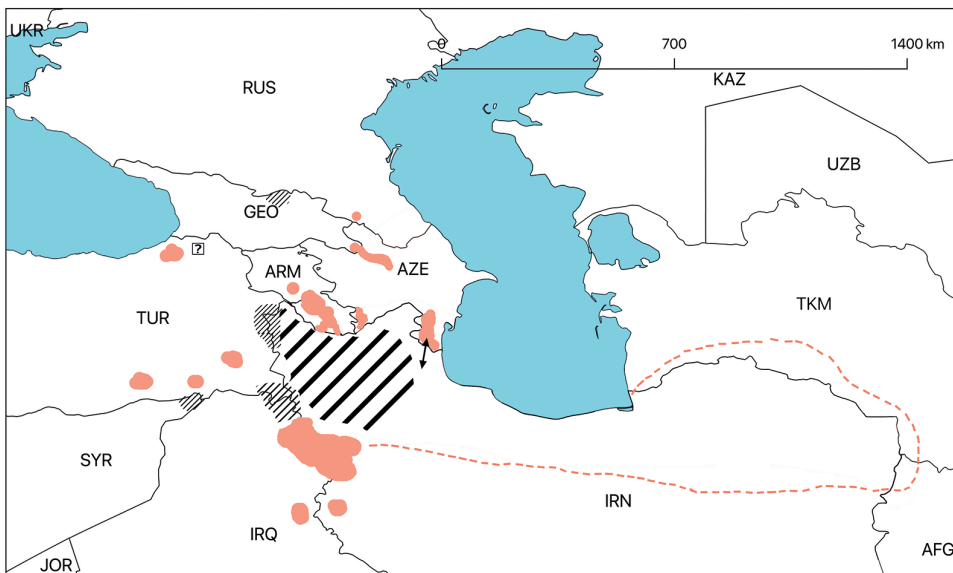
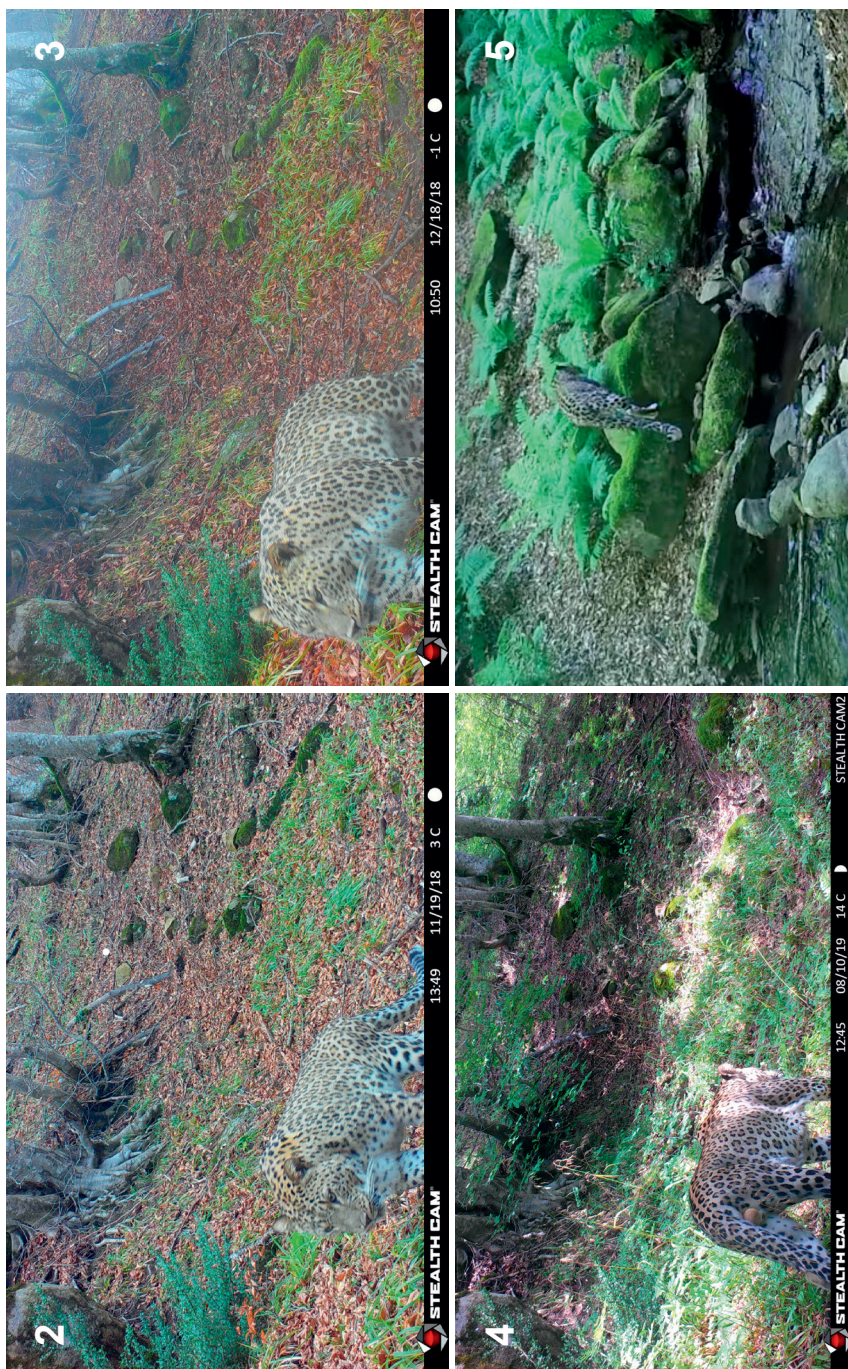


Fig. 1. Distribution of the Persian leopard (*Panthera pardus saxicolor*) in the north of the Middle East: pink – permanent leopard distribution, arrow – seasonal migrations, small hatched areas – zones of unclear / uncertain occurrence or of passage, large hatched area – an approximate distribution in western Iran, interrupted pink line – limits of the distribution. Sources used: ANTELAVA (2004), AVGAN et al. (2012), ASKEROV (2019), AVGAN et al. (2016), SPASSOV et al. (2016), YAROVENKO & ZAZANASHVILI (2016), MAHARRAMOVA et al. (2018), MOSTOVOJ (2018), TOYRAN (2018); own data were used for Azerbaijan, see also AMOS (2014) and ANONYMOUS (2018a, b).

Obr. 1. Rozšíření levharta perského (*Panthera pardus saxicolor*) na severu Blízkého východu: růžová – stálý výskyt levharta, šipka – sezonní migrace, menší šrafované plochy – zony nejasného / neurčitého výskytu anebo migrací, větší šrafovaná plocha – přibližné rozšíření v západním Iranu, přerušovaná růžová čára – okraje oblasti výskytu. Použité zdroje: ANTELAVA (2004), AVGAN et al. (2012), ASKEROV (2019), AVGAN et al. (2016), SPASSOV et al. (2016), YAROVENKO & ZAZANASHVILI (2016), MAHARRAMOVA et al. (2018), MOSTOVOJ (2018), TOYRAN (2018); vlastní údaje použity pro území Azerbajdžanu, viz také AMOS (2014) a ANONYMOUS (2018a, b).



Figs. 2-5. 2-4 – A territorial male leopard recorded in the Hirkán forest. 2 – November 2018. 3 – December 2018. 4 – August 2019. 5 – An individual (probably female) of the leopard recorded in the Hirkán forest on 22 June 2019, near the male's photo site (Figs. 2-4) in June 2019. Obr. 2-5. 2-4 – Teritoriální samec levharta zaznamenaný v Hirkánském pralese. 2 – listopad 2018. 3 – prosinec 2018. 4 – srpen 2019. 5 – jedinec (patrně samice) levharta zaznamenaný 22. 6. 2019 v Hirkánském pralese, poblíž místa, kde byl fotografován samec (obr. 2-4).

were installed and the presence of several animal species including the leopard was detected. The very new data collected are the subject of this communication.

A camera trap installed by WWF Azerbaijan in 2018 confirmed the presence of a new male leopard. A camera trap laid by the Bulgarian team near the same place in November (Fig. 2) and December 2018 (Fig. 3) shows the same animal, judging by the habitus and the coloration pattern. This is apparently a mature territorial male, traversing the territory during the day and on permanent routes, as evidenced by the data from the camera traps. In August 2019 (Fig. 4) the cameras registered the same male at the same place. Roughly at the same time, on 22 June 2019, the camera trap situated several hundred meters from this photo-site registered another leopard. According to its habitus and coloration pattern, this is a different individual, most probably a female based on a video material (Fig. 5).

The leopard habitats in the area consist of old deciduous forests along the almost unpopulated southern and western slopes of the Talysh Mountains, where rich arboreal vegetation is present due to the combined effects of subtropical climate and the mountainous Caucasus influence.

The sparse human population of the protected area and the rugged rocky terrain create conditions for the presence of birthing dens (known in the area). Here, the leopard coexists with the brown bear, as well as with the Indian porcupine, as documented by the traces of their life activities which we found repeatedly. The main prey of the leopard in the area is the wild boar. Boar traces were numerous along the route of the recorded male (we have found remains of a killed and eaten boar). Our analyses suggest the presence of one, at most two territorial males (no more than 3–5 adult individuals) in the Hirkan National Park and its surrounding areas in the Talysh Mountains. Survey data show that the leopard inhabits the medium and high elevations (600–1500 m a. s. l.) of the remote parts of the mountains in the study area. The high snow cover appears late in the winter and does not usually stay for long in the humid and mild climate of this mountainous area. When the snow falls, the leopard migrates south and east to the lowlands following the wild boar and probably passes to Iran (MAHARRAMOVA et al. 2018), which is the main reservoir of this local population. This is supported by the data on individual migration and dispersal opportunities in this carnivore (AVGAN et al. 2016).

The inquiry data show that leopards have been repeatedly observed in recent decades by locals and shepherds. The Hirkan forests are a primeval habitat for the species, which has been gradually and significantly reducing its numbers since the 1930s. In the late 1930s, the bezoar ibex and red deer populations disappeared. This, and the highly developed cattle-breeding during the Soviet times, forced the predator to attack domestic animals frequently and instigate the competitive carnivore-stock-breeder relations, which is the main reason for the killing of leopards. One case of a person eaten by a leopard and one of a wounded soldier on the southwestern border with Iran in 1967–1968 were reported. Today, attacks on livestock are relatively rare, probably because livestock is greatly reduced, and leopards inhabit mostly the higher and remote areas of the mountains.

The data and analyses show that the Hirkan forest (Talysh Mountains) is one of the last permanent leopard habitats in the country where the species has always existed and has never ceased to exist to this day. This is probably the most permanent micropopulation in the country. Preservation of the species in the area will be beneficial for the conservation of the Persian leopard not only in Azerbaijan but also in the Caucasus in general. It is necessary to seek international financial support for an ongoing monitoring in the Talysh Mountains; it would be particularly helpful to prepare an outreach program for the local population and school children in the leopard conservation area and to develop a damage-compensation program.

SOUHRN

Nové nálezy získané pomocí fotopastí v Talyšských horách na jihu Azerbajdžanu ukázaly Hirkánský prales jako jeden z posledních stálých útočišť levharta perského (*Panthera pardus saxicolor*) v Zakavkazí. Obývá je populací tvořenou třema až pěti jedinci, jedná se přitom o území, ve kterém se snad levharti vyskytovali vždy, bez přerušení. Jedná se patrně o nejstabilnější mikropopulaci v Azerbajdžanu. Ochrana

tohoto území nepochybně může výrazně přispět také k ochraně levharta nejen v Azerbajdžanu, ale v celé oblasti Kavkazu.

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REFERENCES

- AMOS A. M., 2014: In Iran, the Persian leopard's last stand. *Earth Touch News Network*, 18 March 2014. URL: <https://www.earthtouchnews.com/conservation/endangered/in-iran-the-persian-leopards-last-stand>.
- ANONYMOUS, 2018a: V Severnoj Osetii leopard dobyl sernu i ne podelilsja s medvedem [In North Ossetia, a leopard killed a chamois and did not share it with a bear]. *Kavkaz.Realii*, 27 December 2018. URL: <https://www.kavkazr.com/a/29679380.html> (in Russian).
- ANONYMOUS, 2018b: Trail camera captures rare footage of Caucasian leopard. *World Land Trust*, 21 December 2018. URL: <https://www.worldlandtrust.org/news/2018/12/trail-camera-caucasian-leopard>.
- ANTELAVA N., 2004: Lone leopard spotted in Georgia. *BBC News*, 25 May 2004. URL: <http://news.bbc.co.uk/2/hi/science/nature/3746491.stm>.
- ASKEROV E. K., 2019: Leopard (*Panthera pardus*) reoccupying its historic range in the South Caucasus: a first evidence (Mammalia: Felidae). *Zoology in the Middle East*, **65**: 88–90.
- ASLAN F., ALTINTAŞ C. & SUNAR S., 2013: Sosyal medya bu fotoğrafı konuşuyor [Social networks talk about this photo]. *Milliyet Basında Güven*, 4 November 2013. URL: <http://www.milliyet.com.tr/gundem/sosyal-medya-bu-fotografi-konusuyor-1787065> (in Turkish).
- AVGAN B., HUSEYNALI T. T., ISMAYILOV A., FATULLAYEV P., ASKEROV E. & BREITENMOSER U., 2012: First hard evidence of leopard in Nakhchivan. *Cat News*, **57**: 33.
- AVGAN B., RAZA H., BARZANI M. & BREITENMOSER, U. 2016: Do recent leopard *Panthera pardus* records from northern Iraq and south-eastern Turkey reveal an unknown population nucleus in the region? *Zoology in the Middle East*, **62**: 95–104.
- FARHADINIA M., MOQANAKI E. & FATEMEH H.-Z., 2014: Predator-prey relationships in a middle Asian montane steppe: Persian leopard versus urial wild sheep in northeastern Iran. *European Journal of Wildlife Research*, **60**: 341–349.
- GEPTNER V. G. & SLUDSKIJ A. A., 1972: *Mlekopitaúšie Sovetskogo Soúza. Tom vtoroj (čast' vtoráá)*. *Hyšnye (gieny i koški) [Mammals of the Soviet Union. Second Volume (Second Part). Carnivores (Hyenas and Cats)*. Vysšaa škola, Moskva, 552 pp (in Russian).
- KHOROZYAN I., 2008: *Panthera pardus saxicolor*. *IUCN Red List of Threatened Species*. URL: <https://www.iucnredlist.org>.
- KHOROZYAN I. G., BARYSHNIKOV G. F. & ABRAMOV A. V., 2006: Taxonomic status of the leopard, *Panthera pardus* (Carnivora, Felidae) in the Caucasus and adjacent areas. *Russian Journal of Theriology*, **5**(1): 41–52.
- MAHARRAMOVA E., MOQANAKI E. M., ASKEROV E., FAEZI S., ALINEZHAD H., MOUSAVI M., KUEMMERLE T., HEIDELBERG A. & ZAZANASHVILI N., 2018: Transboundary leopard movement between Azerbaijan and Iran in the Southern Caucasus. *Cat News*, **67**: 8–10.
- MOSTOVOJ Z., 2018: V Kazahstane v pervye obnaruzhili leoparda [Leopard first discovered in Kazakhstan]. *365.ifo.kz*, 24 October 2018. URL: <https://365info.kz/2018/10/v-kazahstane-vpervye-obnaruzhili-leoparda> (in Russian).

- SPASSOV N., IGNATOV A. & ACOSTA-PANKOV I., 2016: On the status of the leopard in Turkey, again. *Cat News*, **64**: 18–21.
- TOYRAN K., 2018: Noteworthy record of *Panthera pardus* in Turkey (Carnivora: Felidae). *Fresenius Environmental Bulletin*, **27**: 7348–7353.
- YAROVENKO Y. & ZAZANASHVILI N., 2016: Recent hard evidence for the occurrence of the Leopard, *Panthera pardus* (Mammalia: Felidae), in the Eastern Greater Caucasus. *Zoology in the Middle East*, **62**: 88–90.