Transboundary leopard movement between Azerbaijan and Iran in the Southern Caucasus

Understanding whether large cat populations are transboundary by nature is important for conservation planning. We here report transboundary movement by an adult male Persian leopard Panthera pardus tulliana (= P. p. ciscaucasica = P. p. saxicolor) in the Talysh Mountains of the Southern Caucasus. Between 12 and 13 July 2013 this leopard, named Astkhan, was photographed by camera traps at three locations inside Hirkan National Park NP, Talysh Mountains, Azerbaijan. On 7 February 2014 a local hunter killed an adult leopard in Chubar Highlands of Gilan Province, north-western Iran, approximately 30 km away from Hirkan NP (straight-line distance). Comparing photos of this poached leopard with those obtained from Hirkan NP allowed us to identify this leopard as Astkhan. This is the first hard evidence of transboundary movements by Persian leopards in the Talysh Mountains, and thus for linkages between leopard sub-populations in Azerbaijan and northern Iran. This also suggests that the transboundary Talysh Mountains are of utmost importance as a corridor between core leopard areas in the Caucasus Ecoregion, and thus for the Persian leopard conservation in general. Joint survey planning, reporting and data sharing can be a first step for transboundary cooperation in leopard conservation between the eco-regional countries.

The critical status of the Persian leopard in the Caucasus Ecoregion urgently calls for international cooperation between the eco-regional countries (Breitenmoser et al. 2017). Leopards currently occur only in a few locations in the Caucasus, and it has been speculated that leopards in Azerbaijan and Armenia might be connected with leopard populations in the Iranian Caucasus, or even depend on these populations as a source for dispersing individuals (Askerov et al. 2015). However, to date no confirmed evidence of leopard movements for the two proposed transboundary populations of Zangezur-Kiamaky and Talysh-Western Alborz ranges (Askerov et al. 2015) has been documented. Here, we report the first hard evidence of such a movement event between Azerbaijan and Iran in the Talysh Mountains.

Since 2011, WWF (particularly WWF-Azerbaijan Branch supported by WWF-Germany and WWF-Switzerland), together with the Ministry of Ecology and Natural Resources of Azerbaijan Republic MENR, the International Dialogue for Environmental Action IDEA and Humboldt University Berlin, has conducted camera trap surveys of leopards and their prey in Hirkan NP, Talysh Mountains, Azerbaijan (see Askerov et al. 2015; Fig. 1). Two male leopards were photo and video-captured at six sites during an unknown number of camera trap days between May 2013 and July 2014. One adult male, named Astkhan by the research team, was photographed at three sites (photo and video identification based on the right flank only; Fig. 2 & Supplementary Online Material SOM Figure F1) on 12 and 13 July 2013, approximately 2 km east and 4.5 km north of the border with Iran (straight-line distance; Fig. 1).

In May 2014, the Gilan Provincial Office of the Iranian Department of Environment DoE at Talesh County, Iran, was informed about a case of leopard poaching by a local hunter near Mohammad Yurdi, Chubar Highlands (Fig. 1). The local hunter was eventually arrested, and authorities discovered two images of him with a poached leopard in his cell phone (Fig. 3 & SOM F2). The local hunter confessed to having killed this leopard while in search for forest-dwelling ungulates. He claimed that he had sold the leopard’s skin for IRR 70,000,000 (≈ US$ 2,750 in 2014) to an undisclosed person. We identified the date of this incident from the EXIF data of the poacher’s photos as 7 February 2014. The skin could not be traced by the legal authorities, but the leopard’s tail was later discovered by authorities in the poacher’s hideout (SOM F3) and is now in the possession of Gilan DoE. The local hunter was fined with IRR 50,000,000 (≈ US$ 2,000) in accordance with the former revision of

Fig. 1. Locations of camera trap photographs of a male Persian leopard, named Astkhan, inside Hirkan NP, Azerbaijan, between 12 and 13 July 2013 (red square 1), and his death in Chubar Highlands of Gilan Province, Iran on 7 February 2014 (red square 2). Another male leopard shot dead in Dizaj, Ardabil Province, Iran on 9 July 2007 (red triangle 3). Grey polygons represent protected areas.
Panthera pardus and Panthera pardus saxicolor in the Caucasus and Azerbaijan are more crucial than ever. During the workshop on “Revision of the Strategy for the Leopard Conservation in the Caucasus and Coordinating the Monitoring of Leopard and Prey Species in the Ecoregion” in Tbilisi, Georgia held on 25 - 28 April 2017, representatives from Azerbaijan and Iran met and shared information about the leopard status on both sides of the border. Comparison of the pelage pattern of Astkhan with photos obtained from the poacher in Iran (Fig. 4) confirmed the killing of Astkhan in the Iranian part of the Talysh Mountains, approximately 30 km away from the last location where the animal was photographed inside Hirkan NP (straight-line distance; Fig. 1). This represents the first evidence of leopard transboundary movements within Talysh Mountains, as well as the first confirmed record of leopard movement between Iran and Azerbaijan. For the Iranian Caucasus, this killed individual is the only confirmed leopard occurrence in the Talysh Mountains during the past 20 years, besides a young male that was shot in Dizaj village, Ardabil Province, approximately 15 km away from the border with Azerbaijan, on 9 July 2007 (Mowlavi et al. 2009, Moqanaki et al. 2013; Fig. 1 & SOM F4). Habitat suitability modelling and connectivity predicted the Talysh Mountains to be a critical linkage for connecting the border landscape between Iran, Azerbaijan, and Armenia to the presumed source leopard population in the Alborz Mountains in Northern Iran (Zimmermann et al. 2007, Farhadinia et al. 2015). The incident we report here supports these predictive models. The Strategy for the Conservation of the Leopard in the Caucasian Ecoregion, which has been revised in April 2017 (Caucasus Leopard Working Group 2017), stresses the need for strategic transboundary cooperation in leopard conservation between the countries in the Caucasus. Considering the still very low number of individuals in this ecoregion (13 confirmed individuals), the loss of every leopard is a major setback in efforts for safeguarding this species. Recent evidence for leopard reproduction in the Talysh Mountains from Hirkan NP (Breitenmoser et al. 2017) are encouraging news, but also highlight that joint monitoring and conservation efforts between Iran and Azerbaijan are more crucial than ever.

We propose establishing a transboundary platform for planning survey and monitoring activities and for reporting and sharing data on leopard status and occurrence. This would be a first and urgently needed step in this direction.

Acknowledgements

WWF-Azerbaijan is thankful to the Ministry of Ecology and Natural Resources of Azerbaijan Republic MENR and the International Dialogue for Environmental Action IDEA for support and collaboration, particularly in the field of leopard conservation in Azerbaijan. The Iranian Cheetah Society’s research was funded by the Iranian Department of Environment DoE and World Land Trust. Our special thanks go to IUCN/SSC Cat Specialist Group for general support to the process of leopard conservation in the region, and particularly for coordinating the Caucasus Leopard Workshops in Tbilisi, Georgia (25 - 28 April 2017). Finally, we would like to thank Ali Jafari and the law enforcement team in Talesh Branch of Gilan DoE, and Pouyan Behnoud for assistance in the identification of Astkhan.

References


Fig. 2. First footage of Astkhan, photographed by a camera trap inside Hirkan NP, Azerbaijan, on 12 July 2013 (Photo WWF-Azerbaijan).

Fig. 3. A photo of Astkhan, dated 7 February 2014, discovered by authorities in a poacher’s cell phone in Chubar, Gilan Province, Iran.

Fig. 4. Identification of Astkhan was done based on pelage pattern of his head. See SOM F1 & F2 for original photos.
The illegal use of snares and gin traps threatens endanged leopards in Iran

We report on six cases of snare and gin trap captures of free-ranging Persian leopards Panthera pardus tulliana in northern Iran between 2012 and 2017. Three of these leopards died as result of severe injuries, the three others were rescued, one survived albeit disabled, two could be released to the wild but one of them died less than two months after release. These captures were unintentional, and resulted from snares and gin trap being deployed illegally by farmers to rid their crops and chicken-coop from wild boars Sus scrofa (5) and possibly jackals Canis aureus / jungle cats Felis chaus (1), respectively. These cases reveal the growing problem of habitat disturbance and loss for leopard and their natural prey in the Alborz mountain range and Caspian lowlands of Iran.

Fig. 1. An anesthetised female Persian leopard with a gangrenous process affecting its left fore-limb. The animal was unintentionally snared, rescued by the Department of Environment of Golestan Province, and sent 18 days later to Tehran for treatment, January 2012 (Photo I. Memarian, Tehran Zoo and Pardisan Wildlife Rehabilitation Center).

Leopard Panthera pardus populations have been reduced globally due to continued persecution with increasing human populations, habitat fragmentation, increased illegal wildlife trade, excessive harvesting for ceremonial use of skins, prey base declines, and poorly managed trophy hunting. This negative trend supported the recent up-listing of the species from Near Threatened to Vulnerable on the IUCN Red List of Threatened Species (Stein et al. 2016). The leopard subspecies that survives in South-west Asia and the Caucasus (P. p. saxicolor, recently revised as P. p. tulliana by Kitchener et al. 2017) is listed in the IUCN Red List of Threatened Species as Endangered (Khorozyan 2008). In Iran, where it still has a wide distribution range mainly across the Alborz and Zagros Mountains and their off-shots, it is vulnerable to local extinction in fragmented habitats because of anthropogenic activities (Sanei & Zakaria 2011).

Acknowledging that the information was probably incomplete because of the leopard’s protected status, Kiabi et al. (2002) proposed that deliberate killing because of their alleged attacks on livestock was probably one of the main threats to leopards in Iran since the mid 1970’s. These authors mentioned also accidents with cars and habitat loss as two important additional threats to the leopards. Sanei & Zakaria (2011) ranked in decreasing order of likely incidence, (1) habitat destruction, degradation and fragmentation; (2) illegal hunting and poaching of leopards (in an attempt to destroy predators that may prey on livestock) and their prey species, poisonous lures, capturing juvenile of prey species, as the two main groups of threats to leopards in Iran. In a review of 71 mortality cases throughout the country between 2007-

SOM F1. Astkhan, a male Persian leopard, was photographed by a camera trap inside Hirkan National Park, Talysh Mountains, Azerbaijan on 13 July 2013 (Photo WWF-Azerbaijan)

SOM F2. A photo of Astkhan discovered in a poacher’s cell phone by legal authorities in Gilan Province, Iran. Identification of Astkhan was done by comparing the pelage pattern of his head in this photo with SOM F1 (See Fig. 4).
SOM F3. A photograph of Astkhan’s tail discovered in a poacher’s hideout by wildlife authorities in Chubar, Gilan Province, Iran (Photo Ali Jafari/Gilan DoE).

SOM F4. A male Persian leopard shot dead by authorities after injuring 7 villagers in Dizaj, Ardabil Province in Iran on 9 July 2007 (Photo Ardabil DoE).