Results of the Second Phase of the Project on Supplemental Feeding of Vultures in Ustyurt State Nature Reserve (Kazakhstan) in 2018

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Abstract

The article highlights new monitoring data on three vulture species (*Neophron percnopterus, Aegypius monachus, Gyps fulvus*) on the territory of Ustyurt State Nature Reserve in Kazakhstan obtained during the second phase of the project on vulture supplementary feeding in 2018. The project is supported by the Rufford Foundation https://www.rufford.org/projects/zhaskairat_nurmukhambetov_0
Obtained data confirmed the numbers of breeding vultures within Ustyurt State Nature Reserve: 4 pairs of Cinereous Vulture and 2 pairs of Egyptian Vultures. During the implementation of the project, camera traps registered for the first time, the presence of a Persian leopard (*Panthera pardus saxicolor*) in the Ustyurt Reserve.

Keywords: birds of prey, raptors, vultures, Egyptian Vulture, *Neophron percnopterus*, Cinereous Vulture, Eurasian Black Vulture, *Aegypius monachus*, Griffon Vulture, *Gyps fulvus*, Caracal, *Caracal caracal*, Persian leopard, *Panthera pardus saxicolor*, feeding station, camera trap, Kazakhstan, Mangistau Region, Ustyurt State Nature Reserve.

Introduction

Five species of vultures occur in Kazakhstan. These include Egyptian Vulture (*Neophron percnopterus*), Bearded Vulture (*Gypaetus barbatus*), Himalayan vulture (*Gyps himalayensis*), Griffon Vulture (*Gyps fulvus*) and Cinereous Vulture (*Aegypius monachus*) (Dementyev, 1951; Gavrin et al., 1962).

Three species of vultures occur in Mangistau Region, which is located in the south-west of Kazakhstan: Egyptian Vulture, Cinereous Vulture and Griffon Vulture (Karyakin et al., 2004; Levin, Karyakin, 2005; Pfeffer, 2006; Plakhov, 2009; Nurmukhambetov, Boyko, 2009). To date, Egyptian Vulture and Cinereous Vulture have been confirmed as breeding species within this area (Kovshar, Dyakin, 1999; Levin, Karyakin, 2005; Pfeffer, 2006; Pestov, Nurmukhambetov, 2012; Pestov et al., 2017).

According to preliminary estimates, there are about 30 pairs of Egyptian Vultures and a few pairs of Cinereous Vultures in Mangistau Region (Sklyarenko et al., 2012). Within the Ustyurt State Nature Reserve, which is located in the Karakiya district in the southern part of Mangistau Region, the number of nesting vultures has been roughly estimated at 3–4 pairs of Cinereous Vultures and 4–8 pairs of Egyptian Vultures (Pestov, Nurmukhambetov, 2012).

According to some experts, the main limiting factor for vultures in Kazakhstan, including Mangistau, is a shortage of food supply caused by the sharp decrease in livestock and wild ungulate populations, especially Saiga (*Saiga tatarica*) and Goitered Gazelle (*Gazella subgutturosa*) , in the last decades since the collapse of the Soviet Union (Sklyarenko et al., 2012; Plakhov, 2006; 2009). Besides that, in Mangistau Region there were isolated incidents of electrocution of Cinereous Vultures and Egyptian Vultures on medium voltage power lines (6–10 kV) (Levin, Kurkin, 2013; Pestov et al., 2015).

In 2016 for the first time, our team implemented a pilot project on vulture feeding in the Ustyurt Reserve with the support of the Rufford Small Grants Foundation: http://www.rufford.org/projects/zhaskairat_nurmukhambetov (Pestov et al., 2017).

In 2018, our team completed the second phase of this sponsored project: https://www.rufford.org/projects/zhaskairat_nurmukhambetov_0

Project Location

Ustyurt State Nature Reserve occupies 223,342 ha and is situated in the Karakiya District of the Mangistau Region. The Reserve was established in 1984 and has continental climate conditions of the South-Turanian arid zone.

Landscape features within the Reserve include the 210 km stretch of Western "Chink" (chink is a local name for chalk escarpment) of plateau Ustyurt as well as the narrow stretch of the plateau Ustyurt, eastern part of Karynzharyk depression-Kenderli-sor, mount Karamaya and a small section of sand massif Karynzharyk.

The chinks are often nearly vertical cliffs, which define plateau Ustyurt. The height of escarpment can reach more than 100 m (Plakhov, 2006). Escarpment and deep canyons are the primary nesting grounds for the wide range of birds of prey, which occur in the region, including Egyptian Vulture and Cinereous Vulture.

Methodology

From April to November 2018, twice a month our team put down around 20 kg of offal at each of three feeding stations, which were set up in 2016. The location of the stations were selected on the edge of cliffs along the Western "Chink" of the Ustyurt Plateau within the Reserve. During the course of 10 field trips, more than 600 kg of offal in total was laid out. The offal (stomachs, intestines, lungs, heads and distal limbs of large cattle and camels) was obtained from the slaughter house in Zhanaozen.

The first deposition of offal at the feeding stations was performed on 25 April 2018 and the last one on 15 November 2018. Also, in November 2018 outside of the stations, one camera trap was set up on a carcass of Ustyurt urial (*Ovis vignei arkal*). At each feeding station, two camera traps were set up on 1m long metal poles and able to provide close-up shots and the more distant one a wider coverage of the site at the distance of 1.5–2 m and 3–4 m, respectively **(photo 1)**.

Before commencing the project in 2016, we made an official request to the State Committee of Veterinary Control (Ministry of Agriculture of the RoK), regarding a use of Diclofenac, a pharmaceutical preparation for treating cattle. It was used in a number of Asian countries and was responsible for over 90% decline of Gyps and Vultures in India, Pakistan and Nepal (Oaks et al., 2004). The response from the Chairman of this Committee indicated that diclofenac was not registered as a veterinary treatment in RoK, which excluded its use for treatment of cattle.

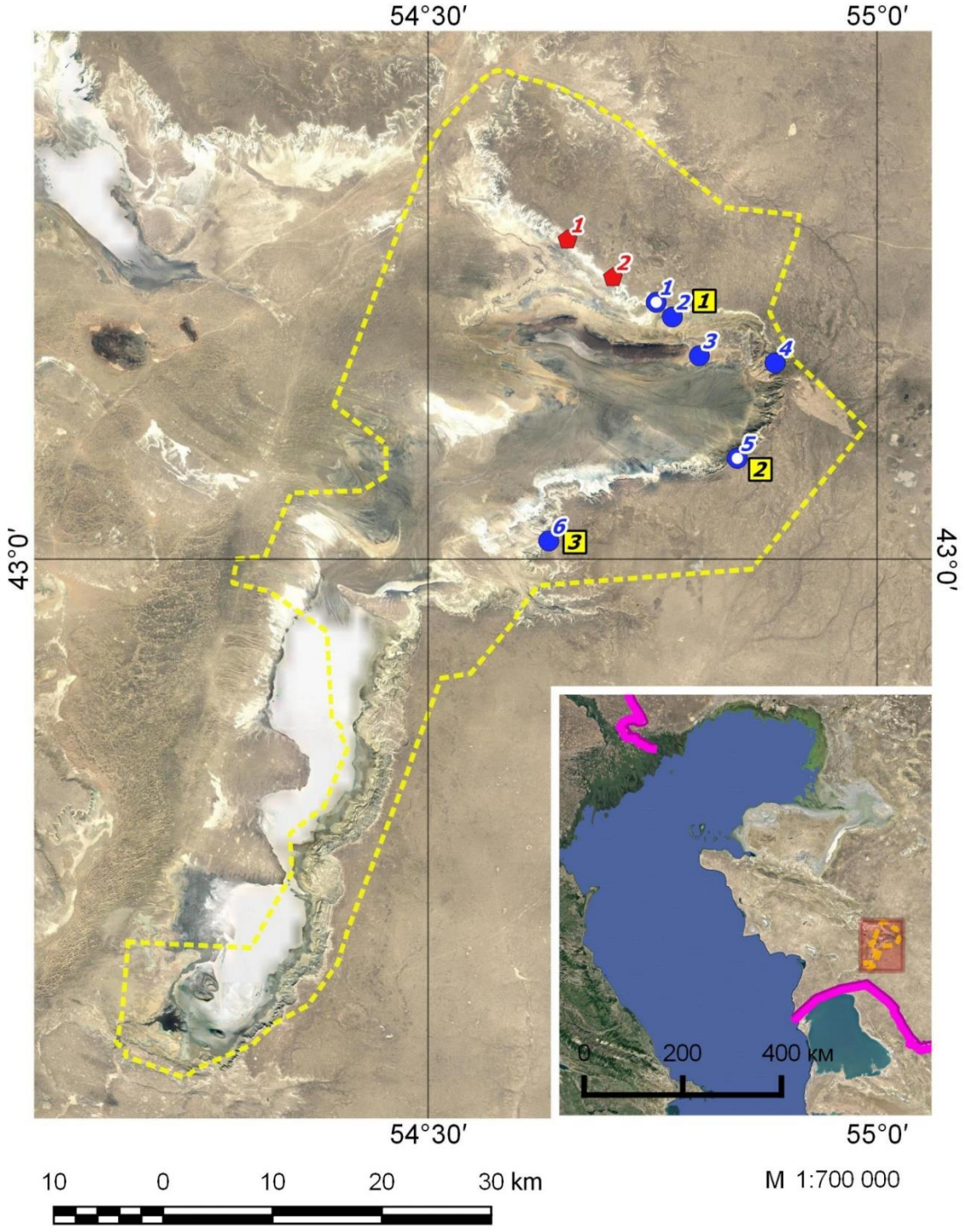
During spring-summer season 2018, our team conducted extensive field trips to identify nesting locations of vultures. We carried out both road trips and walking surveys along the chinks of the plateau Ustuyrt within the Reserve and outside it. The total distance of the surveys was around 350 km.

Results

In 2018, when undertaking counting surveys on Donyztau "Chink" at northern part of the plateau Ustuyrt at least three Cinereous Vultures were observed; probably migrating birds. In the south of Mangistau Region, on Kaplankyr "Chink", four Egyptian Vultures were accounted. Nesting of this species in this area is highly likely, although is not yet confirmed. Nesting sites of vultures were found only at the territory of the Reserve: for the first time it was confirmed the nesting of four pairs of Cinereous Vulture (in previous years only 2-3 occupied nests were observed) **(photo 2, 3)** and in 2016 - two probable nesting sites of Egyptian Vulture.

On 28 April 2018, Russian photographers Polonsky E.V. and Chernyshev I.A. observed a group of 7 Griffon Vultures in the northern part of the reserve: at the same time, near the sighting place, no animal remains were found (anecdotal evidence) **(photo 10)**.

During the use of the feeding stations, several thousands of photographs were obtained from camera traps. The majority of the photographs were informative and showed the presence of the birds and mammals. Among them, there were multiple photographs of Egyptian Vulture, as well as Cinereous Vulture and Griffon Vulture. The number of different species of vultures observed at the feeding stations in 2016 and in 2018 are presented in Table 1.



Locations of the feeding station, nests of vultures within the territory of the Ustyurt State Nature Reserve in 2018.

Table 1: Attendance of vulture species at the feeding stations on the territory of the Ustyurt State Nature Reserve in 2016 and 2018.

Species of vultures observed at the feeding stations	Feeding station 1 Atzhol		Feeding station 2 Ball concretions		Feeding station 3 Zhaman Kenderly	
	No. days *	No. Ind.**	No. days	No. Ind.	No. days	No. Ind.
	2016/ 2018	2016/ 2018	2016/ 2018	2016/ 2018	2016/ 2018	2016/ 2018
Neophron percnopterus	56/13	2/2	16/31	2/1	5/14	1/3
Aegypius monachus	2/-	1/-	-/-	-/-	-/1	-/3
Gyps fulvus	4/-	1/-	-/1	-/1	-/-	-/-

*Total number of days for each species present at the feeding station for the entire period of observation.

** Maximum number of individuals of the each species simultaneously captured in the frame of the camera trap.

This shows that in 2016 and in 2018, the presence of three species of vultures were confirmed by the camera trapping.

Egyptian Vulture

Egyptian Vulture was the species that most frequently attended the feeding stations both in 2016 and in 2018 **(photo 4, 5, 6)**. Previously, we estimated the number of this species within the Ustyurt Reserve as 3-5 nesting pairs (Pestov at al., 2017). In 2018, Egyptian Vultures were observed at all three feeding stations. The maximum attendance was at the station № 2; single vultures attended for 31 days out of 133 days (a time interval between the appearance of the first Egyptian Vulture and last one at the station). This accounts for 27% of the observation period. The maximum number of birds in the frame was three (two adults and one juvenile and they were observed at station № 3. The birds attended exclusively during the daytime between 05:41 a.m. and 08:42 p.m. The maximum staying in one day was about 2 hours and forty minutes (on 01.09.18 two adult birds and juvenile bird jointly attended the station between 08:57 a.m. till 11:36 a.m. with two breaks of 10-15 minutes). In the majority of cases, adult birds attended the station for 10-20 minutes. The first appearance of the Egyptian Vulture was on 25.04.18 and the last one on 06.09.18. It is worth mentioning that Egyptian Vultures are migrating birds and leave the nesting sites in the autumn (Dementyev, 1951; Gavrin at el, 1962). The total attendance of the Egyptian Vulture at all feeding stations in 2018 was 58 camera trap/days for the entire presence of the species at feeding stations (44%). At all stations, at least two adults and two juveniles were present.

Cinereous Vulture

In 2016, one Cinereous Vulture was observed at the station №1, when it attended the station twice during the day hours. We obtained nearly 70 photographs of the bird at the station; however, none of them showed the vulture eating offal. This low attendance at the station by the vulture (2 days out of 210 days of observation- which is 1% of the observation period), is probably related to the narrow feeding

preferences. Unlike Egyptian Vultures and Griffon Vultures, Cinereous Vultures prefer meat and skin of dead animals (Dementyev, 1951).

From April to October 2018, Cinereous Vulture failed to appear at any of the stations, despite the presence of four nesting pairs within the Ustyurt Reserve. The last portion of offal at station № 3 was provided on 15.11.18 and also contained a cow's embryo 80 cm. long. This feed attracted one Cinereous Vulture on 21.11.18 at 12:48 p.m. followed by another bird four minutes later. Both birds stayed at the station until 02:04 pm. They actively fed on the embryo and sometimes fought over the feed **(photo 7, 8)**. The third vulture was also noted approaching although it did not stay. The total attendance of the Cinereous Vulture at the feeding stations in 2018 was less than 0.5 % (1 day out of 220 days of the observation). One more Cinereous Vulture was observed for 25 minutes **(photo 9)**, on 16 November 2018 feeding at Ustyurt Urial remains outside of the feeding station.

Griffon Vulture

In 2016, a Griffon Vulture was photographed at the station № 1 during the day hours over four days (near 2% of total observation period). The photographs showed the vulture eating offal (Pestov et al., 2017). In 2018, the vulture was observed only once on 7 June from 12:17 am until 12:23 am at the station № 2 **(photo 11)**. The bird did not feed on offal. Fairly low attendance of the feeding stations by Griffon Vultures was broadly in line with its status of rare, vagrant and non-breeding species in this area.

Aside from vultures, camera traps captured another two bird species attracted by the feed: Steppe Eagle (*Aquila nipalensis*) **(photo 12)** – 1 ind. in the frame was captured on one occasion at the feeding station № 1 and Raven (*Corvus corax*) – up to 7 of these birds in the frame at all feeding stations. Golden Eagle (*Aquila chrysaetos*) was not registered on the feeding sites during observation period, although this bird is a breeding species for the territory of the Ustyurt Reserve. Obviously, this species with a wide food spectrum finds enough live prey in the warm season and does not need to feed on offal. However, a Golden Eagle was captured on November 15 and 16, 2018 on the camera trap set up on Ustyurt Urial remains outside of the feeding station **(photo 13)**. Probably, as in the case with Cinereous Vulture, only relatively whole and fresh carcasses of ungulates attract Golden Eagle. Among mammals recorded at the feeding sites were: Wolf (*Canis lupus*) (1–2 individuals in the frame) **(photo 14)**, Red Fox (*Vulpes vulpes karagan*) (1–2 in the frame), Caracal (*Caracal caracal*) (1 in the frame) **(photo 15)**, Wild Cat (*Felis silvestris lybica*) (1 in the frame), Brandt's Hedgehog (*Paraechinus hypomelas*) (1–2 in the frame), Long-Eared Hedgehog (*Hemiechinus auritus*) (1 in the frame), Tolai Hare (*Lepus tolai*) (1 in the frame), Yellow Ground Squirrel (*Spermophilus fulvus*) (1 in the frame), Goitered Gazelle (*Gazella subgutturosa*) (1-2 in the frame) and Ustyurt Urial (*Ovis vignei arkal*) (1–4 in the frame).

In 2018, Steppe Polecat (*Mustela eversmanni)* (1 in the frame) was registered on one of the feeding sites; this species was known previously for only one reliable finding on the territory of the Reserve. It is obvious that most mammals were attracted by the smell of offal or were at the feeding stations by accident. Feeding on offal was observed only for the wolf and foxes.

Data on the Caracal obtained in 2018 are of considerable interest, earlier this animal was recorded on the territory of the Ustyurt Reserve only on a few occasions. In 2016, Caracal was captured only once on one of the feeding stations in the nighttime, in 2018 Caracal was registered on all three feeding stations both in the night and during the daytime during the course of 14 days, with at least two different adults. Most likely, these observations indirectly indicating a possible increase in the number of this species due to favorable weather conditions in the spring-summer period of 2016 and 2017, when relatively heavy rainfall caused a good food supply for herbivorous animals, including rodents and hares, which are primary prey for Caracal.

However, the most unexpected and significant result of our project was the capturing of the Persian Leopard (*Panthera pardus saxicolor*) with camera traps on the territory of the Ustyurt Reserve. The Persian Leopard was assessed as Endangered on the IUCN Red List in 2008 (Khorozyan et al. 2008).

According to experts, until the end of the 20th century, the leopard had never been observed in Kazakhstan (Heptner, Sludsky, 1972; Sludsky et al., 1982). Only in the last two decades, three reliable incidents of illegal killing of this species became known: the first incident occurred in 2000 in Zhambyl region (Shakula, 2004); and two more leopards were killed in Mangystau region in 2007 and 2015 (Plakhov et al., 2016).

In the evening of September 29, 2018, the presence of Persian Leopard in the Ustyurt Reserve was registered for the first time. On November 11, 2018, the leopard was captured again at the same feeding station in the nighttime **(photo 16)**. For the third time, Persian Leopard was recorded on December 7, 2018, in the daytime at another feeding station (Pestov et al., 2019) **(photo 17)**.

When the leopard visited the feeding sites, there were camel bone remains only, with no nutritional value, but still acting as a long-term odor bait. Most likely, it was the same leopard- adult male, and on the second and third occasions, this is clearly confirmed by matching patterns in the leopard's coat. Three camera trap records over a period of 70 days in the Ustyurt Reserve allow us to hope that the leopard will remain in the area. Habitat conditions are close to optimal: this area has little human disturbance, its relief provides good cover and within a radius of several kilometers, there are springs with reed beds.

Leopards are likely to periodically migrate from neighboring Turkmenistan (Geptner, Sludsky, 1972; Lukarevsky, 2001; Red Book of Turkmenistan, 2011). In 1989, some leopard tracks were spotted in the Kulansai gorge at the Kara-Bogaz-Gol bay in northwestern Turkmenistan (Lukarevsky, 2001). This site in Turkmenistan is the closest to the place of leopard observation in the Ustyurt Reserve (around 170 km). Based on the data of typical individual territory sizes that leopards occupy in Turkmenistan, 1-2 adult males and several females can live in the Ustyurt Reserve in the future (Lukarevsky, 2001).

The appearance of the leopard in Mangystau provides additional arguments in favor of adopting measures to preserve all the biological and landscape diversity of the Ustyurt Plateau. It is evident that sustainable conservation of all components of the

ecosystem would allow protecting of rare native species, including vultures and the leopard. We propose to increase the buffer zone of the Reserve up to 10 km and to establish a new protected area in the South Ustyurt, including the Kaplankyr “Chink”, near the border of Kazakhstan with Turkmenistan and Uzbekistan. Relevant proposals were submitted to the Committee of Forestry and Fauna of the Ministry of Agriculture of the Republic of Kazakhstan (RoK).

The leopard currently is not listed in the Red Book of the RoK (2010). With the support of the Central Asian Desert Initiative (CADI) project (http://cadi.uni-greifswald.de/ru/start-2/), we have already developed a biological justification for including the Persian Leopard in the Red Book of RoK. At present, an Action Plan on Persian Leopard in Kazakhstan is being prepared. Both documents will be submitted to the Government of Kazakhstan in the near future.

The project on monitoring of vulture supplemental feeding stations and assessment of vulture population status in Mangistau Region was successfully completed in 2018 and the previously set objectives have generally been fulfilled. In the future, the range of activities of our project will be expanded, we are planning to continue the monitoring of rare birds of prey and mammals listed in the Red Book of RoK and IUCN.

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Photo 1. Project participants are setting up a feeding station №1 on 10.04.2018. ©A Mukhashov.

Photo 2. Untypical location of Cinereous Vulture nest in a niche on the top of the cliff in Kokusem area, 08.04.2018. ©M Pestov.

Photo 3. Untypical location of Cinereous Vulture (*Aegypius monachus*) nest in a niche on the top of the cliff in Kokusem area, 08.04.2018. ©M Pestov.

Photo 4. Adult Egyptian Vulture (*Neophron percnopterus*) on the feeding-station № 2 on 11.07.2018. Photo from the camera trap set up by the authors.

Photo 5. The young vulture at the age of 2-3 years on the feeding-station №1 on 21.05.2018. Photo from the camera trap set up by the authors.

Photo 6. The Egyptian Vultures (a pair of adults and the juvenile) on the feeding-station № 3 on 22.11.2018. Photo from the camera trap set up by the authors.

Photo 7. Pair of the Cinereous Vulture on the feeding station №3 on 22.11.2018. Photo from the camera trap set up by the authors.

Photo 8. The conflict over pray between two Cinereous Vultures on the feeding station № 3 on 22.11.2018. Photo from the camera trap set up by the authors.

Photo 9. Cinereous Vulture and Ravens (*Corvus corax*) on the remains of the Ustyurt urial outside the stationary feeding station on 16.11.2018. Photo from the camera trap set up by the authors.

Photo 10. Griffon Vultures (*Gyps fulvus*) at Tabanata area in the northern part of the Ustyurt Reserve on 28.04.2018. © E Polonsky.

Photo 11. Griffon Vulture and the Raven on the feeding station № 2 on 07.06.2018. Photo from the camera trap set up by the authors.

Photo 12. Steppe Eagle (*Aquila nipalensis*) and the Raven on the feeding station № 1 on 07.09.2018 г. Photo from the camera trap set up by the authors.

Photo 13. Golden Eagle (*Aquila chrysaetos*) and the Raven on the remains of the Ustyurt urial outside the stationary feeding station on 16.11.2018. Photo from the camera trap set up by the authors.

Photo 14. Wolf (*Canis lupus*) on the feeding station № 3 on 25.11.2018. Photo from the camera trap set up by the authors.

Photo 15. Caracal (*Caracal caracal*) on the feeding station № 2 on 22.11.2018. Photo from the camera trap set up by the authors.

Photo 16. Persian leopard (*Panthera pardus saxicolor*) on one of the feeding stations at the territory of the Ustyurt Reserve on 06.11.2018. Photo from the camera trap set up by the authors.

Photo 17. Persian leopard on one of the feeding stations at the territory of the Ustyurt Reserve on 07.12.2018. Photo from the camera trap set up by the authors.