

South Ustyurt National Nature Park Mam: Biodiversity, Ecology, And Conservation Issues

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Abstract

This article analyzes the fauna of mammals found within the South Ustyurt National Nature Park, their ecological characteristics, territorial distribution, and conservation status. Research results indicate the presence of mammals belonging to various trophic groups adapted to desert and semi-desert conditions in the region. It is established that the decline in the number of certain species is associated with anthropogenic factors.

Keywords: Mammals, biodiversity, South Ustyurt National Nature Park, desert ecosystem, protection, ecology.

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1. Introduction

Ustyurt is a plateau located in the Mangyshlak and Karabogha gulfs to the west, and between the Aral Sea and the Amu Darya delta to the east. The Republic of Kazakhstan, the Republic of Uzbekistan, and the Republic of Turkmenistan are located on the territory of three countries. Physiographically, the Ustyurt Desert is part of the Mangyshlak-Ustyurt Autonomous Region.

The Uzbek part of the plateau is known as Karakalpak

Ustyurt and is one of the largest natural territories of the Republic of Karakalpakstan - the Autonomous Republic of Uzbekistan.

The Ustyurt Plateau is intersected by steep ridges on all sides. The highest points of Ustyurt do not exceed 330 meters, and the average height of the plateau does not exceed 200 meters.

Ustyurt is divided into North-Ustyurt, Central-Ustyurt, and South-Ustyurt districts. "South Ustyurt" is located in

the South Ustyurt district, and Uval is located south of Karabaur.

Ustyurt is located between the Caspian Sea and the Aral Sea and is a high plateau with absolute elevations of 160–300 m. Above sea level, it is bordered on all sides by uneven ravines (chins) at an altitude of 190–256 m. Northern Ustyurt borders the Caspian Lowland, the Amu Darya Delta to the west, and the Sary-Kamysh coast to the south; the Aral Sea lowland to the east. The total area of Ustyurt is 21.2 million hectares, of which the Republic of Karakalpakstan accounts for 7.2 million hectares. Among the deserts of Central Asia, the part of Ustyurt in

the Republic of Karakalpakstan is one of the least studied areas.

The other side includes the Barsakelmes depression, whose surface is very diverse. The canyons and patches of the gypsum-clay desert slowly descend toward Barsa Kelmes, a salty depression and a glittering world of salt. This is a depression characteristic of Ustyurt.

In the eastern part, there is the Ustyurt Plain, which flows into the Aral Sea with a permanent channel. The southern part of the Chink was connected to the cultural oases in the lower reaches of the Amu Darya River.

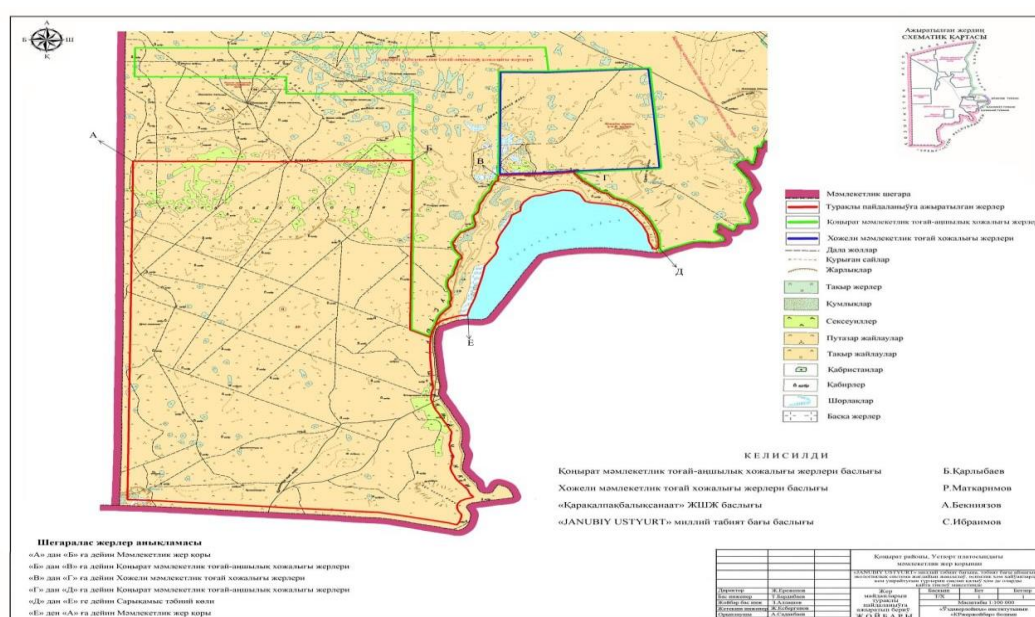


Figure 1 Map diagram of the South Ustyurt National Nature Park

The "South Ustyurt" National Nature Park is located in the southern part of the Ustyurt Plateau, in the western part of the Sarykamysh basin, in the Kaplankir depression to the south, and in the Assake-audan depression to the north.

This autumn census of the animal world was carried out using 2 vehicles with the number of animals encountered along the designated route. Additionally, methods for identifying animal tracks by walking were used in the natural park at points designated for counting: the vicinity of Lake Sarykamysh, Kurykol, Kaplankir, and Asseke-audan. During the count, "Canon," "Nikon" P1000 cameras, "Podzornoe," "Nikon" binoculars, and optical instruments of the observation tube were used.

Photo traps were also installed at Lake Sarykamysh in

the national nature park, around the Western Chink, and in the areas of Dry Lake, Kulontakir, and Kaplankir, and the data obtained from them was analyzed.

The counting work was carried out in the designated areas during the day and night using a light instrument. Scientific research was conducted during 2021–2025 based on seasonal expeditions in the reserve, recreational, and economic use zones of the South Ustyurt National Nature Park. During the observation and registration of animal species, methods such as visual observation via the route method, tracks, and the installation of camera traps were used.

During the research, 14 species of mammals were recorded using visual observation and camera traps (Table 1).

Table 1

Animal species registered on the territory of the South Ustyurt National Nature Park

№	National and scientific names of animal species	Number of years				
		2021	2022	2023	2024	2025
1	<i>Hemiechinus auritus</i>				3	5
2	<i>Hemiechinus hypomelas</i>		3			
3	<i>Lepus tolai</i>	6	13	18	38	61
4	<i>Canis lupus</i>	3	7	9	13	15
5	<i>Vulpes corsac</i>		6	7	5	8
6	<i>Vulpes vulpes</i>	8	10	8	6	11
7	<i>Mellivora capensis</i>		1	3	4	2
8	<i>Felis chaus</i>				1	2
9	<i>Felis libyca</i>			3	2	3
10	<i>Caracal caracal</i>		1		3	3
11	<i>Sus scrofa</i>	6	4	15	19	16
12	<i>Ovis vignei</i>	27	48	58	60	63
13	<i>Gazella subgutturosa</i>	458	504	541	547	564
14	<i>Equus hemionus</i>	37	53	69	73	81

As a result of observations conducted within the territory of the South Ustyurt National Nature Park during 2021–2025, the number and dynamics of several mammal species were identified. The results of the analysis show that different changes in the number of animal species have been observed over the years. In some species, a consistent increase in number was noted, while in others, quantitative fluctuations were observed.

During the analyzed period, the population of the eared hedgehog (*Hemiechinus auritus*) was 3 in 2021 and 5 in 2022, with no data available for this species in subsequent years. For the long-necked hedgehog (*Hemiechinus hypomelas*), 3 individuals were recorded in 2021, and no data on its population have been provided in subsequent years. This situation does not directly indicate a decrease in the population of these species, but may be due to the availability of observation or census

data.

A clear growth trend in the population of the sand hare (*Lepus tolai*) was observed during 2021–2025. In 2021, 6 individuals were recorded, in 2022 there were 13, in 2023 there were 18, in 2024 there were 38, and in 2025 there were 61. That is, over the past five years, the population of sand hares has increased nearly tenfold. This may be due to relatively favorable habitat conditions in the area or an improved food base for the species.

The wolf (*Canis lupus*) population has also been steadily increasing over the years. 3 individuals were recorded in 2021, 7 in 2022, 9 in 2023, 13 in 2024, and 15 in 2025. Overall, between 2021 and 2025, the wolf population increased fivefold. Such a change can be explained by the impact of the predator's food base, access to the territory, and the protection regime.

In the number of wolves (*Vulpes corsac*), there was no steady increase, but rather fluctuation. While 6 individuals were recorded in 2021, 7 in 2022, the population decreased to 5 in 2023, increased to 8 in 2024, and reached 6 in 2025. Consequently, the population of this species has been relatively variable over the years.

The population of the fox (*Vulpes vulpes*) is also variable. 8 individuals were recorded in 2021, 10 in 2022, 8 in 2023, 6 in 2024, and 11 in 2025. Although the lowest figure was observed in 2024, a repeated increase in the number was recorded in 2025.

An overall growth trend in the population of the Indian honey bee (*Mellivora capensis*) was observed between 2021 and 2025. The population increased from 1 individual in 2021 to 8 in 2025. A particularly significant increase was observed in 2024–2025. However, due to the relatively small population size of this species, long-term monitoring data are required to assess its population status.

In 2021, 1 individual, in 2022, 2 individuals, and in 2023, 9 individuals were recorded for the forest cat (*Felis chaus*). Data for 2024–2025 are not provided in the table. The sharp increase in 2023 may be related to the frequency of this species' registration or changes in habitat conditions.

The population of the desert cat (*Felis libyca*) was 3, 2, and 3 individuals in 2021–2023, respectively. The indicators for this species are relatively stable, ranging from 2 to 3 individuals.

The Turkmen caracal (*Caracal caracal*) was recorded with 1 individual in 2021, 3 in 2022, and 3 in 2023. Data for subsequent years are not available. Since this species has been recorded in small numbers, it is important to conduct special monitoring to assess its population status.

Variable dynamics were also observed in the number of wild boars (*Sus scrofa*). While 6 individuals were recorded in 2021, they decreased to 4 in 2022, increased to 15 in 2023, to 19 in 2024, and reached 16 in 2025. A significant increase in numbers was observed between 2022 and 2024, followed by a slight decrease in 2025.

One of the most significant and relatively stable increases in the region was recorded in the population of the Ustyurt sheep (*Ovis vignei*). Its number increased from 27 in 2021 to 48 in 2022, 58 in 2023, 60 in 2024,

and 63 in 2025. In total, over five years, the number has increased more than 2.3 times. This situation may indicate the preservation of the Ustyurt sheep in the protected area and the ongoing process of population recovery.

The highest number was recorded for the gazelle (*Gazella subgutturosa*). In 2021, 458 individuals were counted, in 2022 - 504, in 2023 - 541, in 2024 - 547, and in 2025 - 564. Thus, between 2021 and 2025, the goitered gazelle population increased by 106, which is approximately 23.1%. The steady growth over the years indicates that this area is an important habitat and breeding ground for the gazelle.

The Turkmen kulan (*Equus hemionus*) also showed a consistent growth trend during the study period. In 2021, 37 individuals were recorded, in 2022 - 53, in 2023 - 69, in 2024 - 73, and in 2025 - 81. As a result, over five years, the number of kulans increased by 44, or approximately 119%, i.e., more than doubled.

Overall, positive population dynamics were observed for the majority of animals registered in the South Ustyurt National Nature Park during 2021–2025. In particular, there has been a steady increase in the number of hares, wolves, Ustyurt sheep, goitered gazelles, and Turkmen kulan. This trend may indicate the protection of natural ecosystems in the region, the limitation of anthropogenic pressure, the availability of food resources, and the formation of relatively favorable conditions for animal reproduction.

At the same time, year-to-year fluctuations were observed in species such as the kestrel and fox. The absence of data on hedgehogs, the forest cat, and the Turkmen black grouse in certain years is insufficient to conclude that their numbers have decreased. In this case, it is necessary to take into account the scope of observation, accounting methodology, and monitoring frequency. In particular, the positive dynamics in the populations of the goitered gazelle and the Turkmen kulan indicate the high ecological significance of the Southern Ustyurt region for the conservation and restoration of large ungulates. Therefore, it is important to continue regular monitoring of these species and to protect their migration routes, food base, and breeding grounds.

The creation of the South Ustyurt National Nature Park serves to protect vertebrates, including mammals, from anthropogenic pressure. An example of this is the

increase in the number of species in the table data over the years. However, in recent years, global climate change and a decrease in precipitation have led to a decrease in vegetation cover in the region, which in turn creates disadvantages for herbivorous species such as the gazelle, kulan, and Ustyurt sheep. Therefore, we consider the creation of artificial water sources on the territory of the national natural park to be extremely important for biodiversity.

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