

Taxonomic Analysis and Ecology of the Mammalian Fauna Hunted in South Western Kyzylkum

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Abstract

The species composition, leading order, family spectrum, and taxonomic composition of mammals hunted in the South-West Kyzylkum and adjacent areas were analyzed. Various biotic, abiotic, and anthropogenic factors have a negative impact on hunted mammals. In particular, the widespread and sometimes irrational use of the mammal world for hunting purposes, and the existing problems in the field of hunting farms, in most cases lead to the extinction or reduction of species, sometimes they become rare or endangered species.

Keywords: Biocenosis, Biotope, Adaptation, Niche, Ecological Factors, Biotope Distribution

1. Introduction

Today, special attention is paid to the issue of protecting and rationally using the world of mammals, which is an important component of global biodiversity. Accordingly, the study of these issues, the development of appropriate recommendations for their resolution, the protection of mammals, their sustainable use, the regulation of hunting farms, and the improvement of the economic and social well-being of the population are of theoretical and practical importance. Scientific research aimed at studying and substantiating the fauna, bioecological characteristics, and sustainable use of mammals hunted in the South-Western Kyzylkum, as well as identifying and assessing the impact of anthropogenic factors on hunting objects and their habitats, is of great importance. First, the creation of a steppe ecosystem due to the use of lands used for cultivation has led to a change in the composition of plant and animal species in the corresponding regions, and secondly, by increasing the number of irrigation networks for these cultivated fields, the groundwater level around the newly opened fields has risen, which has led to the emergence of new water bodies in the regions due to increased soil erosion. The impact of such changes on nature is very diverse, and with each change, the formation of biocenoses that were previously not characteristic of this area is observed. Thickets of trees, shrubs, and grasses in the wetlands along the Dengizkul, Zamobobo, Oyok-og'itma, Karakir lakes, Zikri, Khadicha, Devkhona, Shurkul, Kuyimozar, Tudakul reservoirs, and the Amu Bukhara-1, Amu Bukhara-2, and Amu Karakul canals have

led to an increase in prey mammals.

2. Material and Methodology

In order to determine the species composition of the mammal fauna hunted in the South-Western Kyzylkum and adjacent areas, the main part of the research was carried out in the territories of Bukhara, Navoi and Kashkadarya regions (all districts of Bukhara region, Mubarak, Kasbi and Kyzyltepa districts, Todakol, Dengizkol, Oyokgutma and Karakir lakes, Zafarabad, Jongeldi, Kandym, Oyokgujumli) in 2010-2025. In various natural biotopes - desert, semi-desert, foothills, natural water bodies, groves, partially developed areas, in stationary and route methods, a total of 64 land censuses were conducted in different seasons of the year (spring, summer, autumn and winter) [1,2].

The results of the census of the number of hunted mammals were extrapolated to an area of 10 hectares, and the density of the hunted mammal community was determined using the following formula:

$$D = \frac{n}{2 \cdot L \cdot W}$$

Where D is the density; n is the number of birds encountered; L is the length of the route; W is the width of the route, or the distance from the route axis to the border of the corridor where the count was made. The formula uses a multiplier of 2 to account for birds on the left and right sides of the route axis, but the results of our

calculations were taken from one side of the route axis due to the specificity of the lakes [3,4].

During the research, binoculars (Swarovski SLC 15x56) and an electronic rangefinder (Helia RFM 7x25) were used as remote monitoring tools for hunting mammals, a photo trap (Bushnell 119717CW), a caliper (error 0.002 mm) and an electronic scale (accuracy 0.01 g) were used to obtain external dimensions, a Canon camera (lens 400 mm) was used to record the conditions of hunting mammals, and the Locus Pro android application was used to determine the direction of routes, calculate distances, and determine coordinates [5].

During the count, it is necessary to move along the route, slowly, without making noise, stopping from time to time and observing the surroundings. Accordingly, the number of mammals to be hunted during the count is recorded in the diary. The length of the routes is up to 1-5 km along the shore of lakes belonging to hunting farms and other lakes, the route width is up to 25-50 meters, in desert biocenoses the route length is up to 1-20 km, the route width is 50-100 meters. The count was carried out during the open air from 6.00 to 10.00 and from 17.00 to 20.00 [6].

3. Literature Analysis

Studies on the biology, ecology and protection of some animal species allowed for hunting in Uzbekistan G.I. Ishunin, X.S. Saliqbaev 1963, 1984, D.Yu. Kashkarov 1965, T.Z. Zakhidov 1971, M.G. Mitropolsky, O.V. Mitropolsky, V.O. Sudarev 2011, 2014, G.F. Goncharov 2015, A.A. Atakhodjaev, V.O. Sudarev 2017, Ya.I. Ametov 2018, R.R. Rakhmonov, Rayimov A.R 2019, 2024 and others.

4. Results and Discussion

Based on the analysis of the field materials we collected, it was determined that 10 species of mammals from 4 orders (Lagomorpha, Rodentia, Carnivora, Artiodactyla), 8 families (Leporidae, Hystricidae, Cricetidae, Myocastoridae, Canidae, Felidae, Mustelidae, Suidae) are found in South-Western Kyzylkum (Table 1).

The fauna of mammals hunted in South-Western Kyzylkum is divided into 2 ecological groups depending on their habitat conditions: the ecological group of terrestrial mammals and the ecological group of aquatic mammals. Of the mammals hunted in South-Western Kyzylkum, 8 species are officially hunted, and 2 species are not officially hunted. (Table. 1).

T/r	Name of order, family and species	Officially hunted species	Hunted mammals that live on land.	Hunted aquatic mammals	Number of species per unit area
Kingdom. Metazoa					
Subkingdom. Eumetazoa					
Phylum. Chordata					
Subphylum. Craniata					
Superclass. Tetrapoda					
Class. Mammalia					
Order. Lagomorpha					
Family. Leporidae					
1	Lepus tolai	O	+		JK
Order . Rodentia					
Family. Hystricidae					
2	Hystrix indica	ON	+		N
Family. Cricetidae					
3	Ondatra zibethicus	O		+	K
Family. Myocastoridae					
4	Myocastor coypus	O		+	N
Order. Carnivora					
Family. Canidae					
5	Vulpes vulpes	O	+		K
6	Canis lupus	ON	+		N
7	Canis aureus	O	+		K
Family. Felidae					

8	Felis chaus	O	+		K
Family. Mustelidae					
9	Meles meles	O	+		K
Order. Artiodactyla					
Family. Suidae					
10	Sus scrofa	O	+		K

Note: O- officially hunted species; ON- officially not hunted species;

Table 1: Mammalian Fauna Hunted In Southwestern Kyzylkum and Ecological Groups Depending on Habitat

The number (density) of each species per unit area was determined in the desert, gallery forest, watery areas in the South-West Kyzylkum and adjacent areas. The species were divided into the following groups according to their number (density, abundance) per unit area:

Very abundant species – (JK) more than 100 per 10 ha;

Abundant species – (K) from 10 to 100 per 10 ha;

Rare species – (O) from 1 to 10 per 10 ha;

Non-periodic species – N

The ecological group of terrestrial prey mammals includes 8 species of mammals, and the ecological group of aquatic prey mam-

mals includes 2 species. (Table 1).

In the South-West Kyzylkum and adjacent areas, the ecological group of terrestrial mammals includes many species, which are adapted to live on all types of land, in forests, shrubby deserts and open areas. *Sus scrofa* is adapted to walking on hard ground, because its toes are shortened and its support surface is small. The ecological group of aquatic mammals in the South-West Kyzylkum and adjacent areas includes *Ondatra zibethica*, *Myocastor coypus*, among mammals, morphologically less adapted to life in water. The food of animals belonging to this group is fish and amphibians.

Name of order	Number of families	(%)	Number of species	(%)
Lagomorpha	1	12,5	1	10
Rodentia	3	37,5	3	30
Carnivora	3	37,5	5	50
Artio	1	12,5	1	10
Total	8	100	10	100

Table 2: The Spectrum of Leading Orders and Families of Mammals Hunted in the South-West Kyzylkum And Adjacent Areas

According to the results obtained, out of 10 species of hunted mammals identified in the South-West Kyzylkum and adjacent areas, the most numerous species in terms of species composition belong to the Carnivora order (5 species (50%), the Rodentia order (30%), the Lagomorpha order (1 species (10%), and the Artio order (1 species (10%)). Table. 2

Phylum	Class	Order.	Family.	Species
Chordata	Mammalia	Lagomorpha	Leporidae	Lepus tolai
		Rodentia	Hystricidae	Hystrix indica
		Carnivora	Canidae	Vulpes vulpes
			Felidae	Felis chaus
			Mustelidae	Meles meles
		Artiodactyla	Suidae	Sus scrofa

Table 3: Taxonomic Composition of Hunted Mammals in the South-West Kyzylkum and Adjacent Areas

Of the mammals hunted in the South-West Kyzylkum and adjacent areas, there are 5 species of the Carnivora order belonging to 3 families (Canidae, Felidae, Mustelidae), 3 species of the Rodentia order belonging to 3 families (Hystricidae, Cricetidae, Myocasto-

ridae), 1 species of the Lagomorpha order belonging to 1 family (Leporidae), and 1 species of the Artiodactyla order belonging to 1 family (Suidae). (Table 3) *Ondatra zibethicus* is distributed in reedy water bodies, lakes, and ditches in the South-West Kyzyl-

kum and adjacent areas. Sometimes, in search of food, it enters the habitats of the Common Fox - *Vulpes vulpes*, Chiyabori - *Canis aureus*, and wild boars into agrocenoses. This distribution makes it difficult to organize and control hunting for these species, and they are also more likely to be illegally hunted than other species. In the 107 km stretch of the Amu-Bukhara Canal, in the reedbeds and ponds formed along the canal, species such as *Lepus*, *Vulpes vulpes*, *Canis aureus*, *Ondatra zibethicus*, *Sus scrofa*, *Felis chaus* are recorded. In the southwestern Kyzylkum and adjacent areas, the number of mammals hunted and the number of fur-bearing species (*Sus scrofa*, *Meles meles*, *Lepus tolai*, *Vulpes vulpes*, *Canis aureus*, *Ondatra zibethicus*) whose numbers are decreasing, the acclimatization of promising species, captive breeding, implementation of biotechnical measures, and the establishment of industrial hunting will increase the diversity of hunting objects and the economic efficiency of hunting farms.

In the desert and semi-desert biocenoses of the South-Western Kyzylkum and adjacent areas, periodic changes in the number of populations of hunted mammals are associated with the change of seasons; non-periodic changes in the number of populations of hunted mammals are observed due to natural adverse environmental conditions - a decrease in food sources due to low precipitation, severe winter frosts, and high summer temperatures.

Another factor that has led to the decline in the number of the *Lepus tolai* in the desert biocenoses of southwestern Kyzylkum and adjacent areas is the degradation of its habitat, namely the harvesting of *Haloxylon*, *Calligonum*, *Tamarix*, *Alhagi* and other similar plants as fuel and fodder, the sharp decrease in its sources of food and shelter due to the increase in the number of ungulates, and other factors.

In desert biocenoses, the increase in the number of foxes and jackals, which are considered natural enemies of the *Lepus tolai*, leads to an aggravation of biotic relationships of the "predator-prey" type, while the increase in livestock ungulates in these

places causes trophic relationships to manifest themselves in the form of competition. Both situations are reflected in a decrease in the number of *tolai*. *Vulpes vulpes*, *Canis aureus*, *Canis lupus* eat sick, exhausted, old animals as prey, reducing the spread of various diseases in nature, and controlling the number and quality of the population in the natural environment.

5. Conclusion

Conservation of biodiversity, distribution, number, bioecological characteristics, reduction of the impact of anthropogenic factors on mammals hunted in the South-West Kyzylkum and adjacent areas, improvement of measures for the protection and sustainable use of species. Creation of a cadastral information database to monitor the status of the population of hunted mammals in the South-Western Kyzylkum and adjacent areas.

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