

## The role of Shahdag National Park in the preservation of mammal biodiversity in Azerbaijan

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### Abstract

The article considers the mammal biodiversity of Shahdag National Park of Azerbaijan. The park was established in 2006. It is situated in the north part of the country, on the southern slope of Greater Caucasus and close to the border with Georgia and Russia. The whole territory of the park is reached 130,508.1 ha (1305.081 km<sup>2</sup>). It is the largest national park of the country for its territory and composition of the flora and fauna. It is located on the territory of six districts of Azerbaijan: Ismailli, Guba, Gusar, Gabala, Oguz and Shamakhi. 51 of 101 species of mammals inhabiting Azerbaijan can be found in the park and 18 of them are included in the Red Book of the Republic.

**Keywords:** mammal biodiversity, shahdag national park, Azerbaijan

### Introduction

Sustainable conservation of biological diversity is undoubtedly a universal guarantee of the existence of life on earth. Shahdag National Park has a wide variety of natural ecosystems ranging from lowland to mountain ridge of the Greater Caucasus. Taking into account the decrease in the number of several species of mammals, and in order to preserve the unique landscape and biological diversity in the region, the park was established in the territory of Ismailli and Pirgulu State Reserves. This park with other protected areas among the reserves, sanctuaries and monuments of nature that constitute state natural reserve fund, brings the region to the international standard of preservation of untouched nature.

### Materials and methods

The research was carried out in different parts of Shahdag National Park in 2012-2016 (15, 16). The objects of our research were mammals- the members of insectivores (*Eulipotyphla* or *Lipotyphla*), rodents (Rodentia), bats (Chiroptera) and artiodactyls (Artiodactyla). We carried out the field work in all altitudinal zones of Shahdag National Park (lowland, foothill, mountain, high altitude). This is one of the largest and most beautiful protected areas of the country. 127 samples of insectivores, belonging to 11 species, were captured and subjected to the appropriate treatment. Special families of moles and shrew were caught by using trap "Gero" in spring, summer and autumn. But the members of the family erinaceidae were caught by hands and observed day and night with routing method on predetermined transects. The captured live hedgehogs were weighed, after determining the mass and some exterior parameters they were released to nature [7].

The rodents are small mammals because of that they were caught with the help of different traps, live traps and with other methods. As a rule, traps "Gero" were set in advance, then the place was marked in the evening and was checked early in the morning. Sometimes when we were late to check it our research objects were attacked by their enemies, especially by predators, birds and mammals. The research was carried out in areal and routing way [4]. Methods used to catch rodents were chosen depending on research goal. The animal processing was

performed by the method of morphophysiological indicators [6, 12, 15].

Materials for bats were collected in pre-selected areas of Shahdag National Park, in addition the bats were caught in caves and outside the caves with standard method using mist nets with 6 meters length and 2.5 meters width (the size of cell 2x2cm). From 4 to 6 networks were usually used simultaneously overnight [2, 14, 15]. In order to detect the localization of bats and to identify species by acoustic signals ultrasonic detector D-100 (Pettersson Elektronik) was used. Besides bats were caught using mobile traps [3].

### Results and discussion

The mammalian fauna of Shahdag National Park is quite diverse and involves representatives of all orders of class Mammalia, including Artiodactyla. The fauna of rare species of these animals inhabiting Shahdag National Park is quite plentiful [13, 14]. Of the 101 mammal species identified in the country 51, in other words 51.51 % of the total number, live in the park and of those 18 species (31.3% of 51.51%) are under strict protection [17, 18]. In other words, strictly protected areas in the territory of the region studied, take 18.9% of the total number of mammal fauna of Azerbaijan.

Note that biological diversity of mammals can be evaluated at different taxonomic levels. And accordingly, are assessed not higher taxa: from kinds and families to classes. However, according to the zoological taxonomy animal species is the main systematic unit, hence the basic unit of biodiversity. Therefore, the most important task is to preserve the species of the theriofauna of the region.

Comparative analysis of the orders investigated on the landscapes of Shahdag National Park shows that rodents predominate in foothill, mountain and meadow landscapes, artiodactyls predominate on rocky and mountainous landscapes. Especially, 2015-2016 years showed the abundance of rodents. It seems, it is due to the ecological and trophic factors of external environment, as foods for rodents are rich in foothill, mountain and meadow landscapes. Moreover, good conditions allow rodents to multiply three times a year bringing 4-7 offspring each time. The temperature and feeding conditions in the high

slopes of the Greater Caucasus covered with snow are not favorable for small mammals, especially for rodents, that is why they multiply two times, rarely three times a year, but their offspring usually die due to harsh winter. For the number of mammal species listed in the Red Book of the Republic the order Carnivora (7 species) and the bats (4 species) rank first and second places, respectively, and they are followed by artiodactyls (3 species) and rodents (2 species). In recent years, various buildings constructed illegally in the territory of the national park have captured the biotopes. Surely, their food sources have also reduced. That is why the predators especially brown bears, wolves, jackals leaving the park in search of food attack the flocks of farm animals and humans.

For the number of protected species the bats rank second. These nocturnal mammals mainly inhabit the foothills and mountainous landscapes. According to some authors [8, 9, 14], bats are the sensitive indicators for the determination of biodiversity in the environment. They eat different pests, because of that are successfully used in the biological control of pests of agricultural and forestry sector [10, 11]. In addition to these, bats are the carriers of dangerous diseases of humans and animals. Etiological and morpho-ecological features of bats increase their role and value in natural and anthropogenic landscapes.

The park is populated with species like wolf, fox, ermine, badger, rabbit, mouse, gray hamster and other mammals that have ecological plasticity. Moreover, here is inhabited by highly specialized or mountain species – *Capra hircusaegagrus* (mainly found on the northern slopes of Shahdag National Park and is an ancestor of domestic goats), East Caucasian tur – *Capracylindricornis*, red deer – *Cervuselephus L*, Chamois – *Rupicaprarupicapra L*, brown bear – *Urcusarctos L*, ordinary

lynx – *Felis lynx L*, stone marten – *Martesfoina* and others. Currently, 18 rare and endangered species of mammals – bats - 4, carnivores-9, artiodactyls -3, rodents -2 species, have been taken under strict protection in the national park of the region (table 1). The list of rare species of mammals that show their rarity categories on a national and international scale of International Union for the Conservation of Nature suggests that the first category includes 2 species, the second 5 species, the third 8 species and finally the fourth category includes 2 species. The fifth category of rarity includes recovered species that do not have a risk of extinction in the area investigated (1 species- Indian porcupine) <sup>[1]</sup>. Below is a list of mammals of the park listed in the Red Book of Azerbaijan.

Table 1

1.	East Caucasian Tur	<i>Capra cylindricornis</i>
2.	Red deer	<i>Cervus elaphusL</i>
3.	Chamois	<i>Rupicapra rupicapra L</i>
4.	Brown bear	<i>Ursus arctos L.</i>
5.	Ordinary lynx	<i>Felis lynx L.</i>
6.	Eurasian otter	<i>Lutra lutra</i>
7.	Radde's shrew	<i>Sorex raddei</i>
8.	Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>
9.	Blasius's horseshoe bat	<i>Rhinolophus blasii</i>
10.	Bechstein's bat	<i>Myotis bechsteinii</i>
11.	Marbled polecat	<i>Vormela peregusna</i>
12.	European badger	<i>Melesmeles</i>
13.	Wildcat	<i>Felis silvestris</i>
14.	Stoat	<i>Mustela erminea</i>
15.	Caucasian mountain mouse	<i>Chioonmys gud</i>
16.	Indian porcupine	<i>Hystrixindica</i>
17.	Eurasian lynx	<i>Lynx lynx</i>
18.	Pine Marten	<i>Martesmartes</i>



Fig 1: The location of Shahdag National Park on a map of Azerbaijan

Therefore the role Shahdag National Park in the conservation of animal biodiversity, including rare and endangered mammals, is relatively high.

In conclusion, Shahdag National Park has all the necessary conditions to increase the number of rarely encountered species of mammals. The increase in the number of exotic mammals will attract the attention of tourists and can lead to the development of ecotourism in the country. For this it is necessary to strengthen the protection of the territory from poachers, and to create food sources for feeding during harsh winter. In addition

to the above, tourists visiting the park or local population should be educated on the protection of nature.

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