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Mechanisms Of Adaptation Of Small Mammals In Natural Biotes

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Annotation. The article assesses the adaptation mechanisms of small mammals in the natural biota of the Southern Aral Sea region to environmental conditions. Small mammals are an indicator species that respond with sensitivity to environmental factors (temperature, humidity, soil properties, anthropogenic factors). Depending on environmental factors, adaptation mechanisms are formed in their population.
Key words: adaptation, factor, biota temperature, humidity, soil properties, anthropogenic factors,

Currently, great attention is being paid to the problems of studying, preserving, and rationally using the populations of wild animals of the South Aral Sea region. The focus is on species that have important hunting and game significance for this region. Against this backdrop, gaps in the study of the ecology of small and medium-sized mammals are most clearly marked, whose importance in hunting farming is not so significant or sometimes underestimated. To date, the fauna of commercial hunting animals in the region has not been sufficiently studied. The last studies of the fauna of mammals were conducted at the end of the 90s. 20th Century.

One of the important scientific aspects of rodents can be used as a bioindicator in predicting possible phenomena in the formation of communities in natural biotopes that have undergone changes. It is considered a convenient object for scientific substantiation of changes in natural cenoses under the influence of exogenous factors [1]. Recreational impacts are weaker than other anthropogenic impacts and expand over time. One of the main features of recreational disruption of communities in natural biotopes is the persistence of edificators to their final stages and their strong influence on the components of other ecosystems [3].

The community structure is determined not only by the set of species, but also by their mutual territorial distribution along environmental gradients within the ecological niche. Assessment of the ecological location of a species in natural habitats presents certain difficulties.

It is known that various natural components of the environment (climate, rocks, relief, soil, plant and animal communities) are closely interconnected in ecosystems, and as a result of their interaction, they form natural territorial complexes (geosystems) of different levels. The main unit of natural-territorial complexes is the landscape. However, our scholars have interpreted this concept differently: for example, landscape as a general concept, as a regional unit, and as a typological concept [2].

Firstly, the landscape performs the function of a natural-territorial complex at any level. Secondly, landscape is understood as a unique individual and unique natural-territorial complex with a geographical term and a specific location on the map. Thirdly, geographically, the landscape is considered a natural cenosis, distinguished by territories with common features. In the scientific literature, a landscape is understood as a territory with a generalized relief, climate, soils, general history of development, a natural-territorial complex and boundaries of plant and animal communities and geosystems, generalizing typological natural components (V.C. Sung, M.N. Tam, 2000). In foreign literature, the general definition of a landscape is defined as a mosaic of interacting ecosystems that regularly repeat in space (V.C. Sung, M.N. Tam, 2000). Structurally similar landscapes are divided into types.

In the conditions of the lower reaches of the Amu Darya, rodents are distributed in specific biotopes in wooded and shrubby tugai forests located at the mouths of rivers, their canals, and collectors. The tugai is one of the landscape elements, and the fauna, characteristic only of this natural biocomplex, brings significant originality to the fauna of the lower reaches of the Amu Darya. 28 species have been recorded here, more than 1/3 of which are rodents. A large number of tamarisk sand mice and half-day gerbils (33.5% in the trap), house mice (42.5%). Spermophilus fulvus and a large sand mouse are found at the edge of the tugai forests, but their numbers are small. Among predators, the jackal belongs to many species, and in some places, closer to the delta, the reed cat is found [5,6].

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Of the Aral Sea 16 species of mammals were recorded in reed beds located around water bodies and on the shores. Among 5 species of rodents (ondatra, house mouse, flat-toothed rat, tamarisk sand mouse), house mouse dominates (60-80% of captured small rodents). The number of flat-toothed rats averages 10-15 individuals per hectare (in some places 30-50), and in well-preserved water bodies, there are 2 to 5 muskrats per hectare. The tamarisk and field sand mice make up 10-20% of the captured animals. Among ungulates, jackals and, in some places, badgers and wild boars are common. On the edges of the reeds, sometimes in significant numbers, we encounter rabbits (1-3 animals per 1 km) [4].

There are 31 species of mammals, including 11 species of rodents, 8 species of predators, and 6 species of bats. Among bats, Pipistrellus pipistrellus and Eptesicus serotinus are abundant. The hare is widespread. Among rodents, the dominant are the house mouse (50% in falling into a trap) and the tamarisk sand squirrel (35%). Along the banks of canals and collectors, the density of the flat-toothed rat is high, and at the edge of the delta, the half-day mouse and small jerboas are densely distributed [5,6].

The island sands of the lower reaches of the Amu Darya and its sandy edges differ significantly from deep sands, are distinguished by the peculiarity of plant groups, and the fauna complex has a large number of rodents. Of the 30 species of mammals, 16 are rodents, and 9 are predators. In light sandy soils, the background species of the plant world are psammophilic, the fauna consists of a large sand mouse and a half-day mouse, a thin-toed and yellow ground squirrel. Among the rodents caught in traps, 60% are midday gerbils, 26% are jerboas, 10% are tamarisk mice, and 4% are house mice. The density of the large sand mouse in some places reaches 7-8 individuals per hectare, the yellow ground squirrel - 4-5, the thin-toed jerboa - 2-3 individuals. Sand hares, common cattle, and many species of predators are widespread here [4,5].

Thus, climatic conditions are the most important and constantly acting factors in the dynamics of the number of small mammals. The significance of these factors for rodent populations is confirmed by our data. The tamarisk gerbil and field mice are especially sensitive to the influence of weather, their number is directly related to the depth of the snow cover. Winter conditions influence the dynamics of their numbers, but meteorological conditions for them are observed in transitional periods (spring and autumn), i.e., during these periods, a stage of restructuring occurs in their bodies, and they are unstable in relation to external negative influences. The spring season was considered very important for rodents, the cold arrival of spring delays their reproduction, increases mortality, and reduces the reproductive function of females.

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