

**BASED ON EPIZOOTOLOGICAL MONITORING IN THE NORTHWESTERN
KYZYLKUM REGION, THE GREAT SAND MOUSE (*RHOMBOMYS OPIMUS*
L.) STUDY OF POPULATION DYNAMICS**

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Abstract: During the periods of deep depression in 2018-2022, the distribution of great sand mice in the area under consideration was uneven, characterized by a decrease in the population of great sand mice in the direction from northwestern sandy areas to the south.

Keywords: *Great sand mouse, Rhombomys opimus, dynamic change, epizootological process, population, depression.*

Certain features of the ecology of the great gerbil (*Rhombomys opimus*) also determine the specifics and methods of population registration of this species arising from them. The distribution of the great gerbil in the northwestern part of the Kyzylkum, the Beltau hills, the Akchadarya alluvial plain, the Nukus sands, and the Central Kyzylkum is uneven; it is characterized by a decrease in numbers from north to south and from northwestern sandy areas to south, which depends on habitat conditions and the impact of climate change.

Employees of the zoological laboratory of the Takhtakupyr branch of the Republic of Karakalpakstan Epidemic Protection Center used epizootiological monitoring data, and in this process, we witnessed that the population size of the great

gerbil was very low, and in some regions, it was completely absent, with cases of deep depression.

During the spring and autumn seasons of 2018-2022, the condition of great gerbil colonies was observed. During the analysis, the viability of the colonies (%), the average number of gerbils per colony, the average number of gerbils in each colony, and the actual number of rodents in all directions were taken into account (Table 1).

Table 1.

Colony viability (in %) and number

Reporting period	Colony viability %	Average number of mice per colony	Average number of mice in each colony	Actual number of rodents in all directions
May 2018	48,6	5,6	2,6	238
September 2018	52,4	5,8	2,8	271
May 2019	5,6	1,8	0,7	127
September 2019	17,4	3,3	1,6	143
May 2020	18,4	3,6	1,7	157
October 2020	23,7	3,8	1,8	183
May 2021	00,0	0,0	0,0	7
October 2021	3,9	0,0	0,6	21
May 2022	5,3	2,5	0,4	23
October 2022	6,6	1,9	0,7	47

As can be seen from Table 1, the actual change in population size can be accurately estimated from the average number of great herbivores in a colony.

The results of the study show that significant quantitative changes occurred in the great gerbil population between 2018 and 2022. In May 2018, the viability of the colonies was 48.6%, with an average population of 3.6 individuals per colony and an average population of 2.6 individuals per colony, totaling 238 individuals. In September 2018, these figures were 52.4%, 3.8%, 2.8%, and 271 units, respectively. Thus, in 2018, from spring to autumn, there was a relatively positive change in population indicators. In 2019, the population declined significantly. In May, the viability of the colonies was 5.6%, with an average of 1.8 individuals per colony, an

average of 0.7 individuals per colony, and a total population of 127 individuals. Although the viability of colonies increased to 17.4% in September, it did not reach the level of 2018. In 2020, the population declined significantly. In May, the viability of the colonies was 18.4%, and in autumn, it was 23.7%. The total number of sand mice during this period ranged from 157 to 183. The sharpest decline was recorded in 2021. In May, the viability of the colonies was 0%, and the average population per colony was 0. The total number of recorded individuals was only 7. In October 2021, the viability of the colonies was restored to 3.9%, but the total number did not exceed 21. In 2022, relatively positive population dynamics were observed. In May, the viability of the colonies was 5.3%, and in autumn, it was 6.6%. The total number of sand mice was 23 and 47, respectively.

The obtained data indicate high-amplitude, non-uniform, and seasonally variable dynamics in the great gerbil population during the 2018-2022 period. Population indicators, which were relatively high in 2018, decreased sharply in subsequent years, reaching their lowest level in 2021. In 2022, a gradual recovery of the population was observed. Such changes can be associated with environmental factors in the natural environment, the food base, precipitation regime, temperature, the state of vegetation cover, and other changes in the habitat.

The research results demonstrate the effectiveness of a comprehensive analysis of colony viability, colony density, and average individual numbers when assessing the state of the great gerbil population.

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