

# Dynamics of Demographic Indicators during the Population Cycle *Microtus Ilaeus* in the Low of the Amudarya

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**Abstract:** *The article presents the results of studies of demographic indicators of the *Microtus Ilaeus* population. It is shown that *Microtus Ilaeus* is a stenobiont species, too demanding on the Amu Darya hydro mode, feed conditions. In recent years, unfavorable for breeding years, fertility has also decreased to 3.8 embryos per female. Genus and age structure also varies by year and season.*

**Keywords:** lower reaches of the Amu Darya, *Microtus Ilaeus*, age and genus composition, reproduction, feed conditions

## 1. Introduction

The interaction and comparative analysis of the animal population of various natural zones in the ecological, biogeographic and evolutionary aspects is one of the most interesting open questions in modern ecology. When studying the population of terrestrial vertebrates, small mammals are one of the most commonly used objects. The identification of the species composition and abundance of mammals in different areas and remoteness from tugaimassifs makes it possible to know the basic laws of biota formation and to reveal their basic mechanisms. The main objective of this study is to analyze the dynamics of the number and age and genus structure of the population of the *Microtus Ilaeus* in the lower Amu Darya territories.

Small mammals, due to their high abundance, species diversity, and ecological lability, exhibit clear reactions to natural and anthropogenic changes [1, 5]; therefore, it is quite reasonable to use them in determining and evaluating changes occurring in natural communities in a natural way.

## 2. Result and Discussion

*Microtus ilaeus* is one of the few species in the mammalian fauna of the South Aral Sea region. In the lower reaches of the Amu Darya, the vole inhabits mainly kupaks, moist areas with dense vegetation of reed, cattail, tamarisk, sedge, periodically flooded with water. It is also found in humid areas of tugai, along the banks of river channels, reservoirs, as well as in irrigated fields [2, 3, 4]. Tugai forests belong to the intrazonal type of landscape, since they go in a narrow strip along the channels of the main rivers flowing through vast expanses of desert. In terms of composition of flora and fauna, tugai ecosystems significantly differ from the surrounding desert ecosystems. The Ili vole is less stable (stenobiont), too demanding on the hydro regime of the Amu Darya, feed conditions, which limits the survival of animals in adverse years in a limited number of habitats (stenotope). Earlier, the Ili vole in the lower Amu Darya was attributed to the Transcaspian vole *Micritustranscaspicus* [3], or to the Kyrgyz vole *Microtus kirgisorum* [4]. However, according

to modern concepts, it is the Ili vole that lives in the lower reaches of the Amu Darya [4]. According to the data of R. Reimov (1972) in 1968-1969. The number of voles in the Amu Darya delta was very low, despite the fact that the humid conditions of the delta are optimal for its habitat. Reach for 200-300 traps did not exceed 1-2 animals or 4-6 specimens. on 1 ha [7]. According to experts in 1970-1975. the abundance of this species increased sharply, in places by 100 catches / day., the incidence was 10-15% or 15-20 ind. per 1 ha [6, 7]. Due to the change in the hydro regime of the Amu Darya delta and the aridization of the habitat conditions of this species, the settlement areas have significantly decreased, and the population has decreased. The vole breeding period in the lower reaches of the Amu Darya begins in April-May and lasts until October-November. Winter breeding is not observed. By the second half of May, almost 80% of the captured females were pregnant and 20% of the females had already fed the brood. Among overwintered females, barrenness is very rare. The size of litters from spring to autumn varies slightly.

According to the literature, it was noted that the number of cubs in the litter is 1-7, an average of 4-6 [4, 6, 7]. The analysis of fertility dynamics showed that almost 80-90% of females in the litter have from 3 to 6 embryos. On average for the study period from 2016-2018. 4.6 puppies were noted in the litter; in comparative terms, we indicate that in the period from 1976 to 1980, when there was a significant reduction in the area of voles, the average number of puppies in the litter decreased accordingly to 4.1 puppies. In recent years, unfavorable for breeding years, fertility has also decreased to 3.8 embryos per female [2, 6, 7]. Genus and age structure also varies by year and season. The genus ratio in the litter is close to 1: 1. Based on the statistical processing of materials, it was found that in the spring period, males predominate in catches (58.9%), in summer and autumn the sex ratio in the population is equalized (51.5% of males and 48.5% of females), and again in winter there are more males (53.8%) (table).

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**Table:** Age and genus composition of the downstream vole population

Amu Darya according to the catch 2016-2018

Months	Number of profits		Number of wintering		The total number of animals examined	
	Abs.	Of these, males %	Abs.	Of these, males, %	Abs.	Wintering, %
May,	-	-	18	58,9	18	100
June,	10	51,5	11	56,7	21	52,4
July,	13	49,6	10	51,3	23	43,5
August,	28	50,2	11	52,7	39	28,2
September,	27	51,8	7	48,7	34	20,5
October	5	-	-	-	5	-
November,	6	53,8	-	-	6	-
<b>All</b>	<b>89</b>	<b>51,1</b>	<b>62</b>	<b>57,3</b>	<b>151</b>	<b>41,1</b>

Seasonal changes in the age composition of captured voles are indicated by the addition of yearlings to the wintering part of the population. In June, they accounted for 47.6%, in July 56.5%, in August-September - 75-80%, in October-November - 100%. The coefficient of variability of the proportion of breeding females from April to June reaches almost 100%, the coefficient of variation among breeding females from June to October decreases to 58% and decreases until December (42%).

Thus, our data show that voles live mainly in humid places (kupaks, floodplains, reed and tamarisk thickets near ponds and tributaries of rivers). It was revealed that males prevail among overwintered voles due to their greater activity during the breeding season. Young males also quantitatively prevail over females, but this imbalance is small and statistically unreliable.

## References

- [1] Bolshakov V.N., Balakhonov B.C., Benenson I.E. et al. Small mammals of the Ural Mountains: Ecology of mammals of the Urals - Sverdlovsk: Publishing House of the Ufa Scientific Center of the USSR Academy of Sciences. 1986.-101 p.
- [2] Malygin VM, Deulin VB, Some features of the ecology and behavior of species of voles from the group *Microtus arvalis* // Zool. J.-T. 53.- Vol. 5.- 1979.- p. 731-741.
- [3] Meyer M.N. Trans-Caspian (*Microtus transcaspicus* Satunin, 1905) and Kyrgyz (*Microtus kirgisorum* Ognev, 1950) voles of Central Asia and Kazakhstan // Tr. ZIN AN SSSR.- T. 99.- 1980.- p. 84-89.
- [4] Meyer M.N., Golenishchev F.N., Rajabli S.I., Sablina O.V. Gray voles (subgenus *Microtus*) of the fauna of Russia and adjacent territories. Proceedings of the Zoological Institute of the Russian Academy of Sciences.- T. 232.- 1996.- p.1-320
- [5] Magarran E. Ecological diversity and its measurement. M.: Mir, 1992.184 s.
- [6] Obidina V.A. To the ecology of the Ili vole of Talas Alatau // Inform. Mater. Institute of Plant and Animal Ecology, Ufa Scientific Center of the Academy of Sciences of the USSR. - 1980.- p. 73-74.

- [7] Reimov R., Karabekov N. On the distribution and ecology of the Trans-Caspian vole of Karakalpakia // Bulletin of the KCO AN RUz.- No. 4 (38) .- 1969.- p. 22-25