

Spread of Khorezm Oasis land mollusks in biotopes

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Abstract: Khorezm oasis, located in the north-western part of Uzbekistan, consists mainly of plains. This area is intended for irrigated agriculture-gardens, alfalfa plantations, vegetables, sugarcane crops, cotton and other technical crops. The research was conducted in 2020-2023. Study of distribution and morphological features of land molluscs, collection of shell molluscs A.A. Shileyko, and the collection of slime worms by I.M. Likharev and A.Y. Made in Victor styles. According to the results of the research, 14 species of land molluscs were found in 3 biotopes in the flat part of the research area, and common species were *Xeropicta candacharica* (in the 2nd biotope), *C. nitens*, *V. costata*, *P. muscorum*, *Deroceras laeve* (in the 3rd biotope), *X. candacharica* was considered the dominant species, its maximum density in the population was 100-110, and the average density was equal to 93.3

Key words: Terrestrial mollusk, biotope, species, population.

Introduction. Low mobility of terrestrial molluscs, their strong dependence on one biotope, and extremely slow crossing of geographical barriers make them the most convenient object for conducting faunal research, and they can be used in the study of the historical formation of the fauna, in zoogeographical and ecological aspects, as well as as a bioindicator. In addition, land molluscs have their own economic importance, most of them are herbivorous polyphagous animals, and they cause great damage by feeding on various grain crops, vegetables and pulse crops, and a number of other species are intermediate hosts in spreading exoparasitic diseases that are serious for livestock performs its function.

Distribution of land molluscs by biotopes and population density in the flat part of Uzbekistan A. According to the results researched in a number of works of Pazilov (Pazilov A, 1996; Pazilov A, 004), the population density of species varies by biotope.

The Khorezm oasis, located in the north-western part of Uzbekistan, consists mainly of plains. This area is intended for irrigated agriculture-gardens, alfalfa plantations, vegetables, sugarcane crops, cotton and other technical crops.

Material and methods. Research was conducted in 2020-2023. Study of distribution and morphological features of land molluscs, collection of shell molluscs A.A. Shileyko, and the collection of slime worms by I.M. Likharev and A.Y. Done by Victor styles.

The geographical location of the Khorezm oasis, the fact that the surface structure consists of a plain, and its location in the desert zone are also reflected in the climate characteristics of this place. The openness of the region from all sides and the absence of large natural barriers create conditions for the easy entry of air masses from the north, north-east and north-west. The dominance of these air masses for most of the year has a direct effect on the climatic parameters of the region, its temperature and rainfall regime, and the direction of the winds. The absence of natural barriers in the northern and eastern parts of the Khorezm region creates favorable opportunities for the free entry of cold air masses from the Arctic and Siberia. At present, the natural ecosystems of the oasis have been preserved in certain areas, where unique animal species are distributed.

Analysis and results. Land molluscs in the plain biotopes of the Khorezm oasis are as follows:

Biotope 1. Herbaceous plants growing along ditches in orchards. In this biotope: *Cochlicopa nitens*, *S. lubrica*, *Vallonia costata*, *V. asiatica*, *Xeropicta candacharica*, *Zonitoides nitidus*, *Deroceras laeve*, *Macrochlamys turanica* and *Novisuccinea evoluta*, *Oxyloma elegans* species are found on the stems of plants, and their population density is different. For example, the density of *C. nitens* in the population density of *C. nitens* is 8-9 per 1m² among the grasses near the banks of the ditches in the village of Bogot, Dekhkanabad, Nayman, while this indicator is equal to 4-5 among the grasses on the banks of the ditches in various gardens of the Amudarya district of the Republic of Karakalpakstan. *S. lubrica*, Khiva District, Beruniy and Soyot Villages, among the grasses under the apple orchards, the population density is 10-12 individuals, while in Amudarya and Beruniy Districts of the Republic of Karakalpakstan, 2-3 individuals can be found in a similar biotope in only 1 m². *V. costata* and *Z. nitidus* live together with the above two species and the population density is 5-8. However, 12-13 pieces of *V. costata* can be found in 1 m² of the garden in Chakkasholikor village, Urganch district, among the grasses near the running water. The density of *V. asiatica* in the population is 3-4. The density of *X. candacharica* species is high, 17-18 can be found in 1 m².

The species *D. laeve* and *M. turanica* live in the same biotope as the species discussed above, in a different area, but their population density is much higher than them. For example, the population density of *D. laeve* is 15-17, and *M. turanica* is 12-14 among the grasses under the apple orchards of Beruniy and Soyot villages, Khiva district. is equal to 20-22 and 16-18, respectively, the population density index of *D. laeve* in the same biotope in the Kungirotdistrict of the Republic of Karakalpakstan is 5-7, and *M. turanica* is 3-4.

Novisuccinea evoluta, *Oxyloma elegans* species can be found on the grass stems of the stream banks and nearby places, and the density of *N. evoluta* on the grass stems in the places near the stream banks around the villages of Nayman and Khojalyk, Bogot District, is 9-10, while in the gardens around the village of Uro Dorman, Urganch District, plants population density is 6-8, while *O. elegans*, which lives on the stems of grass on the banks of ditches in the gardens of Amudarya, Beruni districts of the Republic of Karakalpakstan, has a density of 2-3.

Biotope 2. *S. alfalfa* plantations in residential plots. *lubrica*, *P. muscorum*, *Phenacolimax annularis*, lives under the clover, while *X. candacharica* lives mainly on the stem. The population density of these species is as follows. 8-9 *C. nitens* are found in alfalfa fields belonging to residents of Naiman village, Bogot district, per 1 m². In the village of Soyot, Khiva district, under alfalfa fields planted between mulberry seedlings, 10-12 *S. lubrica*, 5-6, *P. muscorum*, and on the alfalfa stem, the density index of *X. candacharica* is equal to 25-30, and after harvesting the alfalfa, the density index in the population is 50-60. The highest population density index is 100-110 in the meadows of open fields in the village of Dekhkanabad, Bogot District. *Ph. annularis* population density is the lowest, and 3-4 of them are found in 1m² of alfalfa fields in Naiman village, Bogot district.

Biotope 3. In this biotope, *Deroceras laeve*, *Deroceras reticulatum* and *Deroceras caucasicum* are found mainly in the vicinity of vegetable and vegetable fields and greenhouses. The population density of *D. laeve* is 15-20 individuals per 1 m² area around the fields of rice and vegetable crops and greenhouses around the village of Beruni, Khiva district, while the density index is 25-30 on the edge of the fields of rice crops around the village of Bogot, Dekhkanabad and Nayman.

The density of the *Deroceras caucasicum* species, like other slime worms, depends on the amount of rainfall. In 2021, in 2021, 15-16 individuals per 1 m² were found around the tomato fields of Mevazor neighborhood, Obad village, Gurlan district, Khorezm region, and in 2022, this indicator was 50-55. The population density of this species in the Republic of Karakalpakstan, Amudarya, Beruniy, Kegeilli districts, around the various rice and vegetable fields, the population density index is on average 12-15.

The population density of *Deroceras reticulatum* species is a little lower than the above species, in the vegetable gardens belonging to the residents of Bogdorchi quarter, Urganch district, Urokenbog village, 9-10 of them are found in 1m² area, among the grasses around the field crops belonging to farms in Amudarya district, Republic of Karakalpakstan. the density indicator is 6-8.

Summary. According to the results of the research, 14 species of land molluscs were found in 3 biotopes in the flat part of the research area, and common species were *Xeropicta candacharica* (in the 2nd biotope), *C. nitens*, *V. costata*, *P. muscorum*, *Deroceras laeve* (in the 3rd biotope), *X. candacharica* is considered to be the dominant species, its maximum population density is 100-110, and the average density is 93.3.

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