



DISTRIBUTION AND LIFESTYLE OF *LEUCOZONELLA MESOLEUCA*

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ABSTRACT

The article studies the spread of *Leucozonella mesoleuca* and its life under natural conditions. *Leucozonella mesoleuca* enters to the Hygromiidae family's *Leucozonella* generation, and this type is separate from other types by its superior denseness among the population of generation representatives. Ecologically *Leucozonella mesoleuca* is a type of mezocserobiont, and mostly spread in mountains such as Chotkol, Kurama, Pskom, Turkistan and Nurota. *Leucozonella mesoleuca* wakes up from winter rest (at the early spring season) in the second ten-day of March on the areas of hills, and in mountains the process happens in the beginning of april, then after active nourishment starts preparing to copulation.

In the first ten-days of april molluscs will be ready to multiply. The mollusc that is ready to multiply after finding its pair, the three staged mating "game" will get start.

KEY WORDS: spreading, mezocserobiont, population, reproductive organ, copulation, incubation.

The study of land mollusks in Central Asia has been conducted for more than 150 years, and any information about representatives of the Hygromiidae family (both in the past and in the present) was considered important for malacologists. This is due to the great diversity of representatives of the family in comparison with other groups of the same rank, the extreme complexity of the structure of the reproductive organ and the fact that species similar in morphological characteristics are characteristic only of the family Hygromiidae. Therefore, studies on hygromids are important for the development of modern malacofauna.

In general, the first information about the Central Asian malacofauna is directly related to the names of the great naturalists-travelers P. P. Semenova-Tyan-Shan (1856-1857), N.A. Severtsov (1857-1858) and A.P. Fedchenko (1868-1871), and the collection of terrestrial mollusks collected by them was studied by E. Martens [9; 56-57-pp., 10; 61-69-pp., 11; 334- 337-pp., 12; 1-65-pp.], and he came to conclusion that 29 species of land mollusks were recorded from the territory of Central Asia and 3 species of them belong to the Hygromiidae family.

In the monograph of A. Pazilov and J. Asimov [8; 315-p.] "Terrestrial mollusks common in Uzbekistan and adjacent areas", a morphological, anatomical, ecological description of 171 recipient species is given. Next, a deterministic table of each family, genus and species is compiled. The monograph contains original images of shells and genitals of 34 species from the representatives of the family Hygromiidae. Along with this, a zoogeographic

analysis of land mollusks common in Uzbekistan and adjacent areas was carried out, indicating the distribution area.

Information about the family Hygromiidae is reflected in a number of works by Z. Izzatullaev [2; 79-86-pp., 3; 39- 44-pp ., 4; 212-p.]. According to the results of the conducted research, 60 species of terrestrial mollusks belonging to 15 families and 29 genera are distributed in the Hissar ridge and adjacent territories. In the Hissar ridge and adjacent areas, terrestrial mollusks are distributed unevenly in high-altitude areas, the main species are found in broad-leaved forests, where 41 of the 60 species found on the territory are distributed. It has been shown that *Leucozonella rufispira* and *L. reteri* species from the family hygromiidae are found in high-altitude, mountainous and pasture areas where population density is not high. It was found that *L. mesoleuca* is found only on the southern slopes in a hilly area, while the type of *L. rubens* is common in all high-altitude areas.

The fauna, ecology and zoogeography of gastropods of the Northwestern Turkestan mountain range are considered in a number of works by A. Karimkulov [5; 43-49-pp., 6; 87-88-pp., 7; 90-91-pp.], the taxonomic composition of gastropods common in this territory is revealed, the division into ecological groups is carried out and their distribution in the biotopes of high-altitude areas is analyzed. In the territory where the study was conducted, 7 species of representatives of the family Hygromiidae were distributed, from which some biological features of the species *Xeropicta candacharica* were studied.

From the analysis of the above literature, it can be concluded that information about the biology of

representatives of the Hygromiidae family is scarce and practically not studied. Insufficient information about the distribution and lifestyle of mollusks determines the relevance of this research work.

OBJECT OF RESEARCH

a representative of the genus *Leucozonella* of the family Hygromiidae *Leucozonella mesoleuca*

RESEARCH METHODS

Zoological and malacological methods are used in the work. The collection of the material was carried out according to the A.A.Shileiko method.

As we know, every species that exists in nature has its own meaning, and shellfish are part of the food chain. Their disappearance, increasing or decreasing, has an impact on biodiversity. Therefore, without studying the distribution and biology of mollusk species, we will not be able to fully assess their significance. As can be seen from the above links, the study of the distribution and lifestyle of mollusks remains one of the biggest problems facing the science of malacology. Based on this problem, we studied materials from the village of Mohrum in the Farish district of the Jizzakh region and the village of Duoba in the Zaamin district, and also studied the distribution and lifestyle of *Leucozonella mesoleuca* distributed in this area, and it looks like this.

The results obtained and their analysis: *Leucozonella mesoleuca* is part of the genus *Leucozonella* of the family Hygromiidae. Representatives of this genus are part of the Central Asian endemic species, whose range includes the territories of Central Asia and Western China.

Ecologically, *Leucozonella mesoleuca* is a mesoxerobiont species that lives in hilly and mountainous terrain at an altitude of 1300-2800 m. It occurs at high altitudes, lives under rocks, among shrubs on the banks of rivers and streams. In Uzbekistan, it is distributed mainly in the Chatkal, Kuramin, Kashkadarya, Turkestan, Nurata mountain ranges.

Among the representatives of the genus *Leucozonella*, the most common species with a wide range and high population density is *Leucozonella mesoleuca*.

Leucozonella mesoleuca lives in foothill and mountainous areas under rocks among shrubby thickets, in the humus cover of a plant whose bark has a thick, spherical or cone-shaped structure. The color of the shell is light brown or with a brown structure. The height of the shell is 6.1-7.2 mm, and the diameter is 8-10 mm. The color of the animal's body, however, can be yellowish or brown.

Leucozonella mesoleuca wakes up from hibernation in the second decade of March in hilly areas (when spring comes early), and in mountainous areas - in early April (Fig.1)



Fig.1. The period of activity of *Leucozonella mesoleuca* in the mountainous region (Nurata mountain range) in early April after winter hibernation.

During this period, they become extremely mobile, begin to actively eat and prepare for copulation. In the first decade of April, the mollusks will be ready for reproduction.

In mollusks in general, as in other animals, the process of copulation begins with the search for their own pair. In land mollusks, mucus plays an important role in finding its own mate, which separates from their body as a result of their movement.

According to the literature [1], the mucus contains an element that acts as a "signal" for the "partners" to urge each other to exit through the mucus during the period when the mollusks are ready to reproduce.

After they have found their mate ready to reproduce, they begin mating activities. This process mainly begins at dawn or after rain, the reason is the high humidity of the air. The mating act lasts 2-3 hours, at which time they begin to affect each other in different ways with the help of their tentacles, and also eat the mucus secreted from their body. At the end of the movement, they strongly compress their body, pressing against each other with copulatory organs, as a result of which they are loaded.

They begin to lay eggs 15-16 days after attachment (at the end of April). It should be particularly noted here that the incubation period, egg laying, their development and the release of shellfish from eggs directly depend on external

factors: air humidity, precipitation. According to the results of the conducted studies, it was noticed that in natural conditions mollusks lay eggs at an average air temperature of 15-17°C, air humidity of 70-80%.

Leucozonella mesoleuca lays eggs under rocks, in a shallow (self-made nest) place under the roots of plants. The

number of eggs in the nest is different, that is, up to 20-30 if the eggs are small, and 10-20 if large. The size of the eggs is 1.5 - 2.7 mm, and the color is pale yellowish or ochreous-white.



Figure 2. The process of copulation that occurs in mollusks. A - the process of finding your own mate before copulation; B - the course of the copulation process; C-the process of laying eggs after copulation (15-16 days).

The rate of egg development also directly depends on external factors, with an average air temperature of 18-19°C, humidity of 70-80%, after 17-18 days, the first mollusks begin to emerge from the eggs at the beginning of the second decade of May. Mollusks that hatch from eggs have clear shells with 1.5 wrappers that are dark brown in color. The mollusks hatched from eggs live here until the period of summer hibernation (end of May) and fall into summer hibernation.

From summer hibernation, it first comes to the surface and begins to actively feed at the end of October, in the middle of a rainy year. This activity continues in them until the first snow. As soon as the first snow falls, they fall into a winter sleep when the soil temperature drops below 5°C. When mollusks go into hibernation, their shell wrappers become 3.5 – 4. They spend the winter hibernation 15-20 cm, sometimes even deeper. The hard looseness of the soil directly depends on how deep or on the surface their wintering place will be. That is why mollusks arrange their winter “dwellings” in porous soils, more often under stones or in places close to the veins of trees.

The type of *Leucozonella mesoleuca*, along with all other mollusks, forms an epiphydragma in the mouth of the mollusk when it falls into winter or summer hibernation. The

function of the epiphragm is to retain water in the body of the mollusk, evaporating, in the miera. The winter epiphragm will be thicker than the summer one, since there will always be a possibility of an extreme decrease in winter air temperatures.

From hibernation, mollusks wake up, as noted above, in the middle or end of March and actively move until the third decade of May, and during this period their shells are fully formed, and the wrapper reaches 5 cm, but the shell walls also become thin. This means that mollusks that have not yet reached full maturity fall into summer hibernation.

Having risen from summer hibernation at the end of October, he begins to move actively, and before going into winter hibernation, his shells are fully formed and he reaches puberty. Some of the adult mollusks even manage to lay eggs.

CONCLUSIONS BASED ON THE RESULTS OBTAINED

1. The distribution and biology of the *Leucozonella mesoleuca* species in the natural conditions of the territory of Uzbekistan was studied for the first time.



2. It was found that the optimal temperature for the development of *L. mesoleuca* is 18-19°C.

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