

## Water Molluscs Found in Some Water Basins of Kashkadarya Region

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**Abstract:** The malacofauna of the water bodies of Kashkadarya region was studied, and it was noted that these species consist of phytobionts and eurybionts according to their nutrition. It was noted that 8 species of aquatic molluscs belonging to the Lymnaeidae and Planorbidae families are distributed in the researched areas.

**Key words:** molluscs, conchological, Lymnaeiformes, Kashkadarya region, Planorbidae, Lymnaeidae.

**Introduction.** Water molluscs have a number of important values in nature and in human life, one of them is their economic value, that is, they act as intermediate hosts in the spread of dangerous helminthic diseases in many mammals and birds. In some cases, it causes great damage to the livestock and poultry industry.

**Material and methodology.** In 2020-2022, scientific-research works were carried out in order to study the effects of abiotic factors on the mollusk species found in the water bodies of Kashkadarya region and their distribution. Taking into account the seasons, malacological material was collected from Tallimarjon and Chimkurgan reservoirs of Kashkadarya region.

Methods of V.I. Jadin, N.N. Akramovsky, Ya.I. Starabogatov were used for collecting molluscs. They were picked (by hand) from plants in the water, over stones. Mollusks were separated from water bodies by means of a sieve with holes of 0.5-2 mm. Distribution density of molluscs was measured in plots (1x1 m<sup>2</sup> for large gastropods, 0.25x0.25 cm<sup>2</sup> for some species of Lymnaeidae and other families). Collected molluscs were quickly fixed in 70% ethyl alcohol.

Tweezers, small boxes, cloth bags, dishes, matrap, sieve and 70 percent alcohol were used for material collection. The collected land molluscs were first cleaned of soil and plant debris. Soil samples were sieved with 3, 2, 1 and 1.5 mm holes. Live slime worms were placed in ¼ part of the container and filled with cold water and kept for a day. After the molluscs died, the water was poured out and transferred to 50% alcohol first, and after 3-4 days to 70% alcohol. When fixing slime worms, a large amount of mucus is released, and at this time the alcohol turns yellow. Therefore, alcohol is changed after 3-4 days. The place where the material was collected and the time of collection were attached to the container with the molluscs.

When identifying molluscs (shellfish), the height, width, number and height of the shells, color, shape of the last shell, navel, etc. were measured using a ruler. Much attention was paid to the characteristics of the shell: its mouth, the nature of the growth of the coils, the outer point of the contour of the shell dimensions (Fig. 1).

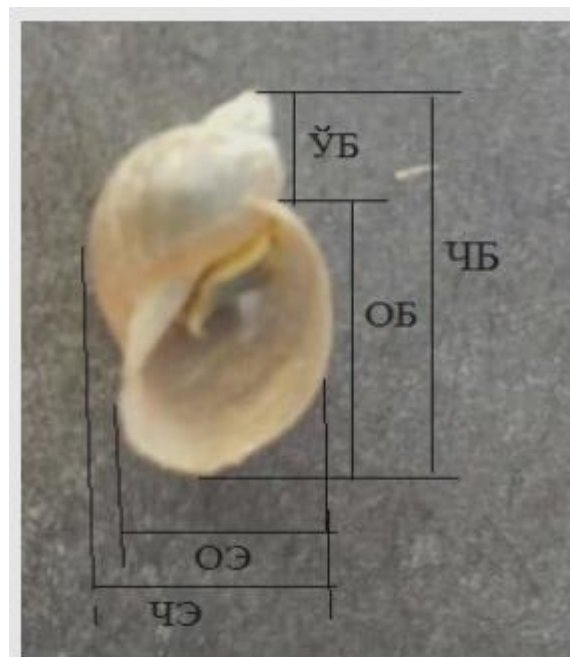


Figure 1. Measuring the shell of gastropod molluscs.

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ChB - height of shell, O'R - height of rolls, OB - height of mouth, OE - width of mouth, ChE - width of shell

Large molluscs were measured using a caliper, and small ones were measured using an ocular micrometer attached to a stereoscopic microscope MBS-9. To measure the shell, the item was fixed to the glass using a piece of plasticine or gelatin. In this case, the plane of the shell should be parallel to the plane of the glass of the product.

Initially, when studying the shell (conchological) signs, the shell is correctly placed in the window of the object. After the shell is placed correctly, its dimensions (height, height and width of the shell mouth, small and large diametric, the last circumference of the shell) are determined, the quality characteristics of the shell (shell color, sutures of the sculpture, the last circumference of the shell, the position of the shell in relation to the mouth and the structure of the navel) are studied.

Methods of I.M. Likharev, A.Y. Victor were used for anatomical examination of slime worms. To dissect slime worms, a container with 1.5-2 cm of wax is placed at the bottom, several needles, thin scissors and a scalpel are also needed.

Before dissecting slime worms, attention is paid to its size, color, body shape and the location of the breathing hole. Then, from the last end of the body of the slime, under the heel, a scalpel is used along the left part of the body to the head.

When it comes to the head, the scalpel turns to the left at a right angle and passes between the eyeballs and ends in front of the genital opening. Then the slime is fixed to the bottom of the container with the help of needles, and water is added so that it is completely covered. The upper body wall is opened back and the reproductive system is carefully isolated.

As a result of the analysis of the collected malacological material, it became known that 8 types of water molluscs are distributed in the water bodies of Kashkadarya region. Species distributed in water bodies of Kashkadarya region systematically belong to 3 families, 1 subfamily and 4 genera of Basommatophora phylum Mollusca and Lymnaeiformes:

Subgenus Basommatophora Keferstein, 1864

Category Lymnaeiformes Rafinesque, 1815

Family Lymnidae Rafinesque, 1815

Genus Lymnaea Lamarck, 1799

1. *Lymnaea stagnalis* (Clessin, 1879)

2. *Lymnaea subdisjuncta* (Kuster, 1862)

3. *Lymnaea truncatula* (Müller, 1774)

4. *Lymnaea auricularia* (L., 1758)

5. *Lymnaea bactriana* (L., 1758)

Family Physidae Fitzinger, 1833

Genus Costatella Dall, 1870

6. *Costatella acuta* (Draparauand, 1805)

Family Planorbidae Rafinesque, 1815

Subfamily Planorbinae Rafinesque, 1815

Genus Planorbis Geoffrey, 1767

7. *Planorbis planorbis* Germain, 1918

Descendant Anisus Studer, 1820

8. *Anisus ladacensis* (Neville, 1878)

The study of the collected malacological material made it possible to analyze the ecological and faunal species identified.

*Lymnaea stagnalis* (Fig. 2) is 60-70 mm in size and is the largest representative of the Lymnaeidae family. This species can be found in lakes and ponds from early spring to late autumn.

*Lymnaea stagnalis* feeds on aquatic plants and small animals. This species is hermaphrodite and lays its eggs on smooth surfaces of various hard rocks underwater.

*Lymnaea truncatula* (Fig. 2) - can be found in various swamps, ponds and springs, and in various very humid biotopes on land, under rocks along streams.

The shell has a conical structure, the walls of the shell are thin, and the color is dark brown. The circle of the shell is 4-5, the tangent line is straight, the last circle is not bulging. The winding circle is strongly convex, step-like, separated by deep seams. The mouth of the shell is oval and has a right angle.

Shell height - 3.5-4 mm, width - 5-10 mm.

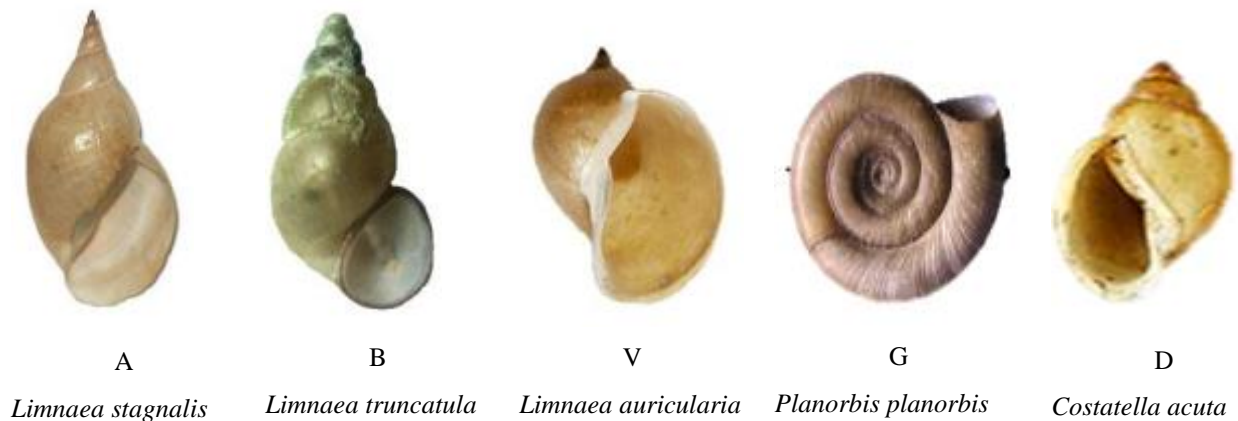


Figure 2. Shells of freshwater gastropods

It is found in the mud of small ponds, ditches, dry ponds, and permanent swamps. There are many in water basins, the density in some places is 40-60 pieces/m<sup>2</sup>. B.B. According to Gorokhov, this species quickly adapts to new places occupied by humans. Lives 1-1.5 years and gives 2-3 generations in a year.

*Limnaea truncatula* is a European-Siberian species that is not evenly distributed in Central Asia. According to Z. Izzatullaev, it is distributed in southern Uzbekistan - in the Uchkizil, Southern Surkhan reservoirs and along the banks of Shirobdarya and Guzordarya.

*Limnaea truncatula* acts as an intermediate host in spreading helminthiasis.

*Limnaea auricularia* (Fig. 2) is distributed in various reservoirs, ponds, lakes, swamps where aquatic plants grow.

The shell is ear-shaped or cone-like, thin, white-yellow in color. The circle of the shell is 3-4, and it grows slowly. The tangent line is turned. The last circle suddenly expands and forms the main part of the shell. The circular embossment is an unknown embossment and has a pear-shaped structure. The mouth of the shell is wide and big.

Shell height 25-29, width 18-20 mm.

It lives in algae around small lakes, slow-flowing canals, ditches. In some water bodies, it can be found up to 80-100 pieces per 1 m<sup>2</sup>. Phytophilous. It lives for 1.5-2 years and gives 2 generations in 1 year.

*Limnaea auricularia* is a palearctic species, widely distributed in Central Asia. In Uzbekistan, it is found in plains and mountain regions.

*Limnaea subdisjuncta* lives on the banks of rivers, canals, small streams, and among the grasses and reeds around springs and reservoirs.

The shell is tall - conical, 4-5 in circumference, not bulging, the tangent line is curved. The last circle is large and widened in the shape of an ear. The mouth of the shell has an oval structure and formed an impenetrable corner. Shell height 16-18, width 11-12mm.

*Limnaea subdisjuncta* is a species of Central Asia and is widespread in Uzbekistan. This mollusk is an intermediate host of liver fluke, a dangerous parasite of cattle and humans.

*Limnaea bactriana* is found in freshwater and collector waters, on stones between grasses in lakes.

The shell is ovoid, ovoid-conical, 4-5 in circumference, uniformly convex. The last circle of the shell is slightly convex, the tangent line is straight, and the seam is deep. The mouth is oval-shaped and evenly turned to the palatal part. Shell height 16-18, width 12-14mm.

In the conditions of Uzbekistan, it is more common in extremely low salinity - collector waters. In the spring months, the population is several times more than in the autumn months.

*Limnaea bactriana* is a Central Asian species, distributed in all water bodies of Central Asia: from the plain to the high mountain region. According to Z. Izzatullaev (1987), it is also widespread in Afghanistan and western China.

Serves as the main intermediate host of trematodes.

*Planorbis planorbis* (Fig. 2) is found in small and temporary water bodies.

The shell is thick and has a horn color. Shell circles are 4-4.5 and the last circle looks like a stringy bow. Shell height 3-4, width 12-18 mm. This species is a European-Siberian species, distributed in all altitude regions of Central Asia.

It is found among algae in permanent and temporary reservoirs, ponds, ponds, lakes and springs. Sometimes the density is 45-70 pieces/m<sup>2</sup> in springs. Phytophil.

*Planorbis planorbis* is of great economic importance, it is an intermediate host of trematodes *Calicophoron calicophorum*.

*Costatella acuta* - The shell is twisted to the left, conical. The color is white, bright yellow, the coils are low, sharp, number 4-5. The dome of the shell is smaller than the height of the mouth.

It lives in ponds, lakes, slow-flowing streams and ponds. Its density in artificial water bodies is 130-170 units/m<sup>2</sup>. Eurybiont. Phytophil.

It lives for 2-3 years and produces 2-3 generations in a year.

A common species.

*Anisus ladacensis* - The shell is wedge-shaped, light yellow or dark brown, shiny. The whorls are 4-4.5, more convex from the top, denser from the bottom, and have clearly visible transverse and imperceptible spiral lines. The last fold is raised above the mouth. The navel is wide, fluted.

It is found in flowing water bodies (ditches, irrigation canals, springs) and stagnant (non-flowing) bodies of water (lakes, ponds). Telmatophile. In some water bodies, it is 50-70 pieces per 1m<sup>2</sup>. It lives for about a year and has two generations.

Spread. Central Asian type. In Central Asia, it is more common in the waters of the plains than in the high mountains.

General distribution. Central Asia, India, China, Afghanistan.

As a result of the analysis of the collected malacological material, it was found that 8 species of Basommatophora molluscs are distributed in different ecosystems of Kashkadarya region.

These species systematically belong to the superfamily Basommatophora of the phylum Mollusca and 3 families, 1 subfamily and 4 genera of the Lymnaeiformes family.

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