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Information on the Reproductive Cycle of *Costatela acuta* (Draparuand, 1805)

Ruzikulova N.A.*

Author's Affiliation:
Samarkand State University, Samarkand, Uzbekistan

***Corresponding author:**
Ruzikulova N.A.
Samarkand State University, Samarkand, Uzbekistan
E-mail: nilruz.sam@mail.ru

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ABSTRACT:
The article presents information on the reproduction cycle of *Costatela acuta* (Draparuand, 1805) from aquatic molluscs. It is common species in the study area. It starts breeding in April. In the conditions of Uzbekistan, it has 3-4 generations. At the water temperature of 18-220°C, embryo development lasts 10-15 days.

Keywords:
Mollusk, Syncapsule, Egg, Shell, Temperature, Reproductive Process.

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INTRODUCTION

Gastropods are important objects of monitoring and zoological research carried out in inland waters. One of the indicators of the state of populations is reproductive processes, the study of which involves comparing the morphology of egg masses. The foundations for the comparative morphological study of egg clutches of freshwater mollusks were laid by A.D. Nekrasov (1928), however, in connection with a deep revision of the taxonomy of Gastropoda, the materials presented in his works can be considered as guides.

MATERIALS AND METHODS

The material for the research was the collection of mollusks during the period 2021-2022, including more than 300 specimens from reservoirs of various types in the cities of Samarkand, Kattakurgan, and Navoi.

Collecting water molluscs V.I. Jadin (1952), Ya. I. Starabogatov (1970) methods were used. They were picked (by hand) from aquatic plants, over rocks. The molluscs were separated from the ponds by means of a sieve with a hole size of 0.5-2 mm. Collected molluscs were quickly fixed in 70% ethyl alcohol. Species identification was carried out from the position of the taxonomic school of Ya.I. Starobogatov when using keys for the fauna of the USSR and Russia (Zhadin, 1952; Berezkina G.N., Starobogatov Ya. I., 1988), as well as Central Asia (Izzatullaev, 1987; Izzatullaev Z.I. & Ruzikulova N.A., 2020; Ruzikulova N.A. & Izzatullaev Z.I., 2022). The number of generations of freshwater mollusks, both in nature and in the laboratory, were the peony counted according to the method of Ya.S. Starobogatov (1988).

RESULTS

Most reservoirs are usually inhabited by mollusks of several ecological groups - with

different preferences and prevalence. In some cases, the ratio of the abundance of certain ecological groups speaks more about the characteristics of a reservoir than the presence of highly specialized species of mollusks (Starobogatov, 1988).

The life cycle of mollusks is associated with specific environmental conditions. One of the main external factors are influencing the lifespan of mollusks is the annual variation of temperature, which also regulates reproductive processes. It is the increases in water temperature, especially sudden ones that most often stimulate pulmonary disease. In the spring, with a constant increase in air and water temperatures in reservoirs, mollusks begin to grow, in the summer growth reaches a maximum, in the fall it gradually fades, and in winter it stops completely .In reservoirs where summer temperatures are higher and more stable, the shells of *Costatella acuta* are larger in size than in reservoirs at high altitudes with lower and more unstable temperatures.

The cyclical reproduction of mollusks living in reservoirs is subject to the laws of both vertical and latitudinal zonation. Thus, for water bodies of a given region, the duration of the breeding period is directly proportional to the sum of the effective temperatures of the studied territories. The amount of generation during the growing season also follows the same pattern. A striking example of this can be the reproduction characteristics of *Costatela acuta, C. integra, Lymnaea truncatula* and other mollusks.

The shell of *C. acuta* (Draparuand, 1805) is white or light, fragile, the curl is low, sharp. The last whorl is uniformly inflated during the transition to the anterior to last whorl. Sink height 12.0; sink width 8.7; mouth height 9.0; mouth width 5.5 mm.

Reproductive system

The penis of the proximal part is club-shaped, thick, towards the distal part it sharply narrows; there are two retractors; (very thin and long) at the border of the penis and the vas deferens, the other thicker at the border with the prepuce (figure 1).

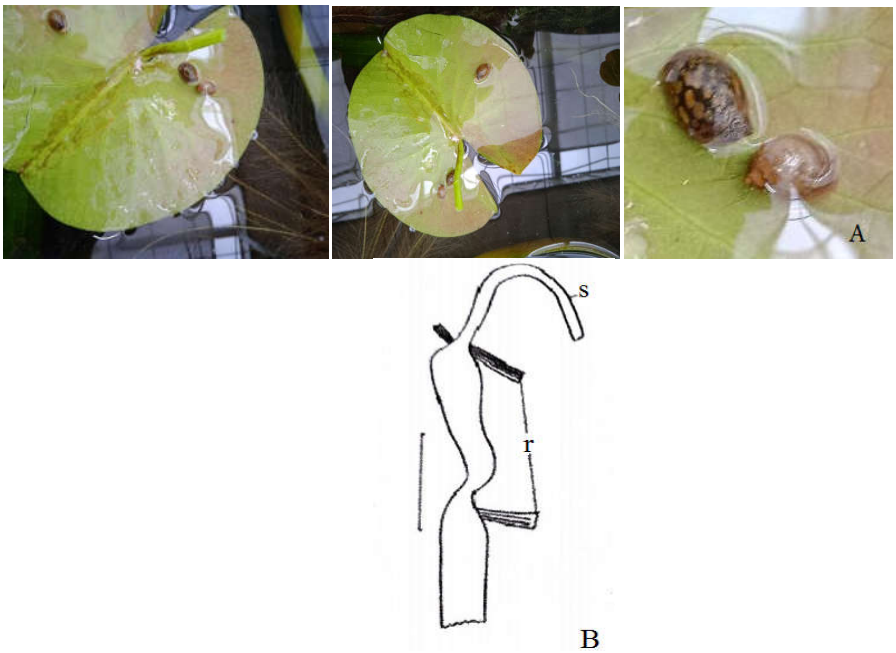

Figure 1: A) *Costatela acuta* (Draparuand, 1805) B) Reproductive system of *Costatela acuta* (Draparuand, 1805) (s-seminal receptacle; p-penis)

In *C. acuta*, the first clutches appeared in early April. Syncapsules are long, slightly curved, transparent. The syncapsular shell is thinly layered. Syncapsules are 1.3-1.9 centimeters long (figura 2).

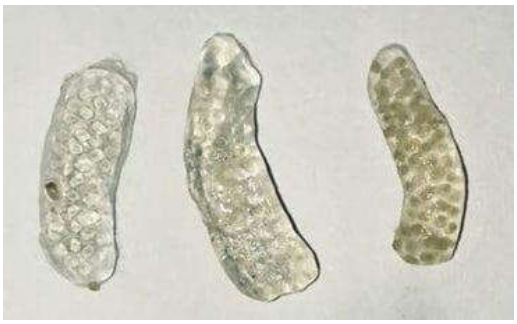

Figure 2: Syncapsules of *C. acuta* (Draparuand, 1805)

Syncapsule contains from 70 to 91 eggs.Egg capsules are large, oval or ovoid in shape. The capsules fit tightly to the capsule shell. The intercapsular cords are clearly visible, they are thin and thread-like (figure 3).

Figure 3: Egg and egg capsule in syncapsule of *C. acuta* (Draparuand, 1805): 1-egg; 2-egg capsule

The substrate to which syncapsules-aquatic plants attach. At the water temperature of 18-220C, embryo development lasts 10-15 days. The juveniles emerge through a hole in the terminal part of the syncapsule. The eggs hatched into juveniles whose shell consisted of 1.5-2.0 embryonic whorls (figure 4).

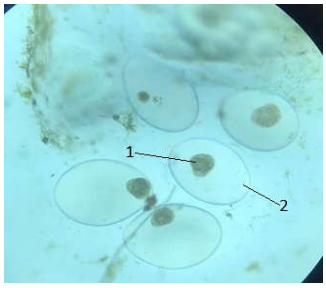

Figure 4: Juvenile *C. acuta* (Draparuand, 1805)

This species on the plain gives 3-4 generations, but in the highlands only one generation and only in favorable years can give 2 generations. Life expectancy is 2-3 years. Lives in ponds, lakes, slow-flowing streams and ponds. Its density in artificial water bodies is 130-170 units/m^2. Eurybiont, Phytophilus Common distribution in Eastern and Central Asia.

CONCLUSION

The number of generations of *Costatela acuta* on the plain gives 3-4 generations. Gastropods living in warm springs reproduce regardless of the season, giving up to five generations per year, and are characterized by a shortened life cycle.

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