Бюллетень Дальневосточного малакологического общества
2006, вып. 10, с. 130–132

The Bulletin of the Russian Far East Malacological Society
2006, vol. 10, pp. 130–132

On the radula and pallial gonoduct morphology of the gastropod *Biwamelania decipiens* and *B. multigranosa* (Cerithioidea: Pleuroceridae: Semisulcospirinae)

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A comparative study of the radula and pallial part of reproductive system morphology of two species of the endemic Biwa Lake (Japan) genus *Biwamelania* Matsuoka et Nakamura, 1981 was undertaken. It was found that *B. decipiens* (Westerlund, 1883) differs from *B. multigranosa* (Westerlund, 1883) in shape of its seminal receptacle. Both studied species differ from those of the *Semisulcospira* Boettger, 1886 by absence of a special gland in proximal part of lateral laminae of pallial oviduct. Radulae of these species differ from each other in shape, size and number of denticles of their rachidian and lateral teeth.

К морфологии радулы и паллиального гонодукта гастропод *Biwamelania decipiens* и *B. multigranosa* (Cerithioidea: Pleuroceridae: Semisulcospirinae)

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Изучены в сравнении морфология радулы и паллиального отдела половой системы двух видов эндемичного для оз. Бива (Япония) рода *Biwamelania* Matsuoka et Nakamura, 1981. Найдено, что *B. decipiens* (Westerlund, 1883) отличается от *B. multigranosa* (Westerlund, 1883) формой семяприемника. Оба изученных вида отличаются от видов рода *Semisulcospira* Boettger, 1886 отсутствием специальной (латеральной) железы в проксимальном отделе латеральной пластины паллиального овидукта. Радулы изученных двух видов различаются между собой по форме, размерам и числу зубцов на рахидальном и латеральных зубах.

The group of *Semisulcospira* Boettger, 1886 species, endemic for Lake Biwa (Japan), is considered to be contained within the genus-group taxon *Biwamelania* Matsuoka et Nakamura, 1981. Nevertheless, T. Habe [1991] confirms the validity of both genera, some malacologists [Matsuoka, Nakamura, 1981; Watanabe, Nishino, 1995; Nishino, Watanabe, 2000; et al.] consider *Biwamelania* as a subgenus of *Semisulcospira*, while others [Higo, Goto, 1993] fail to distinguish *Biwamelania* from *Semisulcospira* at all.

To clarify the taxonomic status of *Biwamelania,* a comparative study of the radula morphology and the reproductive anatomy of two species, *B. decipiens* (Westerlund, 1883) and *B. multigranosa*

(Boettger, 1886), from the Lake Biwa was undertaken. Specimens were assigned to species based on their adult and juvenile shell morphology by a comparison with pictures given by Watanabe and Nishino [1995]. To examine the external morphology of radula and pallial genital duct, ethanol fixed specimens, collected in Lake Biwa by Dr. Oleg Timoshkin and kept in the malacological collections of Zoological Institute, Russian Academy of Sciences, St. Petersburg, were dissected. To facilitate study of the structure and function of the different parts of genital duct, histological sections at 5–7 microns were prepared. Prepared sections were stained with hematoxylin and eosin and examined under Nikon and Olympus microscopes.

The aphallic male genital tract of the *Biwamelania* is revealed to have a common structure within the Cerithioidea sensu A.N. Golikov and Ya.I. Starobogatov [1987]. The male pallial gonoduct of both studied species is represented by a U-shape organ in transverse section, functioning as a prostate, like that of other pleurocerids [Dazo, 1965; Houbrick, 1988; Prozorova, 1990; et al.].

The pallial oviduct of the *Biwamelania* like other Pleuroceridae representatives originates from prolonged folds, transformed to the medial and lateral laminae. Pallial oviduct of both studied species is found to consist of semen-accepting pallial pocket on medial lamina, and a brood pouch located on lateral lamina under the pocket. We did not find any special structures in the top of lateral lamina of the oviduct, described for *Semisulcospira libertina* (Gould, 1859) as «proximal portion of lateral lamina» by D. Nakano and S. Nishiwaki [1989].

Sections across the semen-accepting pallial pocket of the *Biwamelania* species demonstrate primarily a non-glandular structure of pallial pocket, consisting of connective and muscular tissues. Pallial pocket of studied species is found to be filled by disintegrated sperm. That organ functions to accept semen, aggregated in spermatophores. Besides pallial pocket, medial lamina in its extreme proximal part has other small pocket-like structure with oriented spermatozoa inside and consequently functioning as a seminal receptacle. Both studied species have seminal receptacle, disposed above pallial pocket. Species *B. decipiens* differs from *B. multigranosa* in shape of its seminal receptacle, having several long protrusions [Prozorova and Rasshepkina, in press].

Thus studied representatives of the *Biwamelania* differ from these of the *Semisulcospira* by absence of a special gland in proximal part of lateral laminae. It might be estimated as an argument for generic status of the *Biwamelania*, inhabiting only the Lake Biwa drainage [Prozorova and Rasshepkina, in press].

Radulae of *B. decipiens* and *B. multigranosa*, studied using Scanning Electron Microscope, are found to be similar to those of other pleurocerids (see Plate). In detail, radulae of studied species differ from each other in shape, size and number of denticles of their rachidian and lateral teeth. The rachidian of *B. decipiens* is triangular, with large central denticle, flanked by three minor denticles on each side. Central cusp of the rachidian is longer nearly twice than minor cusps (Plate, Fig. A). Central cusp of the *B. multigranosa* rachidian tooth, flanked by four minor denticles, is longer more than twice in comparison with its minor denticles

(Plate, Fig. B). Asymmetrical lateral teeth of studied species radulae differ mainly in shape of their largest cusp. That cusp in the *B. decipiens* radula is regular triangular, with rounded edge (Plate, Fig. A). The largest denticle of the *B. multigranosa* lateral tooth is irregular triangular in shape and having pointed edge (Plate, Fig. B). Both interior and exterior marginal teeth of studied species are very similar in shape.

Acknowledgements

The work was partly supported by the Presidium of Russian Academy of Sciences (grant N 04-1-P12-010).

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