Subfamily Nodulariinae (Unionidae, Bivalvia) from the Russian far East: myth or reality?

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Systematics in the freshwater bivalve family Unionidae Rafinesque 1820 has caused numerous disputes. Russian scientists basically adhere to the taxonomy of Starobogatov (1970), in which the family contains six subfamilies. In 1987, Starobogatov and Zatravkin 1987 proposed an additional subfamily, Nodulariinae, which included two Far Eastern genera, *Nodularia* Conrad 1853 and *Middendorffinaia* Moskvicheva and Starobogatov 1973. These two genera differed from each other in umbonal sculpture and hinge teeth.

The original description of the subfamily Nodulariinae was not adequate to differentiate it from the subfamily Unioninae, and because of this many malacologists not only do not recogninze the validity of the subfamily Nodulariinae, but also do not recognize the validity of the genera *Nodularia* and *Middendorffinaia*, considering these two nominal genera to be junior synonyms of the Genus Unio Philippson 1788.

A study of soft body morphology of representatives of various unionid groups has shown than the presence or absence of papillae on the excretory (exhalant) siphon has special significance. In particular, it has been shown that in all representatives of European Unionidae, as well as species of the unionine genus *Lanceolaria* Conrad 1853 living in the Russian Far East, lack papillae on the excretory siphon. In contrast, species of *Nodularia* and *Middendorffinaia* have well-developed siphonal papillae. These papillae are especially well developed in *Nodularia*. Additionally, there are appreciable oval outgrowths on the epidermis on the internal lateral surface of the excretory siphon in these two genera. These siphonal traits are common morphological features differentating the Nodulariinae from other unionid mussels.

Further research is needed to determine the phylogenetic relationships of these two nodulariine bivalves to other members of the Unionidae.