

TAXONOMIC RE-DESCRIPTION AND RELATIONSHIPS OF TWO MAT-FORMING MUSSELS FROM THE INDO-PACIFIC REGION, WITH A PROPOSED NEW GENUS

Koh-Siang Tan^{1*}, Samuel Hui-Min Tan¹, Kitithorn Sanpanich², Teerapong Duangdee³
and Reni Ambarwati⁴

¹*St John's Island National Marine Laboratory, Tropical Marine Science Institute,
National University of Singapore, Singapore 119227*

²*Institute of Marine Science, Burapha University, Muang District, Chon Buri 20131, Thailand*

³*Faculty of Fisheries, Kasetsart University, Chatuchak, Bangkok 10900, Thailand*

⁴*Faculty of Mathematics and Natural Sciences, Surabaya State University, East Java, Indonesia*

*Corresponding author: tmstanks@nus.edu.sg

ABSTRACT: Two common Indo-Pacific mat-forming mussels with subterminal umbones, widely known in the literature as *Brachidontes setiger* (Dunker, 1857) and *B. striatulus* (Hanley, 1843), are re-described and distinguished on morphological and molecular grounds. Overlapping intraspecific variation in the shells of both species has resulted in several synonyms that in turn have led to confusion over their identities, even though representative shell forms of the two congeners appear distinct. Typical *B. setiger* of authors has a somewhat inflated shell that is dorso-ventrally wide with a uniformly yellowish orange to brown periostracum usually covered partially by byssal hairs over the posterior half of the shell. This is in contrast to the narrowly elongate, dorso-ventrally compressed shell of a typical *B. striatulus*, which usually has up to six black or dark brown stripes of differing widths radiating from near the umbones towards the posterior region over an otherwise yellow to dark brown periostracum devoid of byssal hairs. However, these traits varied considerably between individuals even within populations in some cases. Our study showed that the two species are indeed closely related. Both are capable of secreting and depositing byssal hairs on their shells, as well as living gregariously in byssal mats. Mixed species stands were also observed in Singapore and Phuket, Thailand. The shell microstructure and anatomy of the two species were practically indistinguishable. Nevertheless, pair-wise genetic distances between the two species ranged between 0.06 to 0.07, based on concatenated mitochondrial (COI, 16S) and nuclear (ITS1, 28S, H3) gene trees. These phylogenetic trees also suggested that the two species are not closely related to other members of *Brachidontes*. A new genus *Byssogerdius* is proposed to accommodate them. Further, the syntypes of *B. setiger* appear to be a Mediterranean and/or West African species of *Gregariella*. The correct name for the Indo-Pacific species is thus suggested to be *Byssogerdius subsulcatus* (Dunker, 1857), a species that Dunker himself considered distinct from *B. setiger*.

Keywords: Mytilidae, *Brachidontes*, *Byssogerdius*, Southeast Asia, taxonomy
