

**Morphology and molecular phylogenetic placement of a coastal shipworm
(*Bactronophorus thoracites* (Gould, 1862), Teredinidae) from Peninsular Malaysia**

ABSTRACT

The wood-boring shipworm, *Bactronophorus thoracites* (Teredinidae), is the only species in the genus *Bactronophorus*, with wide distribution in the Indo-West Pacific biogeographic region. Besides rendering important ecosystem services such as in decaying wood and participating in C fluxes in mangroves, to several ethnic groups in Southeast Asia, this mollusk is a highly nutritious delicacy when eaten raw. There are near 20 shipworm species reported in Malaysian waters, however, in-depth studies have not been conducted on any of these species. Here, we characterized *B. thoracites* from a mangrove environment on the west coast of Peninsular Malaysia. This bivalve is distinguished by its non-segmented pallet, composed of a basal cup with a dagger-like extension. Molecular phylogenetic analyses using 16S gene sequences from six different species (family Teredinidae) including *B. thoracites*, revealed a monophyletic relationship. On the contrary, combined datasets of 18S and 28S rRNA gene sequences from 12 different species (family Teredinidae) suggested a paraphyletic relationship; *B. thoracites* appeared to be a sister to *Neoteredo reynei*. Using the DNA barcode COI, *B. thoracites* is clearly separated from other teredinids, albeit with moderate bootstrap support. Molecular dating analysis speculated the divergence time between *B. thoracites* and *N. reynei* was the Early Cretaceous period. We provide novel DNA sequences for *B. thoracites*, which could be useful for species identity validation and molecular taxonomical studies.

Keyword: COI barcoding; Marine; Molecular dating; Species identification; Wood-boring bivalves