

## **Conchology variations in species identification of Pachychilidae (Mollusca, Gastropoda, Cerithioidea) through multivariate analysis**

### **ABSTRACT**

Pachychilidae is one of the freshwater gastropod family which was previously known under the Potamididae and Thiaridae families. Studies on freshwater gastropods especially on conchology examinations are still inadequate compared to marine gastropods. Morphological and morphometric studies of gastropods are practically used to identify and differentiate between species and necessary to complement molecular studies due to its low cost and tolerable resolving power of discrimination. The aim of the current study is to provide information on morphological and morphometric characteristics of Pachychilidae in Bintulu, Sarawak stream. A total of 20 individuals from each species of *Sulcospira testudinaria*, *Sulcospira schmidtii*, *Brotia siamensis*, and *Tylomelania* sp. from Pachychilidae family were collected at three different sites from a small stream within the Bintulu area. Fourteen measurement of shell morphometrics were converted into proportioned ratios and analysed for univariate and multivariate analysis. Three shell morphometric (Aperture width, AW; Whorl width, WW2; and, Interior anterior length, AINL) of Pachychilidae indicated significant differences ( $P < 0.05$ ) between species. However, multivariate analysis revealed that these shell morphometrics are pre-eminent factors to discriminate genus *Sulcospira*, *Brotia* and *Tylomelania*, as well as between *Sulcospira* species. This current study also suggests that these three characteristics are unique to *Sulcospira* species due to strong distinction among species. Findings on these three characteristics are significant for *Sulcospira* spp. as this study is the first shell morphometric report on the Pachychilidae species in Sarawak.

**Keyword:** Freshwater; Gastropod; Morphometric; Multivariate analysis; Pachychilidae