

Serpulidae (Annelida) of the Australian Indian Ocean Territories

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ABSTRACT. Research voyages onboard RV ‘Investigator’ in 2021 (IN2021_V08) and 2022 (IN2022_V04) sampled benthic communities of seamounts off Christmas Island and Cocos (Keeling) Islands, also known as the Australian Indian Ocean Territories (IOT). Over 150 specimens of the family Serpulidae (Annelida) collected during the voyages were deposited in the Australian Museum. The animals belonged to the filigranin genera *Apomatus*, *Bathyvermilia*, *Bathyvermilioides* n. gen., *Filigranula*, and *Protis*, as well as to serpulid genera *Hyalopomatus*, *Placostegus* and *Vitreotubus*. In total, 12 species were identified, including three named serpulids *Bathyvermilia challengerii*, *Filigranula stellata*, and *Vitreotubus digeronimoi*. Nine species *Apomatus nishii* n. sp., *Bathyvermilia rolandobastidai* n. sp., *Bathyvermilioides juliebrockae* n. sp., *Protis melmackenzieae* n. sp., *P. perneti* n. sp., *Hyalopomatus nogueirai* n. sp., *H. rossanae* n. sp., *H. suelindsayae* n. sp., and *Placostegus leslieharrisae* n. sp. were described. All species descriptions are accompanied by DNA sequence data and their phylogenetic positions in the family Serpulidae have been assessed.

Introduction

The family Serpulidae Rafinesque, 1818 (including Spirorbinae) is a group of sedentary annelids inhabiting self-secreted calcareous tubes. The family is composed of ~70 genera and over 500 species (Capa *et al.*, 2021). These animals are most common and abundant in subtidal and shelf habitats, but occur from intertidal to hadal depths (Kupriyanova *et al.*, 2010, 2011, 2014; Kupriyanova & Ippolitov, 2015; Gunton *et al.*, 2021; Kupriyanova & Flaxman, 2023). Serpulids from bathyal and abyssal depths belong to the genera *Bathyditrupa*, *Bathyvermilia*, *Filigranula*, *Hyalopomatus*, *Laminatubus*, *Protis*,

Spirodiscus, *Vitreotubus* and *Zibovermilia* (Kupriyanova & Ippolitov, 2015; Capa *et al.*, 2021), but only representatives of *Bathyditrupa*, *Bathyvermilia*, *Hyalopomatus*, and *Protis* are typical abyssal taxa also penetrating into the upper hadal zone (Kupriyanova *et al.*, 2010; 2011). *Laminatubus alvini* ten Hove & Zibrowius, 1986, *L. paulbroocksi* Rouse & Kupriyanova, 2021 and *L. joycebrooksae* Rouse & Kupriyanova, 2021 as well as *Protis hydrothermica* ten Hove & Zibrowius, 1986 are commonly found in the vicinity of hydrothermal vent and cold seep communities (ten Hove & Zibrowius, 1986; Rouse & Kupriyanova, 2021). Kupriyanova *et al.* (2010) reported two serpulids (*Hyalopomatus* cf. *mironovi* and *Protis* sp.) from vicinity

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