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A New Species of the Mysterious Genus *Spirodiscus* (Annelida: Serpulidae) of the Eastern Australian Abyss

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Abstract. In May–June 2017 an expedition on board RV *Investigator* sampled benthic communities along the lower slope and abyss of Australia's eastern margin from off mid-Tasmania to the Coral Sea. Over 200 annelids of the family Serpulidae collected during the voyage were collected and deposited in the Australian Museum in Sydney. Among them there was a new species of the poorly known abyssal (3754–4378 m) genus *Spirodiscus*. Serpulids typically build cylindrical calcareous tubes attached to hard substrates. Until now, only three serpulid species inhabiting free-lying polygonal tubes were reported from the deep sea: *Spirodiscus grimaldii* Fauvel, 1909 with quadrangular spirally coiled tubes, *Bathyditrupa hovei* Kupriyanova, 1993 with quadrangular tusk-shaped tubes, and *Spirodiscus groenlandicus* (McIntosh, 1877) with octagonal tusk-shaped tubes. The new species, *S. ottofinamusi* sp. nov. has very characteristic thin tusk-shaped unattached fluted tubes similar to those found in *S. groenlandicus*, but it differs by the details of collar, thoracic tori and abdominal chaetae. Morphologically, it has a pinnulated opercular peduncle and flat geniculate abdominal chaetae like filogranin serpulids but lacks thoracic *Apomatus* chaetae like serpulins. The first DNA sequences of this mysterious taxon places the new species within the filogranins in sister group relationship with *Chitinopoma serrula*.

Introduction

The family Serpulidae Rafinesque, 1815 (including Spirorbinae Chamberlin, 1919) is a group of sedentary annelids inhabiting self-secreted calcareous tubes. The family is composed of c. 70 genera and more than 500 species (Capa *et al*. 2021). These animals are most common in subtidal and shelf habitats, but can occur from intertidal to hadal depths (Kupriyanova *et al*., 2010, 2011, 2014; Kupriyanova & Ippolitov, 2015). Serpulids from bathyal and abyssal depths belong to the genera *Bathyvermilia* Zibrowius, 1973; *Bathyditrupa* Kupriyanova, 1993; *Filogranula* Langerhans, 1884; *Hyalopomatus* Marenzeller, 1878; *Laminatubus* ten Hove & Zibrowius, 1986; *Spirodiscus* Fauvel, 1909; *Protis* Ehlers, 1887; *Vitreotubus* Zibrowius, 1979; and *Zibrovermilia* Kupriyanova & Ippolitov, 2015 (see Capa *et al*., 2021).

Among these abyssal taxa, two genera, *Spirodiscus* and *Bathyditrupa,* are the most mysterious ones. Chronologically, *Spirodiscus groenlandicus* (McIntosh, 1877) was first to be collected in 1875 as an empty unattached tusk-shaped tube with distinct eight ridges from an abyssal location in the Labrador Sea. The species was described as *Ditrypa* [sic]

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