



New records of Serpulidae (Annelida, Polychaeta) from hydrothermal vents of North Fiji, Pacific Ocean

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Abstract

Serpulidae are sessile suspension-feeding annelids commonly found in the periphery of hydrothermal vents, but up to now only two species, *Laminatubus alvini* and *Protis hydrothermica* had been described from such communities. This paper reports two additional serpulid species, collected in 2005 from the North Fiji hydrothermal vent area, identified as *Hyalopomatus mironovi* and *Protis* sp. The former has originally been described from the Kurile-Kamchatka Trench and the later recorded from the North-East Pacific. The latter species is similar to *Protis hydrothermica*, but lacks special fin-and-blade collar chaetae typical of this genus. Illustrated re-descriptions of the two species have been supplemented by molecular sequences (18S ribosomal RNA). Molecular phylogenetic analyses show that *Hyalopomatus mironovi* and *Protis* sp. are sister species of *Laminatubus alvini* and *Protis hydrothermica*, respectively.

Key words: Polychaeta, Serpulidae, hydrothermal vents, North Fiji basin, Pacific Ocean, phylogenetic position, *Protis*, *Hyalopomatus*

Introduction

Serpulidae is a group of annelids permanently inhabiting calcareous tubes (ten Hove & Kupriyanova 2009) found in all oceans at any depths from the intertidal to the abyssal. Only two serpulid species, large *Laminatubus alvini* ten Hove & Zibrowius, 1986 and *Protis hydrothermica* ten Hove & Zibrowius, 1986 have been described from the East Pacific Rise (13° - 21°N). They constitute a visually prominent element of the typical bathyal hydrothermal vent communities and live in dense populations (up to 180-220 individuals m⁻²) in the nearest periphery of the vents (Hessler & Smithey 1983; Juniper & Sibuet 1987; Tunnicliffe 1992; Michelli *et al.* 2002; Mullineaux *et al.* 1998; 2003; Lenihan *et al.* 2008). However, other serpulid species commonly reported from hydrothermal vents and cold seeps around the world (Olu *et al.* 1996; Segonzac *et al.* 1997; Hashimoto & Ohta 1999; Galkin *et al.* 2004; Cardigos *et al.* 2005; Galkin & Goroslavskaya 2008) remain mostly unidentified and thus, taxonomic composition of the hydrothermal serpulid fauna is still largely unknown.

In this study we report two serpulid species from the vicinity of the hydrothermal vent communities of the Central Ridge of the North Fiji Basin. In addition to the detailed illustrated description, we obtained complete 18S ribosomal RNA (18S rRNA) gene sequences for both species. The sequences have been added to the most recently published phylogenetic data set of serpulid 18S rRNA genes (Kupriyanova *et al.* 2009) to examine the phylogenetic position of the species and confirm the taxonomic status.

Material and methods

The serpulids were collected in 2005 during dives 149-153 of the Deep-Sea Research Vehicle Submarine (DSV) *Jason II* at the locality known as “White Lady” hydrothermal field. Some specimens were