



## A new species of *Phyllochaetopterus* (Chaetopteridae: Annelida) from near hydrothermal vents in the Lau Basin, western Pacific Ocean

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### Abstract

*Phyllochaetopterus lauensis* n. sp., a new species of Chaetopteridae, is described from material collected by the DSV *Jason II* from the vicinity of hydrothermal vents in the Lau Basin, western Pacific Ocean. The new species is characterized by the coloration and patterning of the ventral shield of the anterior region (region A), the presence of one large cutting chaeta on each parapodium of the fourth chaetiger (A4), the shape of these A4 cutting chaetae (with a pear-shaped head), and presence of two middle-region (region B) chaetigers with foliose notopodia. The new species is very similar to some *Spiochaetopterus* species, but belongs in *Phyllochaetopterus* based on its possession of a pair of anterior ‘antennae’, which are in fact cirri of chaetiger one with internal chaetae. The new species is compared to other *Phyllochaetopterus* species, particularly from the Pacific, and we provide a table for all species currently referred to the genus.

**Key words:** polychaete, taxonomy, deep sea

### Introduction

Chaetopteridae is a small annelid taxon with about 65 nominal species placed in *Chaetopterus* Cuvier, 1830, *Mesochaetopterus* Potts, 1914, *Phyllochaetopterus* Grube, 1863 and *Spiochaetopterus* Sars, 1853. All are tubicolous and commonly occur on mud and sandy mud bottoms from the intertidal to shallow shelf waters; they are less well known from deep water. *Phyllochaetopterus* currently contains nineteen accepted species and membership in the genus is based on the possession of a pair of dorsal structures on chaetiger 1 are usually referred to as ‘antennae’ or ‘tentacular cirri’. It would appear that these structures are notopodial, since they contain internal chaetae (Bhaud *et al.* 1994). *Phyllochaetopterus* has not previously been reported from deep-sea localities, though some records should be re-examined (e.g., Levin *et al.* 1991). Six species of *Phyllochaetopterus* have been reported from Pacific waters (Okuda 1935; Gibbs 1971, 1972; Nishi & Arai 1996): *P. brevitentaculata* Hartmann-Schröder, 1965 (Cook Islands); *P. claparedii* McIntosh, 1885 (Japan); *P. verrilli* Treadwell, 1943 (Okinawa, Hawaii and Cook Islands); *P. elioti* Crossland, 1903 (Solomon Islands and Cook Islands); *P. socialis* Claparède, 1868 (Solomon Islands) and *P. herdmani* Willey, 1905 (Solomon Islands and Japan).

The present paper describes a new species of *Phyllochaetopterus* from the vicinity of hydrothermal vents in the Lau back-arc basin, western Pacific Ocean. It is the 20th species of *Phyllochaetopterus* described to date and the first to be recorded from near hydrothermal vents. It is, however, the third species of the family to be located near chemotrophic biological communities, following records of *P. socialis* (Abbiati *et al.* 1994) from a sulphurous cave in the Mediterranean and the description of *Spiochaetopterus sagamiensis* Nishi, Miura & Bhaud, 1999 from a cold methane seep off Japan (Nishi *et al.* 1999).