



Description and biological observations on a new species of deepwater symphurine tonguefish (Pleuronectiformes: Cynoglossidae: *Symphurus*) collected at Volcano–19, Tonga Arc, West Pacific Ocean

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Abstract

Symphurus maculopinnis n. sp., described on a single specimen (USNM 398820; 84.4 mm SL), was collected by a remotely operated vehicle (ROV) exploring a hydrothermal vent area located at 561 m on Volcano–19, Tonga Arc, West Pacific (24°48.439' S, 177°0.009' W). This new species is distinctive and readily diagnosed from congeners by the following combination of characters: 1–2–2–1 pattern of interdigitation of dorsal proximal pterygiophores and neural spines (ID pattern), 14 caudal-fin rays, 3+6 abdominal vertebrae, 49 total vertebrae, 89 scales in a longitudinal row, 92 dorsal-fin rays, 77 anal-fin rays, blunt squarish snout, thick blind-side lips with conspicuous plicae, and conspicuous ocellated (sometimes partially) spots on posterior dorsal and anal fins. Among *Symphurus*, only *S. ocellatus* von Bonde, collected at deepwater locations off East Africa, features a similar ID pattern, 14 caudal-fin rays and spots on the posterior dorsal and anal fins. *Symphurus maculopinnis* differs distinctly from *S. ocellatus* in its lower and non-overlapping meristic features (49 vs. 54–56 total vertebrae; 92 vs. 97–103 dorsal-fin rays; and 77 vs. 85–89 anal-fin rays), its squarish (vs. pointed) snout, and thick, plicated blind-side lower lip (vs. thin, non-plicated blind-side lower lip). Additional specimens (N= 56) of *S. maculopinnis* observed and filmed *in situ* near active venting sites located between ca. 433–561 m on Volcano–19 provide the basis for behavioral and ecological information recorded for the species. Videotapes reveal one individual of *S. maculopinnis* featuring reversed (dextral) asymmetry from that typical (sinistral) for members of the Cynoglossidae. Specimens with reversed asymmetry are relatively rare in this family and this *S. maculopinnis* represents only the second known reversed individual among the approximately 42 species of deep-sea (>200 m) *Symphurus*.

Key words: taxonomy, deep-sea flatfish, tongue sole, hydrothermal vents, volcanic arcs, seamounts, reversed asymmetry, species description, ocelli

Introduction

Exploratory expeditions along the Tonga and Kermadec Volcanic Arcs investigated various features of submarine volcanoes, hydrothermal vents and their associated faunas (e.g. Stoffers *et al.* 2006). Of particular interest during these expeditions was the discovery of symphurine tonguefishes associated with deepwater hydrothermal vents and other habitats on these undersea volcanoes (Tunnicliffe *et al.* 2010). One undescribed tonguefish species, Species B, observed on Volcano–19 in the Tonga Arc, was conspicuous in the possession of a single pigmented spot on both the posterior dorsal and anal fins. This pigmentation feature is rare among species of Indo–West Pacific *Symphurus* (Munroe unpubl. data), with only *S. ocellatus* von Bonde collected from deep waters in the western Indian Ocean having such spots on its dorsal and anal fins.

A single specimen (now the holotype) of this undescribed species, collected at 561 m on Volcano–19 during a dive conducted by the ROV *ROPOS*, provides the basis for formal description of this species. Details of the expeditions including physico-chemical data of habitats where this specimen was collected and where other specimens of this species were observed, as well as ecological and behavioral observations for the new species, were provided in Tunnicliffe *et al.* (2010).