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SHORT REPORT

A new species of polychaete, *Pettibonella shompens* sp. nov. (Orbiniidae), from the Nicobar Islands, North Indian Ocean

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Abstract

A new species of *Pettibonella* (Polychaeta, Orbiniidae) collected at 50 m depth off Car Nicobar Island is described. The new species, *Pettibonella shompens* sp. nov., is clearly distinguished from the only other species of the genus, *P. multiuncinata*, by the size and shape of the swan-shaped abdominal uncini.

Key words: Polychaeta, new species, Orbiniidae, *Pettibonella*, Nicobar Islands

Introduction

The genus *Pettibonella* is distinguished from other genera of the family Orbiniidae by the presence of two distinct types of abdominal uncini: swan-shaped uncini and slender uncini. The genus was established by Solis-Weiss & Fauchald (1989), who described *Pettibonella multiuncinata* based on specimens collected from mangrove root mats at Twin Cays and West Bay, Belize, Caribbean Sea. In 2002, Eibye-Jacobsen reported the genus *Pettibonella* collected during the BIOSHELF project from off Ko Phra Thong and off Thai Muang, Eastern Andaman Sea. While this genus bears some similarities with *Proscoplos*, it is distinguished from the latter by the presence of two different kinds of abdominal uncini, the size of the swan-shaped uncini, and by the long branchiae, which bear pigmented lamellae on the distal half. This article provides the description of a second species in the genus *Pettibonella* based on specimens obtained from a depth of 50 m off Car Nicobar Island, Andaman and Nicobar Islands.

Materials and methods

During the benthic survey of the Andaman and Nicobar Islands onboard the Fishery Oceanographic Research Vessel (FORV) *Sagar Sampada* (Cruise No. 261 & 292), specimens of *Pettibonella* were obtained in 0.2 m² Smith McIntyre grab samples collected off Car Nicobar Island (50 m, Figure 1). Sediment samples were preserved in 5% buffered formalin, stained using Rose Bengal solution and sorted. Identification was carried out using standard keys (Fauchald 1977), a stereo zoom microscope (Leica S8APO) and a camera lucida attached to a compound microscope (Leica DM1000). Length and width measurements were made using the Leica Application Suite (Leica DFC 425). Although sampling was done at 60 stations around the Andaman and Nicobar Islands (50–200 m) during both cruises, specimens of *Pettibonella* were only collected at a depth of 50 m off Car Nicobar. The specimens have been deposited in the FORV Referral Centre, Centre for Marine Living Resources and Ecology, Cochin, Kerala, India.

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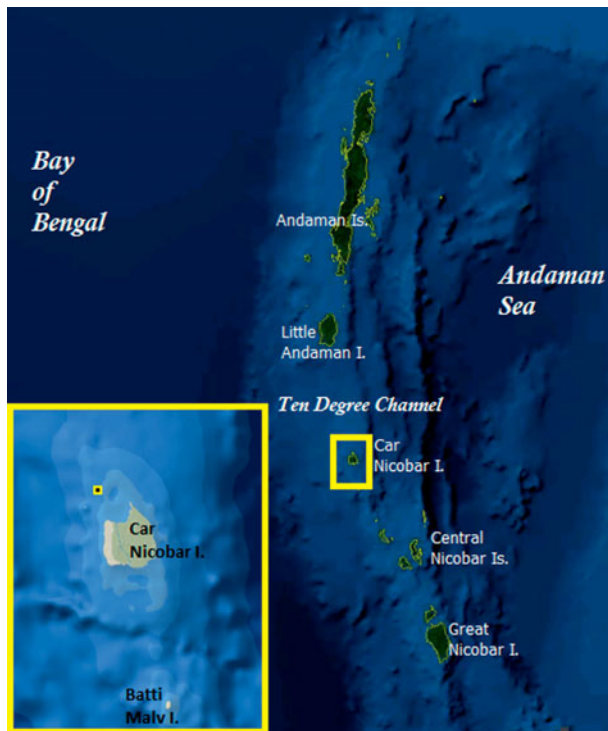


Figure 1. Map of Andaman & Nicobar Islands, indicating collection location (9°17.967'N, 92°42.016'E).

Taxonomy

Family Orbiniidae Hartman, 1942

Genus *Pettibonella* Solis-Weiss & Fauchald, 1989

Type species

Pettibonella multiuncinata Solis-Weiss & Fauchald, 1989

Pettibonella shompens sp. nov.

Material examined

Car Nicobar Island. Holotype: IO/SS/POL/00465, 9°17.967'N, 92°42.016'E, 50 m, specimen complete, 12.22 mm long and 0.48 mm wide with 99 chaetigers (Cr. 261, 23 Jan 2009). Paratype: IO/SS/POL/00466, 9°16.985'N, 92°42.158'E, 49 m, specimen incomplete, 18.32 mm long and 0.72 mm wide with 149 chaetigers (Cr. 292, 21 Nov 2011).

Diagnosis

Prostomium bluntly conical with a pair of eyes, two anterior aetigerous segments, branchiae starting from chaetiger 2, with clearly visible pigmented lamellae on the distal half of branchiae. Notopodial chaetae include crenulate capillaries in both thorax and abdomen; neuropodial chaetae include hooks in thoracic segments and swan-shaped uncini with an

extraordinary bulge on the shaft and slender uncini in abdominal segments.

Description

Body robust and to an extent flattened dorsoventrally (Figure 2a). Prostomium short and bluntly conical (Figures 2b, 3a); a pair of eyes present at lower edge of prostomium. Peristomium small and partially fused to next segment. Two aetigerous segments present between prostomium and 1st chaetiger. Division of the aetigerous segments distinct laterally. Mouth large and ventral, with lateral lips (Figures 2c, 3b). Proboscis not observed. Branchiae long, cylindrical, a stalk with pigmented lamellae on distal half (Figure 2d), attached to dorsum and starting from chaetiger 2. Branchial length increases towards posterior end of body. Branchiae absent on last two parapodia. Biramous parapodia throughout body. Thorax consists of 21 chaetigerous segments with crenulate capillary notochaetae, as well as crenulate capillary neurochaetae along with neuropodial hooks. On the first chaetiger, notopodium with a filiform postchaetal papilla and neuropodium with short postchaetal lobes. Notopodial postchaetal lobes increase in length up to abdomen. Neuropodial postchaetal lobes bilobed, of unequal length from chaetiger 2. Thoracic neuropodia with 4–5 hooks and 15–18 neuropodial crenulate capillary chaetae from chaetiger 2 to end of thorax (Figure 3c). On chaetigers 6 and 7, bilobed neuropodial postchaetal lobes noticeably more strongly developed and larger than on preceding or succeeding chaetigers. These segments bear 4 rows of crenulated neurochaetae with a noticeable variation in length and up to 8 hooks. Lower part of postchaetal lobe decreases in size towards end of thorax, absent in abdominal chaetigers. Length of notopodial crenulate capillaries increases with chaetiger. Neuropodial hooks yellowish with straight shaft and distally bent, blunt tip bearing 10 transverse scales (Figure 3d). Variation in chaetigers between thorax and abdomen prominent from chaetiger 13 to 21. Hooks show a transformation to uncini in transitional chaetigers with a development of two terminal teeth (Figure 3e) while no variation was observed in the capillary neurochaetae or notochaetae in shape or number. Transition clear by chaetiger 22 (Figure 2f), one of the uncini with blunt, tridentate tips exhibiting an intermediate shape between thoracic hook and abdominal swan-shaped uncinus. Neuropodia of chaetiger 22 furthermore with three slender uncini, with 5 denticles above rostrum, and 5–6 crenulate capillaries; notopodia with 8–10 crenulate capillaries. Swan-shaped uncini prominent from chaetiger 23, one per neuropodium, defining a fully formed abdominal chaetiger. Each abdominal neuropodium with a large,

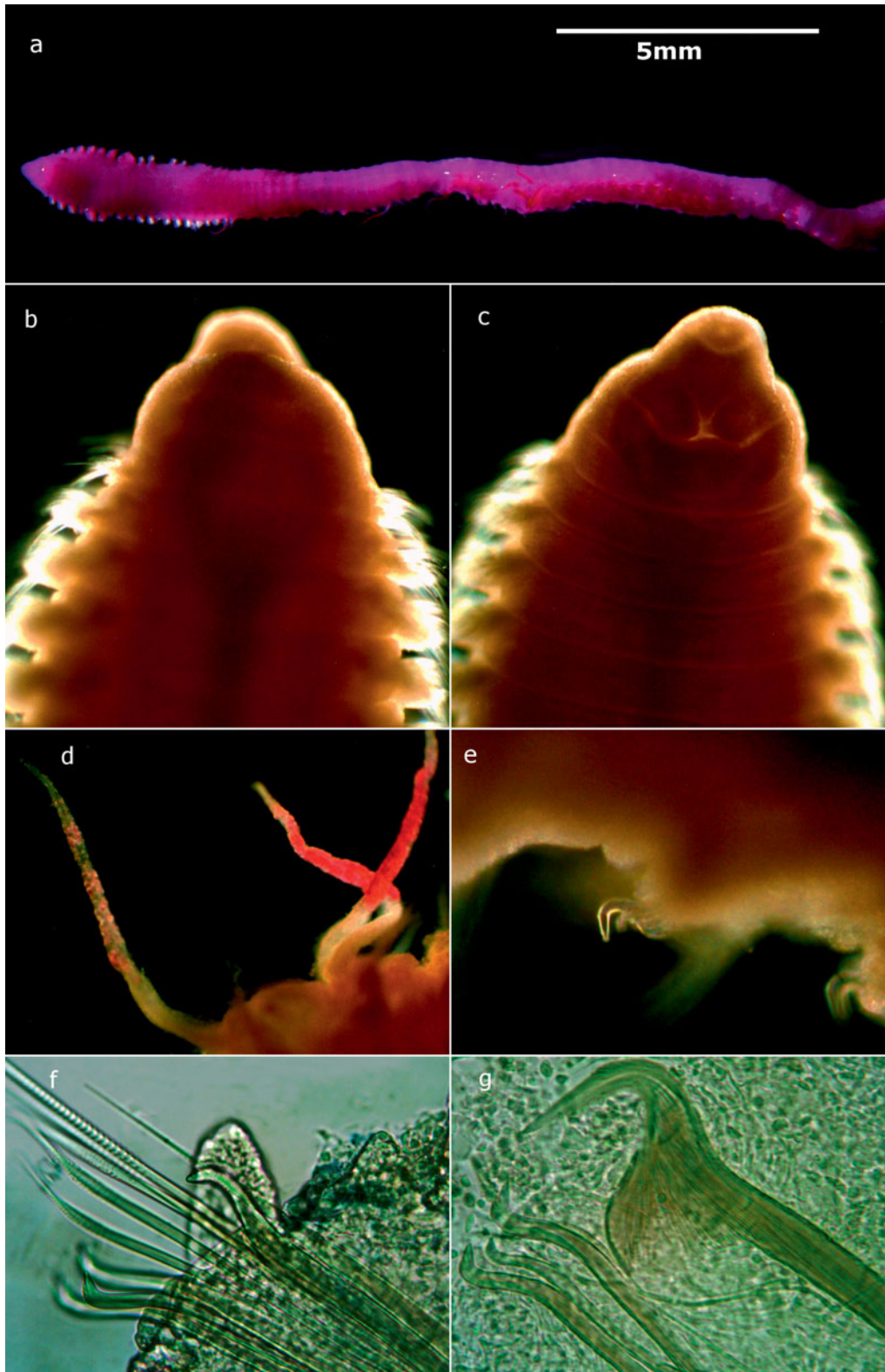


Figure 2. *Pettibonella shompens* sp. nov. Holotype. a, Entire animal. b, Dorsal view of prostomium and anterior chaetigers. c, Ventral view of prostomium and anterior chaetigers. d, Stalked branchiae with pigmented lamellae on abdominal segments. e, Abdominal chaetiger. f, Chaetiger 22 with hooks and capillaries. g, Abdominal uncini.

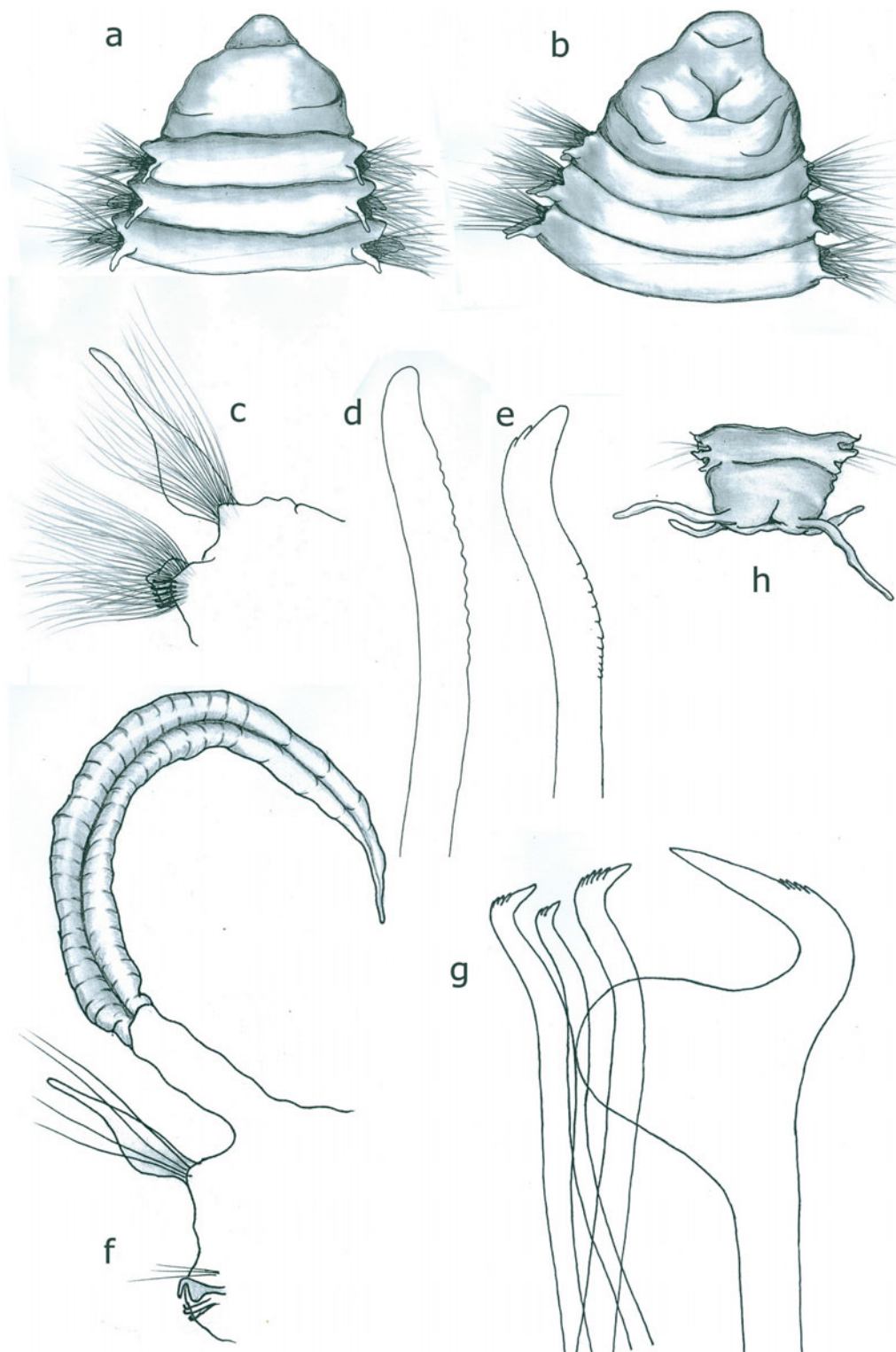


Figure 3. *Pettibonella shompens* sp. nov. Holotype. a, Dorsal view of prostomium and anterior chaetigers. b, Ventral view of prostomium and anterior chaetigers. c, Thoracic chaetiger. d, Thoracic hook. e, Hook in transitional chaetiger. f, Abdominal chaetiger. g, Abdominal uncini. h, Pygidium with anal cirri, dorsal view.

dorsal, swan-shaped uncus facing 3 slender, ventral uncini; 3–4 crenulate capillary neurochaetae also present (Figures 2e, 3f). Large swan-shaped hooks with a main fang surmounted by 2–4 denticles, shaft

highly inflated below rostrum which it extends beyond. Slender uncini with 5 denticles above rostrum (Figures 2g, 3g). Number of denticles on main fang of swan-shaped uncini increases from 2 to 4 on

Table I. Comparison of species of *Pettibonella*, adapted from Solis-Weiss & Fauchald (1989) and Eibye-Jacobsen (2002).

Species	<i>Pettibonella multiuncinata</i>	<i>Pettibonella</i> sp. A*	<i>Pettibonella shompens</i> sp. nov.
First branchiae appear on chaetiger	9	10	2
Branchial stalk	Present	Absent	Present
Ciliation on branchial stalk	Absent	Present	Absent
Pigmentation on distal half of branchiae	Absent	Present	Present
Number of thoracic chaetigers	15	17–18	21
Bilobed neuropodial postchaetal lobes well developed on chaetiger	5 and 6	Not specified	6 and 7
Transitional hooks in chaetiger	16	22–24	22
Inflation of swan-shaped uncus	Inflated	Distally curved	Highly inflated
Number of slender uncini in abdominal chaetiger	2–3	2	3
Occurrence	Off Belize, Caribbean Sea	Off Ko Phra Thong, off Thai Muang, Thai sector of Andaman Sea	Off Car Nicobar Island, Bay of Bengal Sector
Depth range (m)	0.5	21–40	50

*See Eibye-Jacobsen (2002).

posterior chaetigers. Pygidium with 2 long dorsal cirri and 2 short ventral cirri (Figure 3h). Anal aperture prominent, with papillae.

Etymology

The species name is attributed to the Shompen tribe inhabiting the Nicobar Islands.

Ecology

The substrate was coralline sand. Near bottom temperature: 27.34°C, salinity: 32.62‰ and dissolved oxygen: 4.10 ml/l.

Remarks

The branchiae of *Pettibonella shompens* sp. nov. possess a stalk, which is entirely absent in *P. multiuncinata*. The distal half of each branchia lacks pigmentation in *P. multiuncinata* but is pigmented in *P. shompens*. The bilobed neuropodial postsetal lobes are comparatively larger on chaetigers 5 and 6 in *P. multiuncinata*, whereas in *P. shompens* sp. nov. the enlargement is seen on chaetigers 6 and 7. Transitional hooks are prominent in chaetiger 16 in *P. multiuncinata*, but in *P. shompens* sp. nov. they are not obvious before in chaetiger 22. The shaft of the swan-shaped uncus is relatively more inflated in *P. shompens* sp. nov. than in *P. multiuncinata*. The unidentified species, *Pettibonella* sp. A, reported from the Thai sector of the Andaman Sea (Eibye-Jacobsen 2002) differs from *P. shompens* sp. nov. in the appearance of branchiae on chaetiger 10 with lateral ciliation on the basal half, while in *P. shompens* sp. nov. branchiae start on chaetiger 2 and lack ciliation on the basal half. In *Pettibonella* sp. A only 2 slender uncini are present in each abdominal chaetiger, but in *P. shompens* sp. nov. they are 3 in number. A

comparison between the species of the genus *Pettibonella* is shown in Table I.

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