

**A NEW BANDFISH, *OWSTONIA SARMIENTO*  
(PISCES: PERCIFORMES: CEPOLIDAE: OWSTONIINAE),  
FROM THE PHILIPPINES WITH A KEY TO SPECIES OF THE GENUS**

**Yun-Chih Liao**

*Biodiversity Research Center, Academia Sinica, Nankang, 115 Taipei, Taiwan, Republic of China  
Email: fish1715@yahoo.com.tw*

**Rodolfo B. Reyes Jr.**

*The WorldFish Center, Khush Hall, International Rice Research Institute, Los Baños, Laguna, Philippines  
Email: r.reyes@cgiar.org*

**Kwang-Tsao Shao**

*Biodiversity Research Center, Academia Sinica, Nankang, 115 Taipei, Taiwan, Republic of China  
Email: zoskt@gate.sinica.edu.tw (Corresponding Author)*

**ABSTRACT.** – A new bandfish, *Owstonia sarmiento*, is described from specimens collected off East Luzon, Philippines at about 200–300 m depth during the AURORA 2007 Expedition. It differs from other known congeneric species in having more dorsal fin rays, two anal spines, more vertebral counts, and the least lateral row scale counts. The species is described (colour photo and radiograph included) and a diagnostic key to species of the genus is provided.

**KEY WORDS.** – *Owstonia sarmiento*, *Owstonia*, Cepolidae, new species, Philippines, deep-sea fish.

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## INTRODUCTION

Species of the genus *Owstonia* and its allied species (e.g., *Sphenanthias*) belong in the family Cepolidae (Smith-Vaniz, 1986, 2001; Nakabo, 2002). There are about 12 nominal *Owstonia* species recorded in the family (Froese & Pauly, 2008). *Owstonia* has been proposed as a monophyletic group, the family Owstoniidae (Smith, 1968; Mok, 1988), but currently is treated as the subfamily Owstoniinae in the family Cepolidae (Smith-Vaniz, 2001). Five genera were placed in this group viz. *Owstonia* (Tanaka, 1908), *Sphenanthias* (Weber, 1913), *Parasphenanthias* (Gilchrist, 1922) *Loxopseudochromis* (Fowler, 1934a) and *Opsipseudochromis* (Fowler, 1934a) (Smith, 1968; Smith-Vaniz, 2001). Among them, *Loxopseudochromis*, *Sphenanthias*, and *Parasphenanthias* were considered as synonyms of *Owstonia* (Smith, 1968; Smith-Vaniz, 1986), and *Opsipseudochromis* was a synonym of *Sphenanthias*, tentatively considered as a valid genus (Smith, 1968). We follow the classification by Smith-Vaniz (2001) and recognize two genera, *Owstonia* and *Sphenanthias*, in the Owstoniinae. The most important difference between these two genera is that in *Owstonia* the lateral lines of the sides of the body join as a loop in front of the dorsal fin, while in *Sphenanthias*, the lateral lines are separate and do not

form a loop. Currently, there are five species in this genus viz. *Owstonia dorypterus* (Fowler, 1934a), *O. maccullochi* Whitley, 1934, *O. microlepis* Fowler, 1934b, *O. totomiensis* Tanaka, 1908, and *O. weberi* (Gilchrist, 1922). However, formally nominal species including *O. grammodon* (Fowler, 1934b), *O. macrophthalmus* (Fourmanoir, 1985), *O. nigromarginatus* (Fourmanoir, 1985), *O. pectinifer* (Myers, 1939), *O. simoterus* (Smith, 1968), *O. tosaensis* Kamohara, 1934, and *O. whiteheadi* Talwar, 1973, were proposed belonging to the genus *Sphenanthias* with typological species *S. sibogae* Weber, 1913 (Smith, 1968; Smith-Vaniz, 2001).

## MATERIALS AND METHODS

Specimens were collected during the AURORA 2007 Expedition, one of the series of deep-sea expeditions around the Philippines of the Census of Philippines Deep-Sea Biodiversity. This was part of the Census of Margins (CoMarge) theme of the Census of Marine Life. The trawls were conducted and operated by the Research Vessel MV DA-BFAR belonging to the Bureau of Fisheries and Aquatic Resources, Department of Agriculture (Philippines). The research institutions participating in this project included

the National Museum of the Philippines, the Muséum national d'Histoire naturelle, Paris, France, the National Museum of Natural History (NMNH), Washington, D.C., USA, the Institute of Marine Biology, National Taiwan Ocean University, and Department of Biology, National University of Singapore. Staff members and students of the Biodiversity Research Center, Academia Sinica, were invited to join in and take charge of the study of the fishes obtained during the expedition.

Two types of trawls were used in the survey, the 4.2 meter-wide French-type beam trawl and the otter trawl (head line of 12.40 m). The survey was conducted using the Research Vessel MV DA-BFAR of the Bureau of Fisheries and Aquatic Resources, Department of Agriculture (Philippines). Photos of freshly dead specimens were taken before tissue samples were collected. Tissue samples were collected and fixed in absolute ethanol. Voucher specimens were fixed in 10% formalin and then transferred to 70% ethanol for long-term preservation. Type specimens were deposited in the National Museum of the Philippines (PNMI) and the Biodiversity Research Museum, Biodiversity Research Center, Academia Sinica, Taiwan (ASIZP, the formerly Institute of Zoology, Academia Sinica). Measurement follows Nakabo (2002). Abbreviations used in this paper are as follows: SL, standard length; AMS, Australian Museum, Sydney; ANSP, Academy of Natural Sciences, Philadelphia; FMNH, Field Museum of Natural History, Chicago; SAIAB, South African Institute of Aquatic Biodiversity (also RUSI, J. L. B. Smith Institute of Ichthyology, South Africa), Grahamstown; NMNH, National Museum of Natural History (also USNM), Washington, D.C.

## TAXONOMY

### *Owstonia* Tanaka, 1908

*Owstonia* Tanaka, 1908: 46 (type species *Owstonia totomiensis*)  
*Loxopseudochromis* Fowler, 1934a: 354 (type species  
*Loxopseudochromis dorypterus*).  
*Parasphenanthias* Gilchrist, 1922: 69 (type species  
*Parasphenanthias weberi*).  
*Sphenanthias* Weber, 1913: 210 (type species *Sphenanthias sibogae*).

**Remarks.** – Genus *Owstonia* is characterized by large head, compressed body tapering posteriorly; cycloid scales; large and oblique mouth; maxillary exposed, no supplemental bone; teeth curved, uniserial in jaws with cluster at lower symphysis, palatine and vomer teeth absent; six branchiostegals, gill opening wide, gill rakers long and numerous; anal and dorsal fins long, spines slender, caudal fin long with middle rays elongated, pectoral fin short; sensory canals of head prominent; lateral line runs close to dorsal base and ends before caudal peduncle (Smith, 1968).

There are about five species included in this genus, viz. *Owstonia totomiensis* Tanaka, 1908, *O. weberi* (Gilchrist,

1922), *O. dorypterus* (Fowler, 1934a), *O. microlepis* (Fowler, 1934b), and *O. maccullochi* Whitley, 1934. Among them, *O. microlepis* was synonymized with *O. weberi*, and *O. maccullochi* was synonymized with *O. totomiensis*, respectively (Smith, 1968, Smith-Vaniz, 1986; 2001). However, they were included in this genus and in the key to species with parentheses for reference (see below). Furthermore, as mentioned above (Smith-Vaniz, 2001), other species, (i.e., *O. grammodon* (Fowler, 1934b), *O. macrophthalmus* (Fourmanoir, 1985), *O. nigromarginatus* (Fourmanoir, 1985), *O. pectinifer* (Myers, 1939), *O. simoterus* (Smith, 1968), *O. tosaensis* Kamohara, 1934, and *O. whiteheadi* Talwar, 1973), formerly belonged to the genus *Owstonia* should be referred to the genus *Sphenanthias*.

### Key to species of *Owstonia* sensu Smith (1968)

- 1 Lateral series of scales from gill opening to caudal base less than or equal to 44 ..... 2
- Lateral series of scales from gill opening to caudal base more than 45, about 55–60 ..... *O. totomiensis* (*O. maccullochi*)
- 2 Pelvic fin long, attending to anal fin base; anal fin with one spine ..... 3
- Pelvic fin short, not extending to anal fin base; anal fin with two spines ..... *Owstonia sarmiento*, new species
- 3 Gill raker upper 9 and lower 15 ..... *O. dorypterus*
- Gill raker upper 14–17 and lower 28–30 .....  
 ..... *O. weberi* (*O. microlepis*)

### *Owstonia sarmiento*, new species

(Table 1, Figs. 1 A & 1B)

**Material examination.** – Holotype, PNMI 17006 (ASIZP0067939), 61 mm SL, 21 May 2007, CP2667-003, Aurora, East Luzon, Philippines, 15.93°N 121.78°E, 307–292 m, French-type beam trawl, coll. MV DA-BFAR.

**Paratypes.** – ASIZP0068216, 64 mm SL, 2 Jun.2007, CC2743-020, Aurora, East Luzon, Philippines, 16.02°N 121.85°E, 302–309 m, otter trawl, coll. MV DA-BFAR; – ASIZP0067820, 63 mm SL, 20 May 2007, CP2656-004, Aurora, East Luzon, Philippines, 16.03°N 121.88°E, 262–278 m, French-type beam trawl, coll. MV DA-BFAR; – ASIZP0068380, 63 mm SL, 20 May 2007, CP2656-004, Aurora, East Luzon, Philippines, 16.03°N 121.88°E, 262–278 m, French-type beam trawl, coll. MV DA-BFAR.

**Diagnosis.** – Dorsal-fin rays III 23, Anal-fin rays II 14, Pectoral-fin rays 19, Pelvic-fin rays I 5, caudal rays 17–19, vertebrate counts 29. Branchiostegal rays 6; gill rakers 13–14 (upper) +1(middle) +26–28 (lower). Scales: cheek with 2–3 rows of 8–10 scales, lateral rows of scale from gill opening to caudal 27–30 and 3 more scales on caudal fin, lateral line scales 23–29 connected in front of dorsal fin, other 4 lateral scales downward to gill opening, pre-dorsal scales 2. Pelvic fin short, not extending to anal fin base. Reddish in color, outer margin of fins whitish, black pigmentation between membrane of maxilla and premaxilla.

Table 1. Comparison of the characters the of species of the genus *Owstonia* (after Fowler, 1934a).

Scientific Name	<i>Owstonia totomiensis</i>	<i>Owstonia weberi</i>	<i>Owstonia dorypterus</i>	<i>Owstonia microlepis</i>	<i>Owstonia maccullochi</i>	<i>Owstonia samiento</i> , new species
Author	Tanaka, 1908	Gilchrist, 1922	(Fowler, 1934)	(Fowler, 1934)	Whitley, 1934	Liao et al., 2009
Type(s)	FMNH 55424	SAIAB(RUSI) 11072-3	USNM 93166	ANSP 54940	AMS IA5815	ASIZP0068216 ASIZP0067820 ASIZP0068380
D	III + 21	III + 21	III + 21	III + 21	III + 22	III + 23 III + 23
A	I + 14	I + 14	I + 14	I + 14	I + 14	II + 14 II + 14
P1	21	20	1 + 18	19	21	19 19
P2	I + 5	I + 5	I + 5	I + 5	I + 5	I + 5 I + 5
Caudal	17	14	N/A	17	15	17 19
Vert	28	27-28	N/A	28	28	29 29
Br	6	6	6	6	6	6 6
GR	N/A	(14-15) + 1 + (29-30)	9 + 25	16 + 1 + 31	17 + 1 + 30	14 + 1 + 26 13 + 1 + 26 14 + 1 + 28
Cheek scales	absent (lost)	3-4 rows	6 rows	3 rows = 18	5 rows = 40	8 10 2 +
Pred S	6	6	9	6	8	2 2
Lateral row scales	55 + 5	40 + 4	38 + 4	39 + 4	51 + 5	27-28 + 3 27 + 3
Lateral line scales	52 + 4	37 + (7)	28	45 + 6	60 + 4	28 + 4 23 + 4 29 + 4

**Description.** – Body compressed and elongated, tapering posteriorly. Head large, 26–28% in SL; body depth 24–25% in SL. Eye large, 44–50% in HL, inter-orbital distance 32–35% in HL. Mouth large, posterior maxilla not extended to posterior margin of eye. Fin rays and spines counts: dorsal fin III 23, anal fin II 14, pectoral fin 19 rays, pelvic fin I 5, caudal fin 17–19 rays and a few accompanying short rays on the upper and lower margin. Vertebral counts 29. Branchiostegal 6, gill rakers upper 13–14, middle 1, and lower 26–28. Scales: cheek 2–3 rows, 8–10 scales; lateral row scales start from gill opening to caudal fin with 27–30 scales and 3 more scales covered on caudal fin base; dorsal lateral line scale 23–29 along dorsal fin base and connected in front of dorsal fin, another 4 tube-like lateral scales extended downwards to upper margin of gill opening; pre-dorsal scales 2. Scales cycloid with 7–10 radii. Pelvic fin short, not extending to anal fin base.

**Colouration.** – Body reddish when fresh, eyes orange, operculum and maxilla reddish to whitish, membrane between maxilla and pre-maxilla entirely pigmented, membrane between maxilla and posterior lower jaw pigmented, pectoral fins reddish, pelvic fins whitish; dorsal, anal, and caudal fins reddish with white outer margin and one red band along the basal of white margin; belly whitish. Colour in alcohol nearly uniformly whitish.

**Distribution.** – Currently known only from the type locality in the Philippines.

**Etymology.** – This new species is named after the director of the Bureau of Fisheries and Aquatic Resources (Philippines), Malcolm Sarmiento, for his support in making this exploration of deep-sea fauna in the Philippines possible. The species name is used as a noun in apposition.

## DISCUSSION

*Owstonia sarmiento* is unique in having the following characters: anal fin with two spines rather than one; more

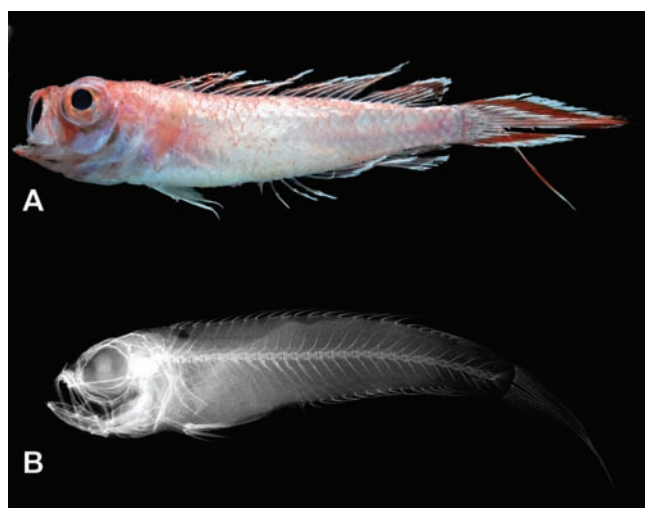


Fig 1. *Owstonia sarmiento*, new species, holotype, PNMI 17006 (ASIZP0067939), 61 mm SL: A, colour photograph; B, radiograph.

dorsal fin rays and vertebral counts; lower lateral row scale counts than for other species of the genus; pelvic fin short, not extending to anal fin base. Even though it is similar to *O. dorypterus* and *O. weberi* in having fewer lateral row scale counts, *O. sarmiento* differs from *O. dorypterus* in having fewer cheek scales (2–3 rows vs. 6 rows in *O. dorypterus*); more gill rakers; and fewer lateral row scales and lateral line scales (Table 1). *Owstonia sarmiento* differs from *O. weberi* in having more caudal rays; fewer cheek rows and scales, and fewer lateral row scales.

According to the definition of the genus by Smith (1968) and Smith-Vaniz (2001), five species were included, viz. *Owstonia totomiensis* Tanaka, 1908, *O. weberi* (Gilchrist, 1922), *O. dorypterus* (Fowler, 1934a), *O. microlepis* (Fowler, 1934b), and *O. maccullochi* Whitley, 1934. However, *O. microlepis* and *O. maccullochi* were synonymized with *O. weberi* and *O. totomiensis*, respectively (Smith, 1968; Smith-Vaniz, 1986, 2001). After examination of the type specimens, we concur with the synonymy. Including *O. sarmiento* described here, there are now four species in *Owstonia*.

**Comparative material.** – *Owstonia totomiensis*, FMNH 55424 (Holotype), 315 mm, 10 Feb. 1906, Totomi, Honda, Japan; NTUM 6857, 373 mm, 9 Jun. 1987, NE Taiwan; – *Owstonia weberi*, SAIAB(RUSI) 11072–3 (Syntype), 106–175 mm, Durban, South Africa, 2 Jul. 1920; – *Owstonia microlepis*, ANSP 54940 (Holotype), 265 mm, Durban, Natal, South Africa, 1932; – *Owstonia maccullochi*, AMS IA5815 (Holotype), 162 mm, NSW, Sydney, Australia, 238 m depth.

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LITERATURE CITED

- Fowler, H. W., 1934a. Descriptions of new fishes obtained 1907 to 1910, chiefly in the Philippine Islands and adjacent seas. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **85**: 233–367.
- Fowler, H. W., 1934b. Fishes obtained by Mr. H. W. Bell-Marley chiefly in Natal and Zululand in 1929 to 1932. *Proceedings of the Academy of Natural Sciences of Philadelphia*, **86**: 405–514.
- Froese, R. & D. Pauly, 2008. FishBase. World Wide Web electronic publication. [www.fishbase.org](http://www.fishbase.org), version (04/2008).
- Gilchrist, J. D. F., 1922. Deep-sea fishes procured by the S.S. "Pickle" (Part I). *Report Fisheries and Marine Biological Survey, Union of South Africa Rep.*, **2** (part 3): 41–79, Pls. 7–12.
- Mok, H. K., 1988. Osteological evidence for the monophyly of Cepolidae and Owstoniidae. *Japanese Journal of Ichthyology*, **34**(4): 507–508.
- Myers, G. S., 1939. A new Owstoniid fish from deep water off the Philippines. *Proceedings of the Biological Society of Washington*, **52**: 19–20.
- Nakabo, T., 2002. Cepolidae. In: Nakabo, T. (ed.), *Fishes of Japan with pictorial keys to the species* (English edition). Tokai University. v. 2: Pp. i–vii + 867–1749.
- Smith-Vaniz, W. F., 1986. Cepolidae. In: Smith, M. M., & P. C. Heemstra (eds.), *Smiths' Sea Fishes*. Smith Institute of Ichthyology, Grahamstown. Pp. 727–728.
- Smith-Vaniz, W. F., 2001. Cepolidae. In: Carpenter, K. E., & V.H. Niem (ed.), *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific*. FAO, Rome. Pp. 3331–3332.
- Smith, J. L. B., 1968. New and interesting fishes from deepish water off Durban, Natal and southern Mozambique. *Investigational Report No. 19*. Oceanographic Research Institute, Durban. Pp. 1–30.
- Tanaka, S., 1908. Notes on some Japanese fishes, with descriptions of fourteen new species. *Journal of the College of Science, Imperial University of Tokyo*, **23** (part 7): 1–54.
- Weber, M., 1913. Die Fische der Siboga-Expedition. E. J. Brill, Leiden. *Fische Siboga Expedition*. Pp. i–xii + 1–710, Pls. 1–12.