

## A New Species of *Cocotropus* (Teleostei: Aploactinidae) from the Ryukyu Islands, Southern Japan

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**Abstract** A new species of aploactinid, *Cocotropus possi*, is described based on 2 specimens (32.1–34.5 mm in standard length) collected from the Ryukyu Islands, southern Japan. The new species differs from 12 known congeners in having the following combination of characters: XIII, 8 dorsal-fin rays, 13 pectoral-fin rays, 26 vertebrae, 5 preopercular spines, the upper jaw longer than the lachrymal, no fleshy papillae on the posterior portion of the maxilla, no vomerine teeth, many well-developed fleshy papillae on the ventral surface of the lower jaw, the first sensory pores on both sides of the lower jaw separate, isthmus tip reaching to level of between fourth and fifth sensory pores of lower jaw, and the body mostly uniformly dark brown.

**Key words:** Aploactinidae, Velvetfishes, New species, *Cocotropus*, Ryukyu Islands.

The velvetfishes (family Aploactinidae) inhabit rocky reefs and soft-bottom trawling grounds in tropical to temperate Indo-Pacific waters (Randall *et al.*, 1990; Kuitert, 1993). The family contains about 17 genera and about 43 species (Imamura and Shinohara, 2004; Johnson, 2004; Nelson, 2006). Seven species belonging to 4 genera (*Aploactis*, *Cocotropus*, *Erisphex*, and *Kanekonia*) occur in Japanese waters (Nakabo, 2002; Imamura and Shinohara, 2003).

The genus *Cocotropus* had been established by Kaup (1858) for *Corythobatus echinatus* Cantor, 1849, and it was recently redefined by Poss (1999) who showed the following diagnostic characters: gill membranes free from the isthmus; anus slightly anterior to anal-fin origin; dorsal-fin rays continuous and comprising a single fin; I, 3 pelvic-fin rays; and interorbital ridges on both sides running in parallel. At present, 12 valid species are recognized as the members of the genus (Imamura and Shinohara, 2003, 2004; Fricke, 2004; Johnson, 2004).

Recently, we had an opportunity to examine 2

unusual specimens of *Cocotropus* collected from the Ryukyu Islands, southern Japan. We herein describe a new species based on these specimens.

### Materials and Methods

Methods for making counts and measurements follow Imamura and Shinohara (2003). Counts of unpaired fin rays and vertebrae were based on radiographs. Standard and head lengths are abbreviated as SL and HL, respectively. Where different, values for the paratype follow those for the holotype in parentheses. *Cocotropus* specimens used for comparison in this study are listed in Imamura and Shinohara (2003, 2004). Institutional acronyms are as follows: NSMT (National Museum of Nature and Science, Tokyo, formerly called as National Science Museum, Tokyo) and URM (University of the Ryukyus, Okinawa).



Fig. 1. *Cocotropus possi* sp. nov., NSMT-P 76417, holotype, 34.5 mm SL, Ryukyu Islands, southern Japan (70% ethanol-preserved condition).

***Cocotropus possi* sp. nov.**

(New Japanese name: Higemojya-okoze)

(Figs. 1–2)

**Holotype.** NSMT-P 76417 (ex. URM-P 29793), 34.5 mm SL, Maeda Cape (26°27'N, 127°47'E), Okinawa Island, Ryukyu Islands, May 1993 (date unknown).

**Paratype.** URM-P 35083, 32.1 mm SL, tidepool, West side of Sesoko Island (26°38'N, 127°52'E), Ryukyu Islands, 21 Jan. 1996.

**Diagnosis.** A new species of *Cocotropus* with XIII, 8 dorsal-fin rays, 13 pectoral-fin rays, 26 vertebrae, 5 preopercular spines, upper jaw longer than lachrymal, no fleshy papillae on posterior portion of maxilla, no vomerine teeth, many well-developed fleshy papillae on ventral surface of lower jaw, first sensory pores on both sides of lower jaw separate, isthmus tip reaching to level of between fourth and fifth sensory pores of lower jaw, and body mostly uniformly dark brown.

**Description.** Doral-fin rays XIII, 8 with ultimate pterygiophore supporting 1 ray (XIII, 7 with ultimate pterygiophore supporting 2 rays); anal-fin rays II, 7 with ultimate pterygiophore supporting 2 rays (II, 7 with ultimate pterygiophore supporting 1 ray); pectoral-fin rays 13 on both sides; pelvic-fin rays I, 3; segmented caudal-

fin rays 7 (upper)+7 (lower); bony sensory tubes on lateral line 12 on both sides (11 on both sides); gill rakers 2+8=10 (1+7=8); vertebrae 26. Proportions as % SL: HL 36.2 (35.8); snout length 9.3 (10.0); orbital diameter 11.0 (11.5); lachrymal length 11.0 (11.2); upper jaw length 13.6 (13.7); lower jaw length 16.5 (15.6); interorbital width 6.7 (7.2); predorsal length 18.3 (19.6); preanal length 65.5 (64.5); length of dorsal fin base 77.4 (75.4); length of anal-fin base 20.3 (20.2); length of caudal peduncle 14.8 (18.1); depth of caudal peduncle 10.1 (11.5); pectoral-fin length 30.7 (34.9); pelvic-fin length 14.8 (14.6); length of first dorsal-fin spine 17.1 (15.6); length of second dorsal-fin spine 19.4 (17.4); length of third dorsal-fin spine 18.3 (16.5); length of first anal-fin spine 9.9 (8.7). Proportions as % HL: snout length 25.6 (27.8); orbital diameter 30.4 (32.2); lachrymal length 30.4 (31.3); upper jaw length 37.6 (38.3); lower jaw length 45.6 (43.5); interorbital width 18.4 (20.0).

Body and head moderately compressed, covered by small pointed papillae, each underlain by tiny buried scale. Anterodorsal profile of head mostly straight. Snout short, 3.9 (3.6) in HL. Eye large; its diameter 3.3 (3.1) in HL, shorter than snout length. Eye with small papillae surround-



Fig. 2. Ventral view of head of *Cocotropus possi* sp. nov., NSMT-P 76417, holotype, 34.5 mm SL, Ryukyu Islands, southern Japan. Arrow and numbers indicate anterior tip of isthmus and sensory openings of lower jaw, respectively.

ing pupil. Interorbital ridges on both sides, ending in a pointed papillae posteriorly, running in parallel. Supraorbital ridge ending in a spine. Single spine present on parietal, pterotic, and posttemporal. Two blunt suborbital spines ventral to eye. Two lachrymal, 5 preopercular and 2 opercular spines present; lower opercular spine indistinct. Mouth weakly oblique. Upper jaw 2.7 (2.6) in HL, longer than lachrymal length; its posterior margin well beyond posterior tip of second lachrymal spine. Posterior part of upper jaw with several small papillae, each underlain by a tiny buried scale, but lacking fleshy papillae. Lower jaw subequal in length to upper jaw when mouth closed. Upper and lower jaws with villiform teeth. Palatines and vomer lacking teeth. Many well-developed fleshy papillae on ventral surface of lower jaw (Fig. 2). Five sensory pores present on lower jaw; first pores on both sides

narrowly separated (Fig. 2). Gill membranes free from isthmus. Isthmus tip reaching to level of between fourth and fifth sensory pores of lower jaw (Fig. 2). Lateral line slightly arched. Sensory canals of supracleithrum and first to third bony tubes (supracleithrum, and first and second bony tubes in paratype) on lateral line continuous; other bony tubes on lateral line separated from each other. Ultimate bony tube on caudal-fin base. Anus slightly anterior to anal-fin origin. All dorsal-fin rays with papillae. First dorsal-fin spine slightly shorter than second dorsal-fin spine. Anal and pelvic fins with several papillae basally. Pectoral fin 3.3 (2.9) in SL, mostly covered with papillae except for lower and posterior margins; its posterior tip just short of origin of anal fin. Pelvic fin 6.8 (6.8) in SL; its posterior tip not reaching to anus. Caudal fin rounded posteriorly; about basal one-third (fourth in paratype) of caudal fin with papillae. All soft fin rays unbranched.

**Color in alcohol.** Head, body, and fins mostly uniformly dark brown. Lateral part of body medial to pectoral fins with large pale brown blotch, the center of which with irregular brown marking. Anus pale. Cheek brown. Anterior margin of snout, upper jaw, anterior portion of lower jaw, and lower cheek region posterior to upper jaw pale brown. Interorbital ridges brown (pale brown in paratype). Margins of fins pale brown; upper and lower portions of caudal fin each with a pale brown blotch. Base of pectoral fin brown, with a pale brown spot. In paratype, middle of body with a small pale brown spot dorsally, and upper and lower portions of caudal peduncle with a pale brown area.

**Etymology.** Named in honor of Dr. Stuart G. Poss, in recognition of his outstanding contributions to aploactinid systematics.

**Remarks.** Among the 12 valid species of *Cocotropus*, *C. possi* is most similar to 3 congeners, *Cocotropus masudai* Matsubara, 1943, *Cocotropus roseomaculatus* Imamura and Shinohara, 2004, and *Cocotropus steinitzi* Eschmeyer and Dor, 1978 in having 13 pectoral-fin rays, no fleshy papillae on the posterior portion of the

maxilla, and lacking vomerine teeth (see Imamura and Shinohara, 2003, 2004; Johnson, 2004). *Cocotropus possi*, however, differs from them in having 13 dorsal-fin spines (vs. 12 in these species) and first sensory pores on both sides of the lower jaw separated from each other (vs. fused in these species) (Fig. 2). *Cocotropus possi* is also separable from *C. masudai* in having the upper jaw longer than the lachrymal (vs. the upper jaw shorter than the lachrymal) and 5 preopercular spines (vs. 4). It differs from *C. roseomaculatus* in having the body mostly uniformly dark brown (vs. pale brown), and from *C. steinitzi* in having 26 vertebrae (vs. 25) (Imamura and Shinohara, 2003, 2004; personal observation).

*Cocotropus richeri* Fricke, 2004 also has 13 pectoral-fin rays and no fleshy papillae on the posterior portion of the maxilla, however the vomerine tooth condition has not been reported (Fricke, 2004). However, *C. possi* is easily separable from *C. richeri* in having 8 soft dorsal-fin rays (vs. 10), isthmus tip reaching to level of between fourth and fifth sensory pores of the lower jaw (vs. not reaching to level of fifth pore), and preserved coloration mostly uniformly dark brown (vs. pale whitish) (Fricke, 2004).

In addition, *C. possi* has many well-developed fleshy papillae on the ventral surface of the lower jaw (Fig. 2) (all other 12 species of *Cocotropus* lack such papillae).

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