

A NEW SPECIES OF THE GENUS *Cociella* Whitley, 1940 (SCORPAENIFORMES: PLATYCEPHALIDAE) FROM THE ANDAMAN SEA

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ABSTRACT: The platycephalid fish, *Cociella martingomoni* sp. nov., is described on the basis of four specimens collected from the Andaman Sea, eastern Indian Ocean. *Cociella martingomoni* sp. nov. is separable from other members of the genus in having 11 second dorsal-fin soft rays, 11 anal-fin soft rays, 22–23 pectoral-fin rays, 1 + 5–6 = 6–7 gill rakers, a larger head (36.8–37.9% of standard length), moderate interorbital width (6.7–8.7% of head length), 4–7 suborbital spines, absence of the interopercular flap, the head and body with many small brownish spots dorsally, and the caudal fin with or without small brownish spots posterodorsally.

Keywords: eastern Indian Ocean, *Cociella martingomoni* sp. nov., *C. hutchinsi*, taxonomic characters

INTRODUCTION

The platycephalid genus *Cociella* Whitley, 1940 was redefined by Knapp (1996) as having characters such as ocular flaps absent, the upper iris lappet simple or slightly bilobed, anteriormost 1–19 lateral line scales bearing small spine, scale rows slanting downward and backward above the lateral line more numerous than lateral line scales, lateral line scales with a single opening to the exterior, the suborbital ridge with one spine under the middle of the eye and one spine under the posterior margin of the eye, and additional spines may or may not present posterior to the eye. At present, the following five species are recognized as the valid members of the genus: *Cociella crocodila* (Cuvier, 1829), *Cociella punctata* (Cuvier, 1829), *Cociella heemstrai* Knapp, 1996, *Cociella hutchinsi* Knapp, 1996 and *Cociella somaliensis* Knapp, 1996 (e.g., Knapp 1996; Nagao and Imamura 2015).

Recently, the senior author (HI) had opportunity to examine four specimens of *Cociella* collected from the Andaman Sea, eastern Indian

Ocean and deposited at the Reference Collection, Phuket Marine Biological Center (PMBC), and found that they belong to an undescribed species of the genus by having morphological characters separating it from other congeners. The present study describes these specimens as a new species of *Cociella* and shows its valid taxonomic characters.

Although Knapp (1996) redefined the genus *Cociella*, his diagnosis of the genus includes no distinct derived characters. In addition, the senior author inferred the phylogenetic relationships of the family Platycephalidae (Imamura 1996), but contained only *C. crocodila* as a member of the genus in it. Therefore, the monophyly of the genus is unclear at present; however, because no alternative phylogenetic hypothesis including all or most species of the genus as study material has been proposed, this study tentatively follows Knapp's (1996) redefinition of *Cociella* and includes the new species in the genus.

MATERIALS AND METHODS

Methods for counts and measurements follow Imamura (2008). Terminology of head spines follows Knapp *et al.* (2000). All measurements were made to the nearest 0.1 mm with calipers. Standard and head lengths are abbreviated as SL and HL, respectively. Institutional abbreviations are from Fricke and Eschmeyer (2019).

TAXONOMIC ACCOUNT

Cociella martingomoni sp. nov.

[New English name: Martin Gomon's Flathead]
(Figs. 1–3; Table 1)

Holotype: PMBC 30410, 293.3 mm SL, Andaman Sea (7°01'N, 98°19'E – 7°05'N, 98°18'E), trawl, 116–119 m depth, 23 Feb. 2000, coll. by C. Aungtonya and V. Vongpanich.

Paratypes: HUMZ 230736, 1 specimen (159.0 mm SL), PMBC 30350, 2 specimens (149.8–160.4 mm SL), Andaman Sea (shooting: 11°29.7'N, 97°30.6'E – 11°29.7'N, 97°31.9'E; hauling: 11°30.5'N, 97°34.9'E – 11°30.7'N, 97°35.5'E), coll. by R/V SEAFDEC, method and date unknown.

Diagnosis: A species of *Cociella* with 11 second dorsal-fin rays, 11 anal-fin rays, 22–23 pectoral-fin rays, 1 + 5–6 = 6–7 gill rakers, larger head (36.8–37.9% SL), moderate interorbit (6.7–8.7% HL), 4–7 suborbital spines, absence of interopercular flap, head and body with many small brownish spots, and caudal fin with or without small brownish spots posterodorsally.

Description: Data for the holotype are presented first, followed by paratype data in parentheses when variation is recognized: first dorsal-fin rays I+VIII; second dorsal-fin rays 11; anal-fin rays 11; pectoral-fin rays 2 (upper, unbranched) + 11 (middle, branched) + 9 (lower, unbranched) = 22 (2 + 12 + 8–9 = 22–23); pelvic-fin rays I, 5; branched caudal-fin rays 11 (12); scales in lateral line 54 (52–53), anterior 3 (7–8) scales with a spine; oblique body scale rows slanting downward and backward above lateral line 62 (60–62); oblique body scale rows slanting downward and forward above lateral line 96 (92–105); gill rakers 1 + 5 = 6 (1 + 5–6 = 6–7). Proportions as % SL: HL 36.8

(37.7–38.0); predorsal length 38.2 (37.7–38.0); length of first dorsal-fin base 22.1 (17.7–19.4); length of second dorsal-fin base 26.0 (27.1–27.9); length of anal-fin base 28.1 (29.4–29.6); caudal peduncle length 9.7 (9.4–10.8); caudal peduncle depth 4.3 (4.1–4.3); snout length 10.5 (11.2–11.3); orbital diameter 7.8 (8.2–8.5); upper jaw length 13.4 (13.5–13.9); lower jaw length 20.8 (20.9–21.6); interorbital width 2.2 (2.5–2.6); pectoral-fin length 16.1 (14.6–14.8); pelvic-fin length 21.5 (22.8–23.4); caudal-fin length 18.4 (18.5–19.6); length of first spine of first dorsal fin 2.7 (3.1–3.3); length of second spine of first dorsal fin 13.9 (13.3); length of first ray of second dorsal fin 9.7 (10.7–10.9); length of first ray of anal fin 5.3 (6.3–6.9). Proportions as % HL: snout length 28.5 (29.8–30.6); orbital diameter 21.2 (22.2–22.7); upper jaw length 36.3 (36.5–37.2); lower jaw length 56.5 (56.7–57.4); interorbital width 8.7 (6.7–6.9).

Body depressed, mostly covered with ctenoid scales, some cycloid scales on undersurface. Head flattened; postorbital region, opercle and nape scaled (Fig. 1). Snout slender, longer than orbital diameter, 3.5 (3.3–3.4) in HL. Two nostrils; anterior nostril tubular and having flap posteriorly; posterior nostril without tube (Fig. 2). Upper surface of eye without papillae and flaps. Iris lappet unclear dorsally (large, simple and semicircular in paratypes), small, simple and semicircular ventrally (Fig. 3). Interorbit moderate in width and concave, 11.5 (14.4–14.5) in HL. Lower jaw slightly beyond upper jaw anteriorly; length of former 1.8 (1.7–1.8) in HL. Top and side of head bearing spines. Nasal with one spine. Ethmoid spines absent. Ventral margin of lachrymal lacking serration and antrorse spines. A single sharp preocular spine present, without spines basally (Fig. 2). One preorbital spine present. Suborbital ridge with five (left side) and seven (right) spines (4–5), one slightly anterior to region below middle of eye, one below posterior margin of eye, and three (left) and five (right) successive spines posteriorly (2–3). Supraorbital ridge roughly serrated posteriorly. Postorbital region with one spine. Frontal without spines and with ridges radiating from posteriormost supraorbital spine. Pterotic with two spines. One parietal spine present (Fig. 2). Nuchal with one ridge ending in spine (ridge without spine). One spine on supratemporal, posttemporal and supracleithrum, respectively. Preopercle with three spines (2–3); uppermost longest, not reaching posterior margin

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of opercle (just reaching it), bearing single supplementary spine; lowermost smallest. Upper and lower opercular spines present, accompanied by single ridge without serration (Fig. 2). Interopercular flap absent. Maxilla reaching near anterior margin of pupil; its length 2.8 (2.7) in HL. Teeth in bands on jaws and palatine, and in two separate patches on vomer; tooth band on upper jaw with notch medially. Upper and lower jaws with villiform teeth; anteromedial portion of upper jaw with several short and slender conical teeth. Tooth band on palatine narrow, with four (2–4) irregular rows of small villiform teeth. Vomer with villiform teeth anteriorly, becoming larger and changing to small conical posteriorly. Lip margins without papillae. Sensory tubes from suborbitals and preopercle undeveloped, not extending to cheek region. Pored scales in lateral line with one exterior opening posteriorly. First dorsal fin originating slightly behind opercular margin. First and second dorsal fins narrowly separated. Pectoral fin 6.2 (6.7–6.9) in SL; its posterior margin posteriorly; posterodorsal corner of pectoral fin slightly pointed. Pelvic fin short, 4.6 (4.3–4.4) in SL; posterior tip of pelvic fin slightly beyond anus (or just attaining to anus or anal-fin origin). Caudal fin mostly straight (or slightly rounded) posteriorly, its length 5.4 (5.1–5.4) in SL.

Color in alcohol: Body and head brown above, with many small dark brown spots, pale brown below. Body with five saddle-like darker brownish bands; anteriormost small, below middle of first dorsal fin, second large, below posterior portion of first dorsal fin, third below middle of second dorsal fin, fourth below posterior portion of second dorsal fin, and last one on caudal peduncle. One large brown spot below eye. First dorsal fin with one blackish marginal band and small blackish spots on anteroventral area. Second dorsal fin with scattered small brownish spots. Pectoral fin light brown, with small brown spots tending to form some bands; its posterior and ventral margins pale. Pelvic fin dusky, brownish. Anal fin pale; posterior rays dusky ventrally. Caudal fin dusky, brownish, with dark brownish spots posterodorsally (without dark brownish spots); one dark brownish band on caudal-fin base. Color in life unknown.

Distribution: Known only from the Andaman Sea, at depths of 116–119 m.

Etymology: The specific name of this new species is named for Dr. Martin F. Gomon, who has contributed greatly to ichthyology.

Remarks: Although the holotype of the present new species, *Cociella martingomoni*, falls outside the range of its paratypes in many proportions, the differences are considered as changes with growth (293.3 mm SL in holotype and 149.8–160.4 mm SL in three paratypes) and these specimens otherwise show conspecificity, having common taxonomic characters as listed below.

Cociella martingomoni sp. nov. is mostly similar to *C. hutchinsi* among five congeners in having 11 second dorsal- and anal-fin soft rays (both 11 in *C. hutchinsi*), 21–22 pectoral fin-rays (vs. 21–23), $1 + 5 - 6 = 6 - 7$ gill rakers (vs. $1 + 4 - 6 = 5 - 7$), a large head (36.8–37.9% SL vs. 35.6–38.4% SL) (Fig. 4), 4–7 suborbital spines (vs. 4–6) (Fig. 2) and absence of interopercular flap. However, it differs from the latter in having a moderate interorbit (6.7–8.7% HL vs. 3.8–6.5% HL) (Fig. 4), and the head and body with many small brownish spots (vs. spots absent). Most of these characters are also useful to separate *C. martingomoni* sp. nov. from other four species of *Cociella* (i.e., *C. crocodila*, *C. punctata*, *C. heemstrai* and *C. somaliensis*), which have 21 or fewer pectoral-fin rays, smaller head (HL 36.3% SL or smaller) (Fig. 4) and 2–4 (usually 2) suborbital spines; the interopercular flap present in *C. heemstrai*, *C. punctata* (the flap sometimes absent) and *C. somaliensis*; and usually 12 second dorsal- and anal-fin soft rays, 9 or more gill rakers in total, and wider interorbit (8.8% HL or wider) (Fig. 4) in *C. heemstrai* and *C. somaliensis*. In addition, the caudal-fin markings, small brownish spots present or absent posterodorsally, is available to distinguish the new species from *C. crocodila*, *C. punctata* and *C. somaliensis* having many spots and/or streaks on the fin (but sometimes absent in *C. punctata*). The above-mentioned taxonomic characters are summarized in Table 1.

COMPARATIVE MATERIAL

Cociella crocodila (13 specimens). Japan: HUMZ 37356, 44408, 59969, 74814, 129.7–189.3 mm SL; NMW 74721, 397.8 mm SL; NSMT-P 53729, 54156 (3 specimens), 73682 (2), 75213, 164.1–319.2 mm SL; ZMB 726 (dry, holotype of *Platycephalus guttatus* Cuvier, 1829), 355.9 mm SL.

Cociella heemstrai (9 specimens). Kenya: USNM 326281 (holotype), 169.8 mm SL. Madagascar: MNHN 1994-504 (paratype), 224.4 mm SL; MNHN B-2887 (3 of 4 paratypes), 105.9–138.4 mm SL. Mozambique: BMNH 1922.2.9.29 (paratype), 173.4 mm SL; RMNH 25144 (paratype), 173.1 mm SL. South Africa: BMNH 1919.4.1.33 (paratype), 109.3 mm SL; CAS 169736 (paratype), 117.3 mm SL.

Cociella hutchinsi (19 specimens). Australia: AMS I.21846-002, I.21847-020 (6 paratypes), 147.5–262.7 mm SL; BMNH 1879.5.14.222

(paratype), 192.5 mm SL; CSIRO CA1865 (holotype), 231.8 mm SL; NTM S.11398-008, S.11613-017, S.11957-005, S.12266-010 (6 paratypes), 169.9–226.7 mm SL; NTM S.14357-002, 182.0 mm SL; WAM P.30716-001 (4 paratypes), 141.2–179.3 mm SL.

Cociella punctata (17 specimens). Ceylon: MNHN 6851 (syntype), 208.8 mm SL. India: MNHN 6848 (holotype of *Platycephalus malabaricus* Cuvier, 1829), 214.9 mm SL. Indonesia: NMST-P 57007, 132.4 mm SL; RMNH 5915 (3, including 2 syntypes of *Platycephalus quoyi* Bleeker, 1856), 125.7–177.7 mm SL. Japan: NSMT-P 29286, 55454, 72.5–126.2 mm SL. Malaysia: BMNH 1860.3.19.270 (dry, holotype of *Platycephalus clavulatus* Cantor, 1849?; see Nagao and Imamura, 2010 for its status as the holotype), 91.7 mm SL. Philippines: BMNH 1872.10.18.117 (holotype of *Platycephalus fasciatus* Günther, 1872), 191.8 mm SL; CAS SU 27207, 176.0 mm SL; HUMZ 198665, 276.6 mm SL. Solomon Islands: MNHN 6852 (syntype), 188.4 mm SL. Thailand (Indian Ocean): PMBC 27361, 292.6 mm SL. Thailand



Figure 1. Dorsal and ventral view of *Cociella martingomoni* sp. nov., holotype, PMBC 30410, 293.3 mm SL, collected from the Andaman Sea, Indian Ocean.

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(Pacific): FRLM 30670, 121.7 mm SL. Locality unknown: BMNH 1880.4.21.102 (Bleeker's specimen or syntype of *Platycephalus bataviensis* Bleeker, 1853), 91.7 mm SL; MNHN 6836 (syntype), 179.4 mm SL.

Cociella somaliensis (6 specimens). Somalia: BMNH 1993.11.5.1–3 (3 paratypes), 248.8–281.1 mm SL; MNHN 1933-265, 1993-266 (2 paratypes), 205.1–234.7 mm SL; USNM 326300 (holotype), 214.9 mm SL.

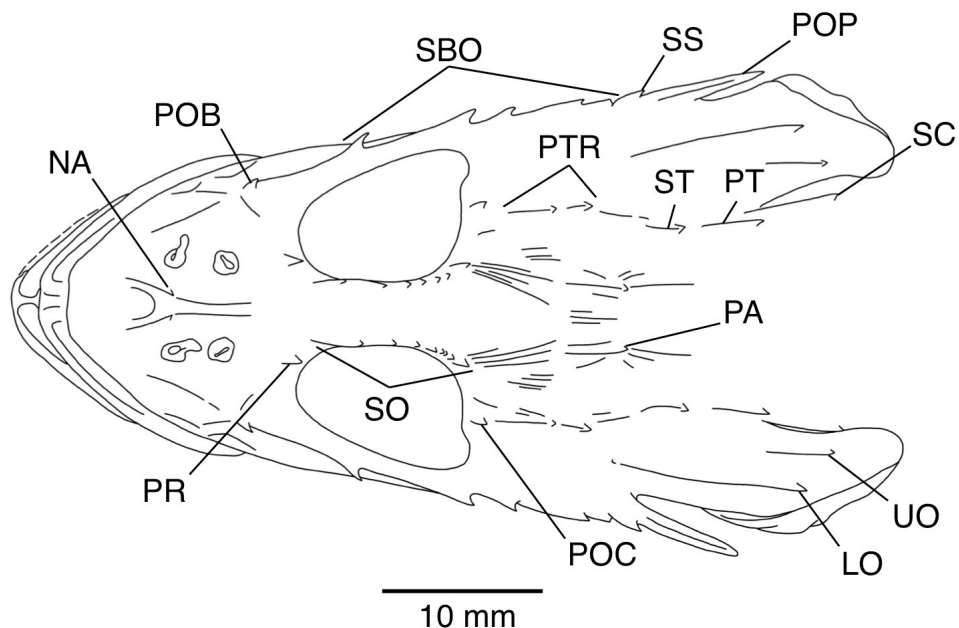


Figure 2. Dorsal view of head in *Cociella martingomoni* sp. nov., paratype, PMBC 30350, 160.4 mm SL, collected from the Andaman Sea, Indian Ocean. LO, lower opercular spine; NA, nasal spine; PA, parietal spine; POB, preorbital spine; POC, postocular spine; POP, preopercular spine; PR, preocular spine; PT, posttemporal spine; PTR, pterotic spines; SBO, suborbital spines; SC, supracleithral spine; SO, supraorbital spines; ST, supratemporal spine; SS, supplementary spine of preopercular spine; UO, upper opercular spine.

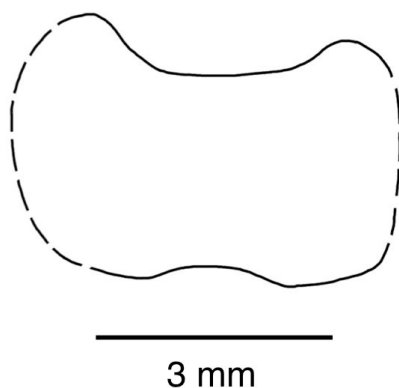


Figure 3. Dorsolateral view of iris lappet in *Cociella martingomoni* sp. nov., paratype, PMBC 30350, 160.4 mm SL, collected from the Andaman Sea, Indian Ocean.

Table 1. Comparison of selected characters in six species of *Cociella*.

	<i>C. martingomoni</i> sp. nov. (n = 4)	<i>C. crocodila</i> (n = 13)	<i>C. heemstrai</i> (n = 9)	<i>C. hutchinsi</i> (n = 19)	<i>C. punctata</i> (n = 17)	<i>C. somaliensis</i> (n = 6)
SL (mm)	149.8–293.3	172.3–397.8	105.9–224.4	141.2–262.7	72.5–292.6	205.1–281.1
Second dorsal-fin rays	11	11–12 (usually 11)	11–13 (usually 12)	11	11	12
Anal-fin rays	11	11	11–13 (usually 12)	11	10–11 (usually 11)	12
Pectoral-fin rays	22–23	19–21	19–21	21–23	19–21	19–20
Gill rakers (total)	1 + 5–6 = 6–7	1 + 5–6 = 6–7 (usually 7)	1–2 + 7–9 = 9–11	1 + 4–6 = 5–7 (usually 6)	1 + 5–6 = 6–7 (usually 6)	3–4 + 11–13 = 14–17
Head length (% SL)	36.8–37.9	31.9–35.0	30.8–34.5	35.6–38.4	32.6–36.3	29.9–31.8
Interorbital width (% HL)	6.7–8.7	4.6–9.9	8.8–12.2	3.8–6.5	4.9–9.2	12.4–14.7
Number of suborbital spines	4–7	2	2–4 (usually 2)	4–6	2–3 (usually 2)	2
Interopercular flap	Absent	Absent	Present	Absent	Usually present	Present
Small spots on head and body	Present	Present	Present	Absent	Present	Present
Caudal fin marking	With or without small spots posterodorsally	With many spots and streaks	With small spots dorsally or centrally	With or without streaks posteriorly	With streaks usually	With many spots and streaks

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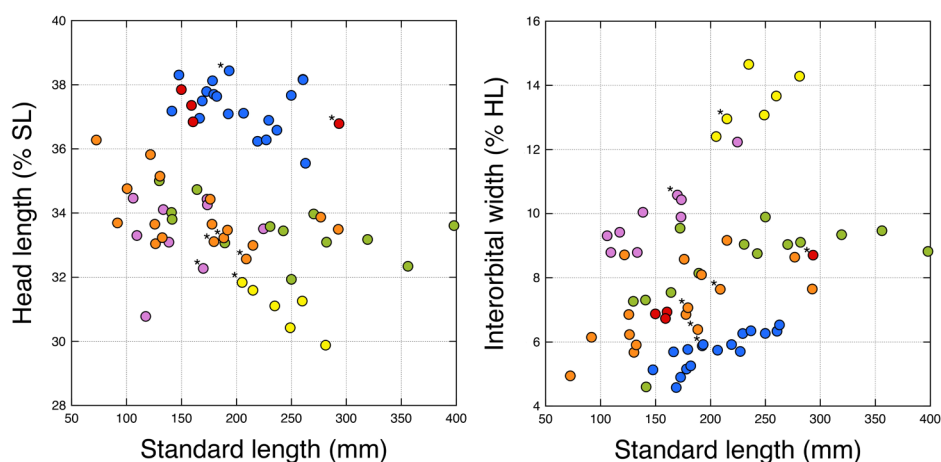


Figure 4. Relationships of head length (left) and interorbital width (right) versus standard length in six species of the genus *Cociella*. Red, *C. martingomoni* sp. nov.; green, *C. crocodila*; orange, *C. punctata*; purple, *C. heemstrai*; blue, *C. hutchinsi*; yellow, *C. somaliensis*. Asterisks indicate holotypes or syntypes.

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