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CALLOGOBIUS CRASSUS, A NEW FISH FROM THE INDO-PACIFIC REGION (TELEOSTEI: GOBIIDAE)

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Abstract.—A new gobioid fish, *Callogobius crassus,* is described from New Guinea, and the Philippine, Molucca, and Society islands. This stout-bodied, trenchantly dark and light mottled species is compared with six other species of *Callogobius.* The seven species comprise a group within the genus characterized by stout bodies, ctenoid scales, and a reduced number of segmented dorsal fin elements. *Callogobius crassus* is unique in this group because it lacks cephalic sensory pores.

In our continuing work on several gobioid genera, we encountered a new species of *Callogobius* from the Philippine Islands, Indonesia, New Guinea, and Tahiti. This new species is most closely allied with a group of *Callogobius* species that is characterized by having a relatively stout body, ctenoid scales and VI-I,9 or fewer dorsal fin elements. Of the species listed by McKinney and Lachner (1978a, Table 1) with the above combination of characters, we presently consider five species to be valid, these being *Callogobius centrolepis* Weber, *C. flavobrunneus* (J. L. B. Smith), *C. maculipinnis* (Fowler), *C. plumatus* (J. L. B. Smith) and *C. sclateri* (Steindachner). Junior synonyms of *C. maculipinnis* include *Callogobius snelliusi* Koumans, *C. shunkan* Takagi, *Drombus irrasus* J. L. B. Smith, *Intonsagobius kuderi* Herre, and *I. vanclevei* Herre. *Drombus tutuilae* Jordan and Seal is most likely a junior synonym of *C. sclateri,* while *Callogobius trifasciatus* Menon and Chatterjee is synonymous with *C. flavobrunneus.* We cannot ascertain the validity of *Gobiomorphus illotus* Herre, as the type was destroyed during World War II. The five valid species listed above plus the recently described *Callogobius bauchotae* Goren (1979) and the new species described herein appear to form a discrete group of species within *Callogobius.*

The methods of recording meristic and morphometric data and identification of cephalic sensory structures are given in Lachner and McKinney (1974, 1978) and McKinney and Lachner (1978a, 1978b).

Callogobius crassus, new species
Fig. 1

Holotype.—National Museum of Natural History (USNM) 220088, male (26.3), Papua-New Guinea, southern tip of Massas Island, 05°10′18″S; 145°51′24″E, depth of capture 0–18 m, collected by V. G. Springer, sta VGS 78-21, 6 Nov 1978.

Paratypes.—Philippine Islands: USNM 220086, male (17.5), Bali-casag Island, W side at drop-off, 09°31′14″N; 123°40′00″E, depth of capture 0–24 m, collected by V. G. Springer, sta SP 78-38, 10 Jun 1978; USNM 220087, male (17.2), same locality and collector as above, sta SP 78-39, 11 Jun 1978. Indonesia, Molucca

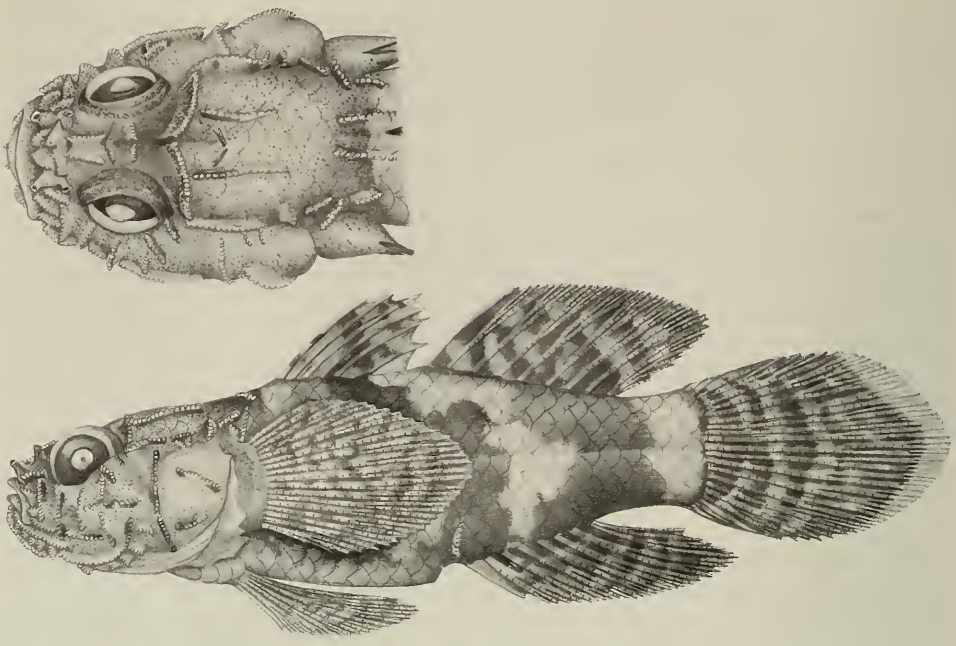

Fig. 1. *Callogobius crassus,* USNM 220088, holotype, a male 26.3 mm SL; dorsal view of head and anterior portion of trunk showing the papillose sensory ridges dorsally and laterally (above); lateral view of entire specimen showing papillose sensory ridges and contrasting color pattern of the trunk and fins (below).

Islands: USNM 210005, male (14.7), Ceram, just off shore and W of Tandjung Namatatuni, collected by V. G. Springer and M. F. Gomon, sta VGS 73-15, 19 Jan 1973; Bernice P. Bishop Museum (BPBM) 18535, male (18.9), Ambon, Eri, SE side of Ambon Bay, collected by J. E. Randall and G. R. Allen, 31 Jan 1975. Tahiti, Society Islands: American Museum of Natural History (AMNH) 51499, male (17.2), female (16.0), not sexed (10.4), reef off Papeari, collected by C. L. Smith, sta S 70-48, 22 Apr 1970.

Diagnosis.—Cephalic sensory pores absent; dorsal fin elements almost always VI-I,8; inner rays of pelvic fins connected only at their bases; pelvic frenum absent; scales in lateral series reduced, numbering 19–21; a stout-bodied species with highly mottled trunk and fin coloration.

Description.—Dorsal fin elements VI-I,7(1), VI-I,8(*6*); VII-I,8(1); anal fin elements I,6(1), I,7(*7*); pectoral fin elements 17 (*7*), 18 (5), 19 (2); pelvic fin elements I,5(*8*), segmented caudal fin elements 17(*7*); branched caudal fin elements 15(4), 16(1), 17(*2*); lateral scale rows 19–21(*2*); transverse scale rows 10–11(*2*), predorsal scales 9–11(*3*).

Scales on posterior portion of body ctenoid with 1–3 ctenii along posterior margin of each scale; scales on anterior portion of trunk cycloid; scales very eccentric, focal area narrow; 6–10 primary radii and 6–7 secondary radii in large anterior field, 0–3 primary radii and no secondary radii in small posterior field.

Vertebrae 10 + 15(6), 10 + 16(*1*), pterygiophore formula 3(22110) in 5 specimens, 3(221110) in 1 specimen.

Table 1.—Selected measurements of type specimens of *Callogobius crassus* expressed in thousandths of the standard length.

	Holotype USNM 220088 male	Paratype BPBM 18535 male	Paratype AMNH 51499 female
Standard length (mm)	26.3	18.9	16.0
Head length	354	328	344
Snout length	80	74	75
Bony interorbital width	30	32	31
Greatest diameter of orbit	89	79	81
Upper jaw length	95	101	100
Snout to dorsal-fin origin	414	434	413
Greatest depth of body	270	234	225
Pectoral fin length	346	349	363
Pelvic fin length	285	265	250
Caudal fin length	350	365	419
Pelvic fin insertion to anal fin origin	350	339	350

Measurements for the holotype and two paratypes are given in Table 1.

A small, stout-bodied species of *Callogobius*. Head slightly depressed, body compressed. Interorbital width less than diameter of eye; lower jaw slightly protruding, gape oblique, jaw length short, not reaching posteriorly to vertical through anterior margin of eye; anterior and posterior nares open at end of short tubes whose bases are located close to each other; tongue rounded anteriorly, tip free; gill opening extending to slightly below and slightly anterior to ventral limit of pectoral fin insertion; first dorsal fin distinctly separate from second dorsal fin, second dorsal fin slightly higher than first dorsal fin, origin of second dorsal fin slightly anterior to vertical through anal opening; adpressed pectoral fin extends slightly beyond vertical through origin of anal fin; pectoral fin longer than deep, its posterior margin somewhat pointed; pelvic fin moderate in length, extending about three-fourths distance from pelvic fin insertion to anal fin origin; pelvic frenum absent, innermost rays connected by membrane only at their bases; anal fin almost as high as second dorsal fin, posteriormost rays longest; caudal fin length about equal to that of head, its posterior margin rounded. Genital papilla of male slender, tapering to point, that of female short and bulbous.

Teeth in upper jaw consisting of outer row of about 20 slightly recurved caninoid teeth, spaces between them equal to half their length; two rows of closer spaced teeth behind outer row, inner row teeth about one-half the size of teeth of outer row. Teeth in outer row in lower jaw consisting of about 24 slightly recurved caninoid teeth more closely spaced than those of outer row of upper jaw. Lower jaw with two rows of small, villiform teeth behind outer row. No vomerine or palatine teeth.

The number, size, shape and distribution of papillose ridges on the head are illustrated in Fig. 1. There are no cephalic sensory pores in this species.

Color in preserved specimens.—Prominent color pattern consisting of dark brown mottling in form of 2 irregular patches and vertical bar on trunk and black mottling or bars on fins (Fig. 1). Head laterally and dorsally mostly dusky; long dusky mark sometimes extending posteriorly from eye to upper gill opening and another

extending from eye across middle of preopercle and opercle; chin and lower jaw pale to slightly dusky. Prominent trunk marks: dusky transverse bar on nape anterior to origin of dorsal fin; irregular dusky patch from first dorsal fin to anal area, nearly divided at mid-body; another patch, somewhat more regular or bar-like, from posterior half of second dorsal fin to lower peduncle; narrow to broad dusky vertical bar on posterior portion of peduncle and base of caudal fin. Dusky marks separated by pale to cream colored areas. First dorsal fin with broad dark vertical bar through middle portion; remainder of fin with dark and light irregular patches. Second dorsal fin with about 5 dark, wavy, oblique bars, some of which weakly joined, interspaces pale, forming irregular color pattern. Anal fin with 5 or 6 dark, oblique bars, somewhat more regularly arranged than those of second dorsal fin. Caudal fin with 4 or 5 arc-like dark bars with narrow, pale interspaces, outer 2 bars more or less coalesced to form broad area; posterior margin of caudal fin pale. Pectoral and pelvic fins with numerous, narrow, irregular dark and light bars. Specimens with frayed fins and eroded scales showing only remnants of trunk coloration and broken pattern of fin bars into fine, dark spots.

Etymology.—The specific name *crassus* is Latin, meaning thick, fat or stout, and refers to the stout body of this species.

Geographic distribution.—The new species is known from the southern Philippine Islands to the Society Islands.

Remarks.—*Callogobius crassus* is a stout-bodied species with ctenoid scales and a reduced number of segmented dorsal fin elements. In these characters, *C. crassus* agrees with the following six *Callogobius* species: *C. bauchotae, C. centrolepis, C. flavobrunneus, C. maculipinnis, C. plumatus,* and *C. sclateri.* The new species can be distinguished from these six species by the absence of cephalic sensory pores. Additionally, the modal counts of VI-I,8 dorsal fin elements and 10 + 15 vertebrae in *C. crassus* contrast sharply with counts of VI-I,9 dorsal fin elements and 10 + 16 vertebrae for the other species (vertebral count not known for *C. bauchotae*). *Callogobius crassus* can be separated from *C. centrolepis* and *C. maculipinnis* on the basis of pelvic fin structure, the latter two species having a typical gobiid pelvic disc and a well developed pelvic frenum. *Callogobius crassus* has 19–21 scales in the lateral series, while all of the other six species except *C. maculipinnis* have 22 or more scales in the laterial series.

Of the six species compared with *C. crassus, Callogobius bauchotae* Goren seems to agree most closely with this new species. We have not had the opportunity to examine the holotype, the only known specimen of *C. bauchotae,* but Goren's short description of this species states that it has two median interorbital pores and VI-I,9 dorsal fin elements. Additionally, aspects of the body physiognomy and coloration shown by Goren (1979, Fig. 1) differ from conditions found in *C. crassus.* The figure of *Callogobius bauchotae* shows the first dorsal fin considerably higher than the second dorsal fin and apparently weakly joined to it, lanceolate caudal and pectoral fins, a reduced pattern of papillose ridges on the head considerably different from that of *C. crassus,* and the median fins uniformly colored.

Acknowledgments

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crassus. The drawing of the holotype was expertly rendered by Jack Schroeder. The manuscript was reviewed by Leslie W. Knapp.

In our description of *Callogobius stellatus* (McKinney and Lachner, 1978b), we erroneously omitted special thanks to Carter Gilbert, Florida State Museum, Gainesville, for exchange of the holotype to the National Museum of Natural History, and we take the opportunity to thank him at this time.

Literature Cited

Goren, M. 1979. *Callogobius bauchotae* new species from Marshall Island (Gobiidae, Pisces).—Cybium (7):41–44.

Lachner, E. A., and J. F. McKinney. 1974. *Barbuligobius boehlkei*, a new Indo-Pacific genus and species of Gobiidae (Pisces), with notes on the genera *Callogobius* and *Pipidonia*.—Copeia (4): 869–879.

———, and ———. 1978. A revision of the Indo-Pacific fish genus *Gobiopsis* with descriptions of four new species (Pisces: Gobiidae).—Smithsonian Contributions to Zoology 262:1–52.

McKinney, J. F., and E. A. Lachner. 1978a. Two new species of *Callogobius* from Indo-Pacific waters (Teleostei: Gobiidae).—Proceedings of the Biological Society of Washington 91(1):203–215.

———, and ———. 1978b. A new species of gobiid fish, *Callogobius stellatus*, from Flores Island, Indonesia (Teleostei: Gobiidae).—Proceedings of the Biological Society of Washington 91(3): 715–723.

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