

Scorpaenopsis iop, a New Species of Scorpaenidae from Southern Japan

Tetsuji Nakabo,¹ Hiroshi Senou² and Hajime Masuda²

¹ Department of Fisheries, Faculty of Agriculture, Kyoto University,
Kitashirakawa-oiwake-cho, Sakyo-ku, Kyoto 606-01, Japan

² Izu Oceanic Park, Diving Center, Futo, Ito, Shizuoka 413-02, Japan

(Received March 13, 1992; in revised form February 12, 1993; accepted February 22, 1993)

Abstract A new scorpaenid fish, *Scorpaenopsis iop*, is described based on the 8 specimens collected from the east coast of Izu Peninsula, Pacific coast of Shikoku and Tsushima Islands, Japan. This is a reddish small-sized species, ca. 60 mm standard length, and is characterized by having a head almost scaleless, but covered with numerous small papillae, broad postocular and tympanic spines, upper opercular spine bicuspid to multiple spine, a somewhat protruded eye from the dorsal contour, 17 (rarely 16) pectoral fin rays, 33–37 vertical series of scales and 4 predorsal scales.

The scorpaenid fishes of *Scorpaenopsis* are widely distributed in rocky or coral reefs in the tropical and subtropical Indo-Pacific regions. The species of the genus have 12 dorsal spines and lack palatine teeth, and are generally divided into three groups, large-sized humpbacked, large-sized non-humpbacked and small-sized species groups. We have 8 specimens of the small-sized species group of *Scorpaenopsis* from the coasts of southern Japan.

Our specimens of *Scorpaenopsis* are most similar to *S. cotticeps* Fowler from the Philippines, but differ from it in several characters. They are described here as a new species.

The methods of counts and measurements follow Eschmeyer (1965, 1969). Vertebrae were counted by soft-X ray negatives. Counts and proportional measurements are shown in Table 1.

Scorpaenopsis iop sp. nov.

(New Japanese name: Hime-satsuma-kasago)

(Figs. 1, 2)

Scorpaena picta (not of Cuvier): Masuda et al., 1984: pl. 280-G; Aizawa and Senou, 1991: 80, pl. 4A (Mugi, Tokushima Pref., Japan); Masuda et al., 1988: pl. 142-G.
Scorpaenopsis zanzibarensis (not of Playfair): Masuda et al., 1975: pl. 142-G.

Holotype. FAKU (Department of Fisheries, Faculty of Agriculture, Kyoto University) 58788, 57.0 mm standard length (SL), Izu Oceanic Park, Futo, Ito City, Shizuoka Prefecture, east coast of Izu Peninsula, 30 m depth, rocky

reef, coll. by M. Yanagita, 2 July 1991.

Paratypes. IOP (Izu Oceanic Park) 2080, 50.7 mm SL, Izu Oceanic Park, Oct. 1990; NSMT-P (National Science Museum, Tokyo) 35788, 56.0 mm SL, same data as holotype; TKPM-P (Tokushima Prefectural Museum, Pisces) 1305, Oshima, Mugi, Tokushima Prefecture, 33°38'08"E, 134°29'15"E, 20 m depth, 24 July 1989; FAKU-S 188, 192, 58.0–62.9 mm SL, Shikoe, Tsushima Is., Nagasaki Prefecture, summer, 1973; FAKU 57333, 20.0 mm SL, Izu Oceanic Park, Futo, Ito City, 5 Feb. 1990; FAKU 59113, 36.9 mm SL, Izu Oceanic Park, 25–30 m depth, boundary between rocky reef and sandy bottom, coll. by M. Yanagita and T. Murai, 22 June 1992.

Diagnosis. A species of *Scorpaenopsis* with 17 (rarely 16) pectoral fin rays, 33–37 vertical scale rows, 4 predorsal scales, a blunt head profile, somewhat protruded eye from the dorsal contour of head, no hump behind head, 2 spines on lachrymal overlying maxillary (1st spine forward and 2nd spine backward), broad postocular and tympanic spines, and many small papillae on head.

Description of holotype. Body elliptical, compressed and covered with ctenoid scales; area before pelvic and pectoral fins covered with cycloid scales embedded in skin. Head large and covered densely with small papillae; upper side between eye and opercular with a few ctenoid scales almost embedded in skin. Eye large, protruded a little from dorsal contour of head. Snout blunt. Two nostrils before eye, anterior one with a cleft cirrus. Mouth large, maxillary a little exceeding posterior end of eye.

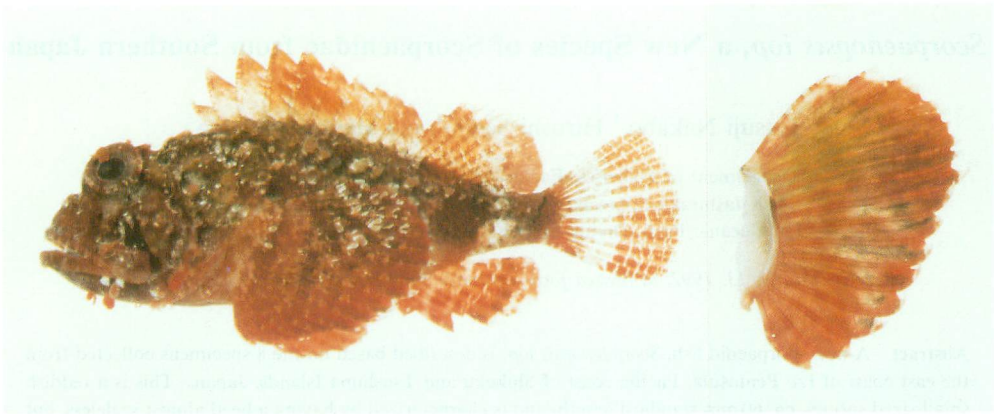


Fig. 1. *Scorpaenopsis iop* sp. nov., FAKU 58788, holotype, 57.0 mm SL (photo by H. Masuda). Left—lateral view; right—inside of right pectoral fin.

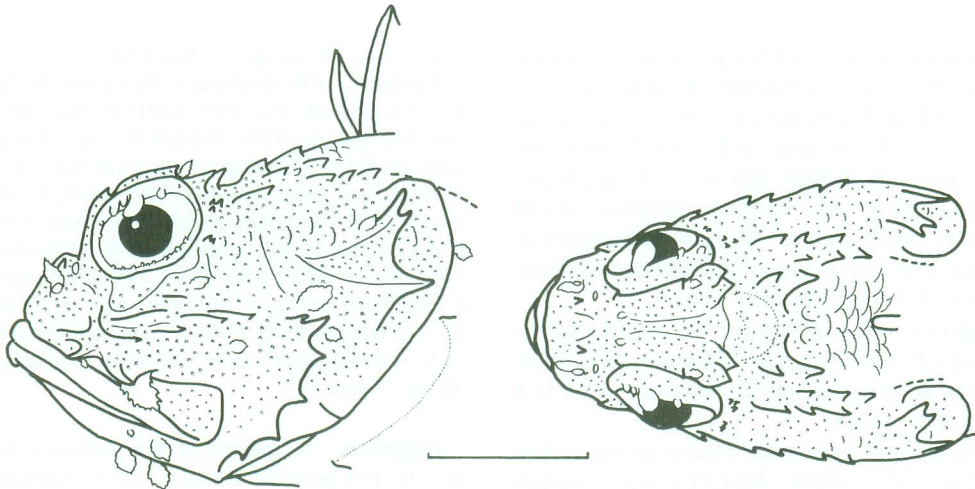


Fig. 2. Head of *Scorpaenopsis iop* sp. nov., FAKU 58788, holotype, 57.0 mm SL (drawn by T. Nakabo). Left—lateral view; right—dorsal view. Scale indicates 10 mm.

Lower jaw with four pairs of cirri. Teeth on jaws very small canine-like in bands. Teeth on prevomer very small in V-shaped narrow band. Palatine without teeth. Tongue with many small papillae. Lachrymal with 2 spines overlying maxillary; anterior one toward forward with a small cirrus, and posterior one toward backward with a large cirrus. Right and left pores of mandibular canals at symphysis not united. Suborbital stay with 4 spines, first one lachrymal. Preopercle with 5 preopercular spines; uppermost spine longest with a short supplemental spine. Opercle with 2 spines; upper spine bicuspid. A pair of nasal spines present. Preocular and supraocular

spines broad. Postocular and tympanic spines very broad and simple at tip. A pair of very short cirri between supraocular and postocular spines. Other spines include parietal, nuchal, upper and lower posttemporal, sphenotic (triple), pterotic, supracleithral, and cleithral. Anterior and posterior parietal spines with very short cirrus. Two small postorbital spines on 4th suborbital. Occipital fossa moderate; no small spine before it. A pit under front of eye. Lateral line running downward rapidly above pectoral fin and extending to base of caudal fin; some cirri on lateral line.

Dorsal fin moderately high and beginning at upper

margin of gill-opening; 4th spine longest. Anal fin beginning at vertical through 11th dorsal spine; 2nd spine longest. Pectoral fin large, round and reaching to middle of base of anal fin; tips of 3 rays on upper half branched. Pelvic fin round and not reaching beginning of anal fin. Caudal fin round.

Color when fresh.—Body reddish, with marbled dark marks and some irregular white spots. Occiput and upper sides of head behind eyes with an irregular dark brown blotch each. Dorsal and anal fins reddish with some irregular transparent oblique lines. Pectoral fin red with a few rows of irregular dark marks; inside of pectoral red with a yellowish area on upper half. Pelvic fin red. Caudal fin with a vertical broad red band.

Color in 70% ethyl alcohol.—Body marbled brown above, white below. Dorsal and anal fins with irregular dark marks. Pectoral fin dark with vertical broad white band near base and with some small dark and white spots, inside of pectoral faint dark. Pelvic fin almost white with irregular dark marks on posterior half. Caudal fin with a vertical broad band.

Description of paratypes. In NSMT-P 35788, tympanic spine bicuspid; upper opercular spine tricuspid; lower opercular spine bicuspid. In IOP 2080, postocular and tympanic spines bicuspid. In FAKU-S 192, right and left tympanic spines divided at base; a small spine beside left tympanic spine; upper opercular spine tricuspid; left lachrymal with 3 spines (2nd one very small and almost attached to 1st one); supraorbital cirri larger than that of holotype. In FAKU 57333, supraorbital cirri filamentous and a little longer than that of holotype. Sphenotic with 2–4 small spines. Anterior and posterior parietal spines with cirri in some paratypes. Other characters agree well with the holotype.

Color when fresh.—In TKPM-P 1305, almost the same as the holotype except for pectoral fin. In IOP 2080, occipital and upper opercular regions whitish red and other part of head and body, fins almost same as the holotype.

Color in 70% ethyl alcohol.—In IOP 2080 and NSMT-P 35785, body almost pale with faint marbled brown. In TKPM-P 1305, FAKU 57333 and 59113, body faint dark, with an oblique broad darker band above pectoral fin and two darker bands under soft portion of dorsal fin and on caudal peduncle. In IOP 2080 and NSMT-P 35785, dorsal fin almost transparent. In TKPM-P 1305, FAKU 57333 and 59113, middle of spinous portion of dorsal fin with dark

mark near base. Anal fin with 1–3 oblique dark bands. In IOP 2080 and NSMT-P 35785, pectoral fin with irregular faint dark marks. In TKPM-P 1305, pectoral fin dark with transparent white margin and a blackish brown mark at middle near base. In FAKU 57333, pectoral fin with two dark broad bands. In FAKU 59113, pectoral fin dark with darker posterior margin. Inside of pectoral fin without any remarkable marks. In IOP 2080 and NSMT-P 35785, pelvic fin transparent, but in TKPM-P 1305 and FAKU 59113, transparent with dark area on posterior half. In FAKU 57333, pelvic fin dark. Caudal fin almost transparent with a vertical faint dark band.

Etymology. The specific name, *iop*, is derived from the acronym of Izu Oceanic Park where the holotype was collected.

Remarks. *S. iop* is very similar to the following 4 small *Scorpaenopsis* species, *S. cotticeps* Fowler, *S. altirostris* Gilbert, *S. simulata* de Beaufort and *S. gilchristi* (Smith), in having the upper opercular spine bicuspid to multiple points, low scale-row counts, suborbital ridge with 4 spines and a pit under the front of eye. Except for *S. altirostris*, they are known in the literature from 1 specimen each.

S. cotticeps Fowler, 1938, was collected from the Philippines (Sulu Archipelago). *S. iop* is similar to it in having the broad postocular spine and bicuspid upper opercular spine (pers. comm., W. N. Eschmeyer—expressed as P.C.E. below), but differs from it in the number of predorsal scales (4 in the former vs. 6 in the latter by Fowler [1938]), shorter predorsal length (39.3–43.1 average 41.1%SL vs. 44.2%SL by P.C.E.) and shorter dorsal spine (in the 3rd spine, 11.9–16.1 average 14.5%SL vs. 18.2%SL by P.C.E.). Eschmeyer (pers. comm.) compared a second specimen of *S. cotticeps* (USNM 169344, about 25 mmSL) with our account and photograph of *S. iop* and found it also to have a predorsal length of about 43% and 3rd spine length of 18% and 5 or 6 predorsal scales; he indicated that *S. cotticeps* has a more stubby shape, with a higher dorsal profile—giving it a more humpbacked appearance, a shape shared by *S. cotticeps*, *S. simulata*, and another undescribed species known to him; *S. iop* is more elongate and has a less high dorsal profile (by P.C.E.).

S. iop differs from *S. altirostris* Gilbert, 1905, from the Hawaiian Islands in lower scale row counts (33–37 in the former vs. ca. 45 in the latter by Eschmeyer

Table 1. Counts and measurements for *Scorpaenopsis iop* sp. nov. Measurements are in mm; proportions (%SL) in parentheses

	Holotype	Paratypes						
	FAKU 58788	IOP 2080	NSMT-P35785	TKPM-P 1305	FAKU-S 188	FAKU-S 192	FAKU 57333	FAKU 59113
Standard length	57.0	50.7	56.0	38.6	58.0	62.9	20.0	36.9
Dorsal fin	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9	XII, 9
Anal fin	III, 5	III, 5	III, 5	III, 5	III, 5	III, 5	III, 5	III, 5
Pectoral fin	17	17	17	17	16	17	17	17
Pelvic fin	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5
Gill rakers (upper + lower)	4 + 8	4 + 9	3 + 8	3 + 8	3 + 8	3 + 8	4 + 9	4 + 9
Vertical scale rows	34	37	36	34	33	36	35	34
Pored lateral line scales	17	18	17	17	17	16	17	17
Predorsal scales	4	4	4	4	4	4	4	4
Vertebrae (AV + CV)	9 + 15	9 + 15	9 + 15	9 + 15	9 + 15	9 + 15	9 + 15	9 + 15
Head length	27.0 (47.4)	24.4 (48.1)	26.6 (47.5)	18.2 (47.2)	28.8 (49.7)	28.1 (44.7)	9.5 (47.5)	17.0 (46.1)
Snout length	8.1 (14.2)	6.8 (13.4)	8.0 (14.3)	5.0 (13.0)	8.7 (15.0)	8.7 (13.8)	2.5 (12.5)	4.4 (11.9)
Orbit diameter	6.7 (11.8)	6.0 (11.8)	6.5 (11.6)	5.0 (13.0)	7.1 (12.2)	7.2 (11.4)	2.9 (14.5)	4.5 (12.2)
Interorbital width	3.7 (6.5)	2.4 (4.7)	2.9 (5.2)	2.5 (6.5)	3.5 (6.0)	4.4 (7.0)	1.4 (7.0)	2.0 (5.4)
Upper jaw length	14.7 (25.8)	12.5 (24.7)	14.0 (25.0)	9.4 (24.4)	14.5 (25.0)	16.2 (25.8)	4.6 (23.0)	8.8 (23.8)
Predorsal length	23.4 (41.1)	19.9 (39.3)	23.5 (42.0)	15.6 (40.4)	25.0 (43.1)	25.3 (40.2)	8.3 (41.5)	15.1 (40.9)
Body depth	22.1 (38.8)	18.0 (35.5)	20.4 (36.4)	15.9 (41.2)	24.9 (42.9)	26.3 (41.8)	7.0 (35.0)	14.4 (39.0)
Pectoral fin length	20.2 (35.4)	15.6 (30.8)	18.3 (32.7)	11.6 (30.1)	17.0 (29.3)	21.0 (33.4)	5.9 (29.5)	12.5 (33.9)
Pelvic fin length	15.9 (27.9)	13.9 (27.4)	14.6 (26.1)	11.1 (28.8)	14.7 (25.3)	15.6 (24.8)	4.9 (24.5)	9.5 (25.7)
Caudal fin length	18.0 (31.6)	14.7 (29.0)	15.4 (27.5)	11.9 (30.8)	16.5 (28.4)	18.2 (28.9)	6.4 (32.0)	11.8 (32.0)
3rd dorsal spine length	9.2 (16.1)	7.5 (14.8)	8.0 (14.3)	5.9 (15.3)	6.9 (11.9)	9.0 (14.3)	2.9 (14.5)	5.4 (14.6)
4th dorsal spine length	10.1 (17.7)	8.2 (16.2)	8.7 (15.0)	6.5 (16.8)	8.0 (13.8)	9.5 (15.1)	2.9 (14.5)	5.9 (16.0)
11th dorsal spine length	5.2 (9.1)	4.6 (9.1)	5.2 (9.3)	3.9 (10.1)	5.0 (8.6)	6.4 (10.2)	1.6 (8.0)	3.0 (8.1)
12th dorsal spine length	7.3 (12.8)	5.8 (11.4)	6.0 (10.7)	5.1 (13.2)	6.7 (11.6)	7.6 (12.1)	2.2 (11.0)	4.4 (11.9)
1st anal spine length	4.3 (7.5)	3.8 (7.5)	4.8 (8.6)	3.4 (8.8)	3.5 (6.0)	3.2 (5.1)	1.8 (9.0)	2.9 (7.9)
2nd anal spine length	8.8 (15.4)	7.0 (13.8)	7.4 (13.2)	6.1 (15.8)	7.0 (12.1)	8.5 (13.5)	3.0 (15.0)	5.1 (13.8)
3rd anal spine length	8.4 (14.7)	6.7 (13.2)	7.6 (13.6)	6.0 (15.5)	6.9 (11.9)	7.6 (12.1)	3.1 (15.5)	5.4 (14.6)

T. Nakabo, H. Senou & H. Masuda

and Randall [1975]), and shorter dorsal spine (in the 4th spine, 13.8–17.7%SL vs. 23%SL).

S. simulata de Beaufort, 1962, from the Sulu Sea is similar to *S. iop* in the predorsal and the 3rd dorsal spine length (by P.C.E.), but differs from the latter in having a pair of small spines before the occiput fossa.

S. gilchristi (Smith, 1957) from off South Africa differs from *S. iop* in having united pores at symphysis of the lower jaw (by P.C.E.), lachrymal with 5 spines and 2 predorsal scales.

The color photograph identified as *Scorpaena zanzibarensis* Playfair in Masuda et al. (1975), *Scorpaena picta* Cuvier in Masuda et al. (1984) and *S. picta* in Masuda et al. (1988) is most likely *S. iop* because of its appearance. *S. picta* of Aizawa and Senou (1991) is this species, and the specimen (TKPM-P 1305) they examined has been included in the paratypes.

Acknowledgments

We are grateful to Mr. Mitsuhiko Yanagita, the staff of Izu Oceanic Park, Diving Center, and Mr. Takashi Murai (FAKU) for helping us to collect the specimens and to Mr. Yoichi Sato (TKPM) for loan of the specimen collected from Mugi, Tokushima Prefecture. We wish to thank deeply Dr. William N. Eschmeyer for reviewing our manuscript, giving useful comments and information about the type specimens of some *Scorpaenopsis* species.

Literature Cited

- Aizawa, M. and H. Senou. 1991. An annotated list of the coastal fishes from Oshima Island and the adjacent region, Tokushima Prefecture, Japan. Bull. Tokushima Pref. Mus., (1): 73–208, pls. 1–45. (In Japanese.)
de Beaufort, L. F. 1962. Order Scleroparei. Pages 1–177 in L.F. de Beaufort and J. C. Briggs, eds. The fishes of the Indo-Australian Archipelago XI. E.J. Brill, Leiden.
Eschmeyer, W. N. 1965. Western Atlantic scorpionfishes of the genus *Scorpaena*, including four new species. Bull. Mar. Sci., 15: 84–164.

- Eschmeyer, W. N. 1969. A systematic review of the scorpionfishes of the Atlantic Ocean (Pisces: Scorpaenidae). Occ. Pap. Calif. Acad. Sci., (79): i–iv + 1–143.
Eschmeyer, W. N. and J. E. Randall. 1975. The scorpaenid fishes of the Hawaiian Islands, including new species and new records (Pisces: Scorpaenidae). Proc. Calif. Acad. Sci., 4th ser., 40: 265–334.
Fowler, H. W. 1938. Descriptions of new fishes obtained by the United States Bureau of Fisheries Steamer "Albatross," chiefly in Philippine Seas and adjacent waters. Proc. U.S. Natn. Mus., 85 (3032): 31–135.
Gilbert, C. H. 1905. The deep-sea fishes of the Hawaiian Islands. Bull. U.S. Fish Comm., vol. 23, pt. 2: 575–713, pls. 66–101.
Masuda, H., K. Amaoka, C. Araga, T. Uyeno and T. Yoshino (eds.). 1984. The fishes of the Japanese Archipelago. Tokai Univ. Press, Tokyo. xxii + 438 pp., 370 pls.
Masuda, H., C. Araga and T. Yoshino. 1975. Coastal fishes of southern Japan. Tokai Univ. Press, Tokyo. 379 pp.
Masuda, H., C. Araga and T. Yoshino. 1988. Coastal fishes of southern Japan, 2nd ed., 2nd print. Tokai Univ. Press, Tokyo. 383 pp.
Smith, J. L. B. 1957. The fishes of the family Scorpaenidae in the western Indian Ocean. Part I. The subfamily Scorpaeninae. Rhodes Univ. Ichthyol. Bull., 4: 49–72, pls. I–IV.

南日本沿岸から得られたフサカサゴ科の1新種ヒメサツマカサゴ

中坊徹次・瀬能 宏・益田 一

静岡県伊東市富戸の伊豆海洋公園における水深 25–30 m の岩礁域、徳島県牟岐町大島の水深 20 m の岩礁域、長崎県対馬から得られた計 8 個体の標本に基づいて、フサカサゴ科オニカサゴ属魚類のうち、小型のグループに属する 1 新種 *Scorpaenopsis iop* (ヒメサツマカサゴ、新称、完模式標本 57 mm SL) を記載した。本種は頭部が殆ど無鱗（わずかに数枚の半埋没性櫛鱗がある）、多くの微小突起で被われる、眼は頭部背縁よりやや突出する、眼後棘と耳棘は幅広い、涙骨に 2 棘ある、後頭部のくぼみの前縁に 1 対の小棘がない、下顎の先端付近の左右の感覚孔は癒合しない、鰓蓋骨上方棘の先端が単尖頭ではない、胸鰭は 17 軟条、側線上方横鱗列数が 33–37、背鰭前方鱗数が 4、第 1 鰓弓下枝の鰓耙数が 8–9、背鰭前長が短い、そして背鰭棘条部の高さが低い、等の諸形質でオニカサゴ属魚類の他の小型種から区別される。

(中坊: 〒606-01 京都市左京区北白川追分町 京都大学農学部水産学科; 瀬能・益田: 〒413-02 伊東市富戸 伊豆海洋公園)