The Batfishes (Lophiiformes: Ogcocephalidae) of Taiwan, With Descriptions of Eight New Records

Hsuan-Ching Ho and Kwang-Tsao Shao

台灣的棘茄魚類兼記八個新紀錄種

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The Batfishes (Lophiiformes: Ogocephalidae) of Taiwan, With Descriptions of Eight New Records

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**ABSTRACT**

This work reports the batfishes collected from the Taiwanese waters. A total of 18 species in six genera were recognized. New records of two genera, Halieutopsis and Coelophrys, and eight species, Coelophrys breviceudata, C. micropa, Halieutopsis ingerorum, H. simula, Halieutaea indica, Malthopsis mitchi, Metlhophis tiarella, Solocisquama stellulata, are reported. A key to all genera and species of batfishes recorded from Taiwan as well as the diagnosis, synonymy and distribution of each species are provided.

**Key words:** Taxonomy, Pisces, Batfish, New Record, Taiwan.

**INTRODUCTION**

The ogocephalid batfishes are characterized by their strongly depressed body disk, triangular, subtriangular, or rounded in dorsal view (except box-like in Coelophrys); tail tapering; dorsal surface bearing modified from scales, tubercles or bucklers; species in some genera with an enlarged rostral snout; dorsal-fin with first spine modified to form a short illicium, housed in the illicial cavity at the tip of head; a fleshy escal bulb at the tip of illicium; second spine greatly reduced; pectoral fins arm-like, on latero-posterior edge of disk, horizontal; pectoral fin rays 10-19; dorsal-fin rays 2-7 (completely absent in some species of Halicmetus); anal fin rays 3-4; pelvic fins on ventral surface of disk; mouth subterminal, in front of body disk.

There are ten genera and about 70 species of this family found in the world from warm to temperate seas (Nelson 2006, Ho, unpublished data). Bradbury (1967) studied the taxonomy of all genera based on osteology and morphology. She revised three genera, the deep-sea genus Halieutopsis, the western Atlantic and eastern Pacific genus Ogocephalus, and the world wide genus Dibranchus and removed two species from Dibranchus to a new genus, Solocisquama (Bradbury, 1980, 1988, 1999a). In 2003, Bradbury compiled a species catalog of this family and suggested some groups should be further revised.

In Taiwan, the first ogocephalid, Halieutaea stellata, was reported by Nakamura (1943). Liang (1951), Chen (1953, 1956), and Yang and Lee (1965) also recorded this species. Chen et al. (1967) reported three additional species from Taiwan: Halicmetus reticulatus, Malthopsis annulifera, and M. lutea. Shen (1984a) provided color photos of five ogocephalid species including two unidentified species and two new records: Halieutaea fitzsimonsi and Dibranchus japonicus. However, based on his photos, his Halieutaea fumosa is H. stellata; Halieutaea sp. 1 and Dibranchus japonicus are both misidentifications of H. indica. Shen

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recorded four species, *H. stellata*, *D. japonicus*, *M. annulifera* and *M. lutea*; no other information was provided for further identification.

Lee (1988) reviewed the order Lophiiformes and added one new record, *M. jordani*. His only specimen of *D. japonicus* is reidentified as *H. indica* by the author. Chen's (1993) record of *H. stellata* from the Pescadores (Peng-hu Islands) is a misidentification of *Halieutaea indica*. Lee (1993) followed several previous authors and recorded all 8 species mentioned above: *Halieutaea stellata*, *H. fitzsimonsi*, *H. fumosa*, *D. japonicus*, *Halicmetus reticulatus*, *M. jordani*, *M. lutea*, *M. annulifera*. Yu (1996) published a checklist of fishes of Taiwan totally based on literature reviews and recorded nine species, with *Halicmetus ruber* as the additional species. Recently, Ho and Shao (2007) described *Halieutopsis margaretae* from Taiwan, Japan and Hawaii; and Ho et al (2008) described *Halicmetus nigra* (= *Halicmetus niger*) from Taiwan, Japan and Australia.

A total of 18 species in six genera are recognized from Taiwan. These are not including 10 newly recognized unidentified species. Two genera and eight species are newly recorded from waters around Taiwan. There are three species previously reported from Taiwan, *Dibranchus japonicus* is excluded based on our examination and the misidentification of previous voucher specimens. *Halicmetus ruber* and *M. jordani* are considered unidentified species because their distinctive characters are different from those of their respective type specimens. Keys to all genera and species of batfish family Ogcocephalidae and diagnosis, synonymy and distribution of each species are provided.

**METHODS AND MATERIALS**

Standard length (SL) expressed in millimeter is used throughout this work. The methods and definitions follow Bradbury (1980, 1988, 1999a). Terminology used in describing angling apparatus follows Bradbury (1967). Specimens examined were collected by commercial fishing boat by using bottom trawls and by research vessel *Ocean Researcher I* (OR I) by using beam trawl and otter trawl. All specimens examined in this study were deposited in the following museums and institutions: American Museum of Natural History, New York, U.S.A (AMNH); Biodiversity Research Center, Academia Sinica, Taipei (ASIZP); California Academy of Sciences, San Francisco, U.S.A. (CAS); National Museum of Marine Biology & Aquarium, Ping-tong, Taiwan (NMMP); National Museum of Natural Science, Taichung, Taiwan (NMNSF); National Taiwan Museum, Taipei, Taiwan (NTMP); Zoological Museum, National Taiwan University, Taipei, Taiwan (NTUM); and Natural Museum of Natural History, Smithsonian Institution, Washington D.C., U.S.A. (USNM).

**FAMILY OGCOCEPHALIDAE**

棘茄魚科

Key to the genera and species of the family Ogcocephalidae in Taiwan

1A. Head box-like; pelvic fins minute, barely emerging from ventral surface of body. ................................................. *Coelophys* 2

1B. Head strongly depressed; pelvic fins normal ..................................................3

2A. Disk more or less depressed posteriorly; head 1.5 in SL; interorbital width 3.5-4.3 in SL; eyes 9.2-10.2 in SL; caudal peduncle relatively long ................................................................. *Coelophys micropa*

2B. Disk box-like; head 1.2-1.3 in SL; interorbital width 3.0-3.6 in SL; eyes 6.0-7.6 in SL; caudal peduncle relatively short, equal to anal fin length. .............................................. *Coelophys brevicaudata*

3A. Disk rounded; gill filaments present on second and third arches, an additional hemibranch present on fourth arch; lower edges of esca bearing numerous filaments .............................................. *Halieutaea 4*

3B. Disk subtriangular to triangular; gill filaments present on second and third gill arches only; lower edges of esca without filament. ..................................................7

4A. Body surface covered with minute spinules between principal tubercles......
H. stellata

4B. Body surface naked, without any spinules between principal tubercles...5

5A. Pectoral fin rays 14-15; principal tubercles on dorsal surface strong, loose in arrangement; a pair of black rings on dorsal surface; size up to 250 SL.........................H. fitzsimonsi

5B. Pectoral fin rays 12-13; principal tubercles on dorsal surface small and dense in arrangement; no black rings on dorsal surface; size up to 130 SL.............................H. indica

6A. Teeth on tongue with a prolongation on inner and posterior corner; principal tubercles on dorsal surface sharp and slender; ventral surface usually covered with few small granules or totally naked.............................H. fumosa

6B. Teeth on tongue somewhat rounded posteriorly; dorsal surface covered with small principal tubercles and numerous mid-size spines; ventral surface totally naked........................................H. cf. ruber

7A. Disk acutely triangular; rostrum with a hom-like spine....................Malthopsis 8

7B. Disk subtriangular; rostrum shelf-like, without hom-like spine............12

8A. Ventral surface covered with dense spinules between principal bucklers....9

8B. Ventral surface naked, without spinules between principal bucklers........10

9A. Ocellus usually present on dorsal surface; principal bucklers forming two dense rows on dorsal surface and tail.................................M. lutea

9B. No ocellus on dorsal surface; principal bucklers rather loose on dorsal surface and tail.....................................................M. tiarella

10A. Subopercle bucker bears two spines pointed forward; vomer teeth forming a wide band..............................M. mitrigera

10B. Subopercle bucker bears none or one spine or none directed forward; vomer teeth forming a square.........................11

11A. Longest anal fin ray reaches caudal fin base; many mid-size bucklers present on belly; 0-4 pairs of black dots on dorsal surface............................Malthopsis sp. (cf. jordani)

11B. Longest anal fin ray falls short of caudal fin base, belly usually naked or only few bucklers; 3-8 pairs of ocellus on dorsal surface..............................M. annulifera

12A. Anterior margin of disk truncated; skin covered with bucklers as well as minute spinules..........................Halicmetus 13

12B. Anterior margin of disk pointed; skin covered with tubercles as well as minute spinules.................................15

13A. Dorsal surface with reticular color pattern; peritoneum pale with small brown dots..........................H. reticulatus

13B. Dorsal surface uniform gray or white to dark patches on white background; peritoneum uniformly brown to dark.................................14

14A. Rostrum well extends overhanging mouth; skin covered with numerous trifid spinules; body uniformly grayish to dark; all fins grayish..................H. niger

14B. Rostrum short to mouth; skin covered with numerous bifurcated spinules; dorsal surface with brown to dark patches on white background; all fins pale..............................H. cf. ruber

15A. Anterior midline of upper jaw with a deep notch; lower part of esca well connected, not divided into two rounded lobes; ventral series of lateral line scales not running anterior to anus..............................Solocisquama stellulatus

15B. No notch on anterior midline of upper jaw; lower part of esca well divided into two rounded lobes; ventral series of lateral line scales running anterior to anus............................Halieutopsis 16

16A. Ventral surface totally naked (except for some tubercle at pelvic fin base)...17

16B. Tubercles present on ventral surface.....................................................H. margaretae

17A. Face upturned; entire rostrum posterior to mouth; esca with two rounded ventral lobes and a leaflike dorsal lobe..............................H. ingemorum

17B. Face not upturn; rostrum extended overhanging mouth; esca covered with a mass of filaments..............................H. simula

Coelophysys Brauer 1902

腔幅魚屬
Coelophrys Brauer 1902: 291 (Type species: Coelophrys brevicaudata Brauer 1902, by original description and monotype).

Coelophrys brevicaudata Brauer 1902
短尾腔幅魚
(Fig. 1)


Specimen examined. ASIZP 63511 (1, 90.3), Ta-shi, Yi-lan, NE Taiwan, 10 Jun. 1999. ASIZP 62883 (1, 43.3), Ta-shi, Yi-lan, NE Taiwan, 4 Jan. 2004. ASIZP 62938, 62.5 mm SL, Ta-shi, Yi-lan, NE Taiwan, 15 Dec. 2002. ASIZP 62939 (1, 37.7), Ta-shi, Yi-lan, NE Taiwan, 1 Jan. 2002.

Diagnosis. Dorsal fin rays 5-6; pectoral fin rays 15-16; anal fin rays 3-4. Head box-like, posterior portion slightly wider than anterior; body slightly elongated; pelvic fins greatly reduced in size; caudal peduncle relatively short, about equal to anal fin in length; head length 1.2-1.3 in SL; mouth large, slightly wider than interorbital space; few teeth on jaws and tongue (fifth ceratobranchial); teeth absent on palatines and vomer; eyes large, 6.0-7.6 in SL; interorbital space wide, 3.0-3.6 in SL; illicial cavity large and cavernous, its width much greater than eye diameter; eye visible dorsally; esca with two not well-separated ventral lobes and a leaf-like dorsal lobe; skin translucent and loose, entirely covered with simple tubercles; tubercles along lateral-line simple, not bifurcated; subopercular spine weak, size about equal to the neighboring tubercles. Body grayish in color, posterior two-third usually darker, peritoneum black. A species with adult size up to 100 mm SL.

Distribution. Widespread in the western Pacific off Japan, the Philippines, Indonesia, New Caledonia and eastern Australia.

Coelophrys micropa (Alcock 1891)
扁頭腔幅魚


Coelophrys micropa: Yamakawa in Okamura and Kitajima 1984: 279, 380 (description)


Halieutopsis sellifera: de Beaufort and Briggs 1962:232 (misidentification).

Specimen examined. ASIZP 66382 (1, 63.5), RV Ocean Research I, sta. PCP 339, 22°10.45'N, 121°15.17'E, SE Taiwan, 843-849 m, 7 Mar. 2006.

Diagnosis. Dorsal fin rays 5; pectoral fin rays 15; anal fin rays 4. Head box-like, posterior portion much wider than anterior portion; body slightly depressed, surface of body flat; pelvic fins greatly reduced in size; caudal peduncle much shorter than disk length, slightly longer than anal fin; head length 1.5 in SL; eyes small, 9.2-10.2 in SL; interorbital width 3.5-4.3 in SL; illicial cavity large, about equal to interorbital width; eyes invisible when dorsal view; rostrum flat and broad, slightly projects beyond jaws; esca with a pair of not well-separated ventral lobes and a flat dorsal flap; teeth few, villiform bands on jaws; skin translucent and loose, covered with numerous simple tubercles; tubercles on lateral sides of tail bifurcated, slightly larger than those on body; subopercular spines less developed, slightly stronger than neighboring tubercles. Body gray to dark brown in color; pectoral and pelvic fins darker than body; peritoneum black. A species with adult size up to 120 mm SL.

Distribution. Widespread in the Indo-west Pacific Ocean off South Africa, India, Madagascar, the Philippines, Salomon Is., Australia, Taiwan and Japan.

Remark. We place this species in Coelophrys based on the similarity of the following characters: frontal bones flat, not forming a groove; pelvic fins strongly reduced in size; illicial cavity forming a deep
cavity; and more lateral line scale counts.

**Genus Halieutopsis Garman 1899**

With 10 species, three species recorded from Taiwan. Two other species, *Halieutopsis stellifera* and *H. bathyoreos*, widespread in the western Pacific region are also expected to be in Taiwanese waters.

**Halieutopsis ingerorum Bradbury 1988**

仰頭擬棘茄魚

*(Fig. 2)*

*Halieutopsis ingerorum* Bradbury 1988: 17 (Holotype: CAS 57249, Mozambique Channel, 21°18'S, 36°18'E, 1,510-1,600 m.). Bradbury 2003: 7 (list).

Specimen examined. ASIZP 66275 (1, 74.5), RV ORV I sta. CP285, off Suao, NE. Taiwan, NW. Pacific, beam trawl, 2,246-2,356 m, 16 Jun. 2006; ASIZP 66324 (1, 77.0) and ASIZP 66325 (1, 75.2), same data as ASIZP 66275.

Diagnosis. Dorsal fin rays 4-5; pectoral fin rays 14-15; anal fin rays 4. Body depressed, disk oval in outline; disk relatively small and short; tail relatively long and stout; face unturned, rostrum entirely posterior to mouth; eyes relatively small, 17-18 in SL; interorbital space narrow, 8.8 in SL; illicial cavity shallow and small; esca with a dorsal flap-like lobe and two well-separated rounded ventral lobes; tubercles on face and disk margin closely adjoined, on dorsal surface relatively small and apart, on edge of tail simple; tubercles absent from ventral surface, except for 1-2 on each side of ventral fin base; ventral series of lateral line with 2-3 scales on each side of anus. Body entirely cream white; nostrils and gill openings pink when fresh, without any pigmentation when preserved. A species with adult size up to 77 mm SL.

**Distribution.** Known from Mozambique Canal, the western Indian Ocean at depth 1,510-1,380 m and the western Pacific off Taiwan at depth 2,246-2,356 m. Our specimens represent the first record of the western Pacific Ocean. Two additional specimens (MNHN 1986-0027, ZMMU 20363) were collected from near the type locality.

**Halieutopsis margaretae Ho and Shao 2007**

馬格麗特擬棘茄魚

*(Fig. 3)*

*Halieutopsis margaretae* Ho and Shao 2007: 88 (Holotype: ASIZP 64424, 24°29.00'N, 122°12.80'E, E Taiwan, NW Pacific, 445 m).

Specimen examined. ASIZP 64424 (Holotype, 1, 36.0), ORV I, sta. CD210, NE Taiwan, otter trawl, 445 m, 31 May 2003; ASIZP 66987 (1, 33.1), ORV I, sta. CP372, NE Taiwan, beam trawl, 1219 m, 26 Aug.

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![Fig. 2. Halieutopsis ingerorum, ASIZP 66324, 77.0 mm SL.](image-url)
Fig. 3. *Halieutopsis margaretae*, ASIZP 64424, holotype, 36.0 mm SL.

2006; FRIP 1051 (1, 74.0), 112°25.2 E, 22°51.9 N, South China Sea.  

*Diagnosis.* See Ho and Shao (2007) for details.

*Distribution.* Known from the western Pacific off Taiwan and Japan and central Pacific off Hawaii. Additional specimens were collected from the South China Sea (FRIP 1051) and New Caledonia (MNHN 1997-4035).

*Halieutopsis simula* Smith and Radcliffe 1912

準擬棘茄魚

*Dibranhus simulus* Smith and Radcliffe in Radcliffe 1912: 211 (Holotype: USNM 70274, the Philippines).

*Dibranhus infranudus* de Beaufort in de Beaufort and Briggs 1962: 228 (holotype: ZMA 101877, Flores Sea). Bradbury 1988: 14 (possible synonym of *H. simula*). Bradbury 1999a: 261 (tentatively assigned to *Halieutopsis*; possible synonym of *H. simulus*).


*Specimen examined.* ASIZP 57202 (1, 73.0), Tong-sha Islands, southern Taiwan, 15 May 1993.

*Diagnosis.* Dorsal fin rays 5; pectoral fin rays 15; anal fin rays 4. Head somewhat box-like; disk oval in outline; tail slender and tapering; illlicial cavity forming a deep cavity, its opening triangular; esca a mass of filaments; eye diameter 7.6-7.9 in SL; interorbital space 4.5-4.9 in SL; ventral surface completely naked; anal fin long, reaching caudal fin base; skin translucent and loose; dorsal surface and tail covered with simple tubercles; subpercular spine not well-developed; rostrum rounded, rostral spine weak; ventral series of lateral line with 3-4 scales on each side of anus. Body light brown to yellowish in color; all fins pale; peritoneum black. A species with adult size up to 80 mm SL.

*Distribution.* Known from the Indomost Pacific off Tong-sha Is., the Philippines, Indonesia and western Australia. Our specimen represents the first record in the western North Pacific Ocean.

*Remark.* The frontal bone of *H. simula* is flat and this character suggests that *H. simula* might belong to *Coelophrys*. Further
study on osteology of this genus is needed to verify this hypothesis.

**Halieutaea Valenciennes 1837**


With about 9 species and a few undescribed species (Ho, unpublished data). Four species are recorded from Taiwan. This genus is under review by the first author for his doctoral dissertation.

**Halieutaea fitzsimonsi** (Gilchrist and Thompson 1916)

費氏棘茄魚
(Fig. 4)


**Halieutaea liogaster** Regan 1921: 419
(Syntypes: BMNH 1921.3.1.25-27, Natal, South Africa, 120-130 fm.).

**Halieutaea** sp. 1: Yamada 2002: 464 (key).

**Halieutaea** sp. a: Mochizuki in Okamura et al. 1982: 190, 359 (description).

*Specimen examined.* ASIZP 59754 (1, 146.0), Nan-fang-ao, Yi-lan, NE Taiwan, 21 May 1992; ASIZP 61052 (1 of 2, 110.5), Yi-lan, NE Taiwan, 200 m, 1 Dec. 2000; ASIZP 63239 (1, 173.0), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 65405 (1, 156.5), Nan-fang-ao, Yi-lan, NE Taiwan, 300-400 m, 28 May 2004; ASIZP 65416 (1, 114.4), data as given for ASIZP 65405; NMNSF 0425 (1, 142.2), Tong-kang, Ping-tong, S Taiwan, 27 May 1999; NTMP 0619 (1, 148.5), Taiwan, 1945.

*Diagnosis.* Dorsal fin rays 4-5; pectoral fin rays 14-15; anal fin rays 4. Head elevated above body anteriorly; rostrum not projects over front of disk, esca visible from dorsal view; dorsal surface covered with strong needle-like principal tubercles, most with four facets, loose in arrangement; skin naked, without spinules between principal tubercles; ventral surface totally naked; teeth on tongue forming two mid-size patches, each has a pointed outer prolongation; three pairs of principal tubercles on lateral sides tail, anterior one larger. Body reddish in color, pectoral, dorsal, and caudal fin usually with black edge; dorsal surface cover with black reticulate pattern; a pair of symmetrical black rings on opercular area, size about equal to eye diameter. A large species with adult size up to 280 mm SL.

*Distribution.* Widespread in the Indowest Pacific off South Africa, Madagascar, New Caledonia, Salomon Is., the Philippines, Taiwan and Japan.

**Halieutaea fumosa Alcock 1894**

雲紋棘茄魚
(Fig. 5)


*Specimen examined.* ASIZP 55648 (1, 57.5), Tong-kang, Ping-tong, S Taiwan, 1 Jan. 1981; ASIZP 61493 (1, 47.0), Yi-lan, NE Taiwan, 200 m, 1 Dec. 2000; ASIZP 62274 (1, 63.0), Tong-kang, Ping-tong, S Taiwan, 100 m, 8 Nov. 2001; ASIZP 63240 (1, 90.2), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 63241 (1, 70.3), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 64551 (1, 97.5), Ta-shi, Yi-lan, NE Taiwan, 22 May 2004; ASIZP 64579 (2, 52.1-64.0), Tong-kang, Ping-tong, S Taiwan, 1 Oct. 2004; ASIZP 64593 (1, 82.2), Ta-shi, Yi-lan, NE Taiwan, 2 Nov. 2004; CAS 30305 (1, 81.8), Keelung, N Taiwan, 70-100 m, 8 May 1972; NMMBP 1113(2, 75.4-80.7), Tong-kang, Ping-tong, S Taiwan, 21 Dec. 1984; NMMBP
Fig. 4. *Halieutaea fitzsimonsi*, ASIZP 63239, 173.0 mm SL, Nanfangao, Yilan, NE Taiwan.

Fig. 5. *Halieutaea fumosa*, ASIZP 63241, 70.0 mm SL, Tashi, Tienan, NE Taiwan.
Fig. 6. *Halieutaea indica*, 68.0 mm SL, Tashi, Yi-lan, NE Taiwan.

Fig. 7. *Halieutaea stellata*, 135 mm SL. Tashi, Yi-lan, NE Taiwan.
2871 (2, 73.4-75.2), Tong-kang, Ping-tong, S Taiwan, 8 Nov. 2001; NMMPB 3552 (1, 36.8), Kaohsiung, SW Taiwan, 25 Aug. 2001; NMMPB 3716 (1, 67.6), Tong-kang, Ping-tong, S Taiwan, 8 Jan. 2003; NMMPB 5249 (4, 67.7-80.5), Tong-kang, Ping-tong, S Taiwan, 21 Mar. 1979; NMMPB uncat. (4, 49.1-69.4), Tong-kang, Ping-tong, S Taiwan, 6 Nov. 2007; NMNSF 0420 (1, 71.0), Tong-kang, Ping-tong, S Taiwan, 11 Dec. 1997; NMNSF 0424 (1, 57.2), Tong-kang, Ping-tong, S Taiwan, 12 Jan. 2004; NMNSF 0432 (1, 71.6), Tong-kang, Ping-tong, S Taiwan, 10 Nov. 1997; NMNSF 0792 (1, 56.9), Tong-kang, Ping-tong, S Taiwan, 7 Oct. 2004; NMNSF 0881 (1, 52.3), Tong-kang, Ping-tong, S Taiwan, 17 Jan. 2000; NMNSF 0882 (1, 86.8), Tong-kang, Ping-tong, S Taiwan, 26 Apr. 2001; NMNSF 0883 (2, 27.0-39.9), Tong-kang, Ping-tong, S Taiwan, 11 Sep. 1994; NTMP 0053 (1, 84.0), Tong-kang, Ping-tong, S Taiwan, 2 Nov. 1987; NTMP 0070 (3, 70.0-82.3), Nan-fan-so, Yi-lan, NE Taiwan, 1 Mar. 1977; NTUM 1670 (1, 84.4), Tong-kang, Ping-tong, S Taiwan, 9 Feb. 1973; NTUM 1672 (1 of 2, 62.8), Ta-shi, Yi-lan, NE Taiwan, 11 Mar. 1973.

**Diagnosis.** Dorsal fin rays 4-5; pectoral fin rays 12-13, and anal fin rays 3-4. Head strongly depressed, not elevated above body anteriorly; rostrum not projects over front of disk, esca visible from dorsal view; illicial cavity relatively small; principal tubercles relatively short; dorsal surface densely covered with small tubercles between those principal tubercles; ventral surface completely naked; teeth on tongue forming two small patches, each has a short and rounded inner prolongation; five to six pairs of equal size principal tubercles on lateral sides of tail. Body reddish to grayish in color; pectoral usually translucent with a black bar; few irregular lineate patterns on dorsal surface, made up by small dots. A species with adult size up to 130 mm SL.

**Distribution.** Widespread in the Indo-west Pacific Ocean from off South Africa, Vietnam, Malaysia, the Philippines, Indonesia, New Caledonia, north Australia, Taiwan, China and Japan.

**Remark.** Halieutaea stellata vittata, previously placed in synonym of *H. stellata*, is actually a junior of *H. fumosa* based on our examination. *Halieutaea fumosa* is similar to an eastern Australia species *Halieutaea brevicauda* in having black ring around eye and black bar on pectoral fin. The later differs from the former in having loosely arranged spinules on belly and fine reticulate color pattern on dorsal surface.

**Halieutaea indica** Annandale and Jenkins 1910

(FIG. 6)

*Halieutaea indica* Annandale and Jenkins 1910: 19 (Bay of Bengal, off Orissa coast, India). Yamada 2002: 466 (key).

*Halieutaea sinica* Chang and Chang 1964: 156 (Holotype: ASIZB 56-7266, Kwangtung, China) (New synonymization).


*Halieutaea* sp.1: Shen 1984a: 20 (description).

*Lophius faujas* Lacepède 1798: 318 (vernacular, not latinized).

*Lophius muricatus* Shaw 1804: 382 (holotype: MNHN A. 4542, not treated as valid in 1900).

**Specimen examined.** ASIZP 58256, (2, 75.0-102.0), Ta-shi, Yi-lan, NE Taiwan, 16 Nov. 1996; ASIZP 59593 (1, 81.3), Pescadores Is., W Taiwan, 24 Jun. 1980; ASIZP 62547 (1, 68.0), Ta-shi, Yi-lan, NE Taiwan, 27 Feb. 2003; ASIZP 62594 (1, 80.1), Ta-shi, Yi-lan, NE Taiwan, 11 Jul. 2003; ASIZP 63240 (1 of 2, 63.5), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 63253 (1, 66.0), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 64521 (1, 60.5), Ta-shi, Yi-lan, NE Taiwan, 29 Jan. 2003; CAS 15608 (6, 70.5-92.6), Pescadores Is., W Taiwan, 30-50 m, 5 May 1972; CAS 28171 (8), Kaohsiung, S Taiwan, 73-91 m, 13 Oct.
black margin. A species with adult size up to 110 mm SL.

Distribution. Widely distributed in Indo-west Pacific from off South Africa, Madagascar, Seychelles, western Australia, the Philippines, Indonesia, Taiwan, China and Japan.

Remark. Shaw (1804) provided a species name *Lophius muriatus* for “La Lophie Faujas” proposed by Lacepède (1798), which was considered as a vernacular and not latinized. Both names were treated as junior synonym of *H. stellata* by previous authors. We examined the only known type specimen, MNHN A.4542, and found this is actually a *H. indica*, a species described in 1911. Since *L. muriatus* was now treated as valid since 1900, we put the name in the synonym of *H. indica* herein.

Based on our examination and the figures of *Halieutaea sinica* provided by Chang and Chang (1964), we recognized it as a junior synonym of *H. indica*. *Dibranchus japonicus* recorded by Shen (1984a) and Lee (1988, 1993) was apparently misidentification of present species. The squamation suggests that more than one geographical population is present.

*Halieutaea stellata* (Vahl 1797)

臘茄魚

(Fig. 7)

*Lophius stellatus* Vahl 1797: 214 (No type known, original from China).

*Halieutaea stellata* (Vahl 1797):


*Halieutaea maoria* Powell 1937: 81 (Holotype: AIM Ps.427.1., off White I., Bay of Plenty, New Zealand, 30-40 fm.).

*Specimen examined.* ASIZP 61052 (1 of 2, 125.0), Ta-shi, Yi-lan, NE Taiwan, 200 m, 1 Dec. 2000; ASIZP 62590 (1, 115.2), Ta-shi, Yi-lan, NE Taiwan, 11 Jul. 2003;
ASIZP 61492 (1, 150.2), Ta-shi, Yi-lan, NE Taiwan, 200 m, 17 Jul. 2000; ASIZP 62548 (1, 133.5), Ta-shi, Yi-lan, NE Taiwan, Feb. 27 2003; ASIZP 62549 (1, 130.8), Ta-shi, Yi-lan, NE Taiwan, 27 Feb. 2003; ASIZP 62550 (1, 158.7), Ta-shi, Yi-lan, NE Taiwan, 27 Feb. 2003; ASIZP 62551 (1, 116.4), Ta-shi, Yi-lan, NE Taiwan, 27 Feb. 2003; ASIZP 62589 (1, 142.2), Ta-shi, Yi-lan, NE Taiwan; ASIZP 62592 (1, 80.3), Ta-shi, Yi-lan, NE Taiwan; ASIZP 63238 (2, 106.1-133.0), Ta-shi, Yi-lan, NE Taiwan, 21 Mar. 2004; ASIZP 63553 (1, 126.6), Ta-shi, Yi-lan, NE Taiwan, 29 Sep. 2000; ASIZP 64546 (1, 124.8), Nan-fang- ao, NE Taiwan, 22 May 2004; ASIZP 64550 (1, 67.7), Ta-shi, Yi-lan, NE Taiwan, 22 May 2004; ASIZP 65489 (1, 136.3), Ta-shi, Yi-lan, NE Taiwan, 29 Jan. 2005; FRIP 3071 (3, 118.9-126.3), Keelung, N Taiwan, 14 Jun. 1963; ASIZP 61138 (1, 81.1); Ao-di, Taipei, NE Taiwan, 100 m, 15 Nov. 2000; ASIZP 70234 (1, 144.0), Ta-shi, Yi-lan, NE Taiwan, 21 mar. 2004; NMNB 0520 (1, 119.4), Tong-kang, Ping-tong, S Taiwan; NMNB 1762 (1, 69.9). Tong-kang, Ping-tong, S Taiwan; NMNB 3636 (1, 126.9), Tong-kang, Ping-tong, S Taiwan; NMNB 4302 (2, 131.3-167.7), Tong-kang, Ping-tong, S Taiwan; NMNB 7268 (1, 98.2), Tong-kang, Ping-tong, S Taiwan; NMNB 0334 (1, 81.3), Tong-kang, Ping-tong, S Taiwan, 12 Jan. 2004; NMNSF 0422 (1, 143.3), Tong-kang, Ping-tong, S Taiwan, 10 Nov. 1997; NMNSF 0427 (1, 172.3), Tong-kang, Ping-tong, S Taiwan, 21 Jan. 1999; NMNSF 0430 (1, 98.0), Ta-sha, NE Taiwan, 7 Jun. 2001; NTMP 0618 (1, 168.7), Kaohsiung, SW Taiwan, 1945; NTMP 0619 (1 of 2, 122.2), Taiwan, 1945; NTUM 1662 (1 of 3, 145.0), Ta-shi, Yi-lan, NE Taiwan, 13 Dec. 1970; USNM 387989 (1, 73.7), Ta-shi, Yi-lan, NE Taiwan, 1 Oct. 1960.

**Diagnosis.** Dorsal fin rays 4-5; pectoral fin rays 13-15; anal fin rays 4. Head relatively elevated; body anteriorly: rostrum not projects over front of disk, esca visible from dorsal view; dorsal surface covered with needle-like principal tubercles; tiny spinules present everywhere on body surface forming a velvet skin between those principal tubercles; teeth on tongue forming two large patches, each has a outer pointed prolongation. Body uniformly pinkish to reddish in color when fresh with black symmetrical lineate pattern on dorsal surface; all fins with black edge or not. A large species with adult size up to 250 mm SL.

**Distribution.** Widespread in the western Pacific off Japan, Taiwan, South China Sea, the Philippines, Indonesia, New Caledonia, Australia and north New Zealand. Specimens recorded from the Indian Ocean may represent an undescribed species.

**Remark.** Based on the original description and figure provided by Vahl (1797) contains only general (non-diagnostic) information without presenting apomorphic features necessary for distinguishing species. Valenciennes in Cuvier and Valenciennes (1837) derived the new genus *Halicetula* and designated *L. stellatus* as the type species. His specimens and drawings are identical to the present species. A neotype is needed for verifying this species.

**Halicetula Alcock 1891**

牙棘茄魚屬


With three species and at least three undescribed species, three recorded from Taiwan. The previously recorded species *H. ruber* is recognized as unidentified species herein (Ho, unpublished data). A new species *H. nigra* (= *H. niger*) is described more recently. For the detail description of this species, please refer to Ho et al. (2008)

**Halicetula reticulatus** Smith and Redcliffe 1912

網紋牙棘茄魚

(Fig. 8)

Fig. 8. Halicmetus reticulatus, ASZIP 61273, 68.8 mm SL.


Specimen examined. ASZIP 55226 (1, 79.8), Ping-tong, S Taiwan, 17 Feb. 1979; ASZIP 57620 (1, 74.9), Ping-tong, S Taiwan, 1 Oct. 1965; ASZIP 58048 (6, 43.5-82.9), Tong-sha Is., South China Sea, 1 May 1993; ASZIP 58049 (1, 57.7), Tong-sha Is., South China Sea, 19 Aug. 1991; ASZIP 62953 (1, 61.7), OR I, sta. CD137, 22.2°N, 120.42°E, SW Taiwan, 316-477 m, 23 Nov. 2001; ASZIP 61273 (1, 68.8), Tong-kang, Ping-tong, S Taiwan, 26 Aug. 2001; NTUM 1691 (1), Tong-kang, Ping-tong, S Taiwan, 13 Nov. 1972; NTUM 1692 (1), Tong-kang, Ping-tong, S Taiwan, 3 Feb. 1972.

Diagnosis. Dorsal fin rays 2-4; pectoral fin rays 12-13; anal fin rays 3-4. Body strongly depressed; disk subtriangular and truncated anteriorly, relatively wide; rostrum not extends beyond mouth; lower jaw slightly overhanging upper jaw, mouth visible from dorsal view; illicial cavity small, triangular in outline; esca a small flat lobe, ventral broader than dorsal, with two cirri on dorsal margin; dorsal fin present, with 2-4 fin rays; teeth on vomer and palatines forming three equal square patches; entire body covered with minute bucklers associated with lateral line system and skeleton and simple tubercles. Dorsal surface with brown reticulate on yellowish background; ventral surface paler; fins translucent to pale; peritoneum white with numerous small pepper dots. A species with adult size up to 90 mm SL.

Distribution. Known from the western Pacific off Japan, Taiwan and the Philippines.

Halicmetus sp. (cf. ruber)

牙棘茄魚屬一種
(Fig. 9)

Halicmetus ruber (non Alcock 1891): Mochizuki in Masuda et al. 1984: 104 (description). Mochizuki in Masuda et

Specimen examined. ASIZP 63079 (1, 65.0), Ta-shi, Yi-lan, NE Taiwan, 400-600 m, 2 Apr. 2004. ASIZP 57212(1, 74.0), Tong-sha Is., South China Sea, 15 May 1993.

Diagnosis. Dorsal fin rays absent; pectoral fin rays 12-13, anal fin rays 3-4. Body strongly depressed; disk subtriangular and truncated anteriorly; snout broad and rounded, without conical rostrum; rostrum not extends beyond mouth, mouth visible from dorsal view; entire body covered with small bucklers associated with lateral line system and skeleton and numerous bifurcated spinules; illicial cavity small, relatively flatten; esca a small flat lobe, ventral broader than dorsal, with two cirri on dorsal margin; teeth on vomer and palatines forming three equal square patches; dorsal fin completely absent; and anal fin relatively short. Dorsal surface creamy white, with irregular reddish pattern; ventral surface paler; fins translucent and pale. A species with adult size up to 80 mm SL.

Distribution. Known from the western Pacific off Japan, Taiwan and the Philippines.

Remark. Our specimens agree well with the original description of H. ruber. However, we compared the specimens of H. ruber collected from Indian Ocean and found several different characters. For the detail comparison, see Ho et al. (2008)

Solocisquama Bradbury 1999

Solocisquama Bradbury 1999b: 297 (Type species Dibranchus stellulatus Gilbert 1905, by original designation).

Solocisquama stellulata (Gilbert 1905)

(Fig. 10)


Specimen examined. ASIZP 57201 (1, 61.0), Nan-fang-ao, NE Taiwan, 1 Jul. 1993, coll. P.-H. Kao; ASIZP 58057 (1, 76.0), Nan-fang-ao, NE Taiwan, 21 May, 1992, coll. P.-H. Kao; ASIZP 64522 (1, 51.1), Nan-fang-ao, NE Taiwan, 12 Jun. 2004; ASIZP 64526 (3, 51.5-72.3), same data as ASIZP 64522; ASIZP 64583 (2, 92.3-95.4), Nan-fang-ao, NE Taiwan, 7 Jul. 2004; ASIZP 64600 (7, 42.2-73.8), same data as ASIZP 64583; ASIZP 64606 (10, 62.4-112.3), same data as ASIZP 64583.

Diagnosis. Dorsal fin rays 6-7 (usually 6); pectoral fin rays 13-15; anal fin rays 4. Body depressed, head slightly elevated; disk triangular in outline; skin covered with sharp and complex tubercles, those on dorsal and ventral surfaces simple, on tail bifurcated or trifid, on disk edge multifid; spinules present between principal tubercles; upper jaw not joined together, forming a cleft in midline; rostral spine multifid, bears 5-7 spinelets on top; rostrum projected, slightly overhanging illicial cavity and mouth; esca slightly visible, with a dorsal leaf-shape lobe and two rounded ventral lobes not well-separated; teeth absent from vomer and palatines; teeth on tongue forming two elongated patches not joined at midline; tail relative long and stout; dermal cirri absent. Color on dorsal surface olive-brown with black stain or spots; ventral surface pinkish when fresh and uniformly creamy white when preserved. A species with adult size up to 110 mm SL.

Distribution. Widespread in Indo-west Pacific off South Africa, New Caledonia, Taiwan and Japan; the central North Pacific off Hawaii.

Malthopsis Alcock 1891

Malthopsis Alcock 1891: 26 (Malthopsis luteus Alcock 1891, by monotype).

With six nominal species, four species and an unidentified species are recorded from Taiwan. Malthopsis jordani previously
recorded from Taiwan is now referred as the unidentified species based on the distinctive characters from the type specimens collected from Hawaii.

**Malthopsis annulifera** Tanaka 1908

(Fig. 11)


**Specimen examined.** ASIZP 55227 (1, 42.6), Tong-kang, Ping-tong, S Taiwan, 17 Feb. 1979; ASIZP 56026 (2, 60.7-70.0), Tong-kang, Ping-tong, S Taiwan, 24 May 1964; ASIZP 58053 (3, 40.0-69.2), Tong-sha Is., South China Sea, 1 May 1993; ASIZP 60225 (1, 56.0), Ta-shi, Yi-lan, NE Taiwan, 15 Oct. 1997; ASIZP 60510 (1, 52.7), Nan-fang-ao, Yi-lan, NE Taiwan, 26 Dec. 1995; ASIZP 62596 (1, 57.7), Ta-shi, Yi-lan, NE Taiwan; ASIZP 62946 (1, 55.4), Ta-shi, Yi-lan, NE Taiwan, Jan. 2004; ASIZP 63084 (1 of 2, 55.3), 24.8°N, 122.18°E, Ta-shi, Yi-lan, NE Taiwan, 210-340 m, 2 Apr. 2004; ASIZP 63530 (1, 57.3), Ao-di, Taipei, NE Taiwan, 200 m, 15 Nov. 2000; ASIZP 64588 (2, 64.6-82.8), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64592 (2, 52.3-56.4), Ta-shi, Yi-lan, NE Taiwan, 2 Nov. 2004; ASIZP 66018 (1, 65.5), Nan-fang-ao, Yi-lan, NE Taiwan, 8 Mar. 2005; ASIZP 66463 (1, 58.6), Tong-kang, Ping-tong, S Taiwan, 7 Oct. 2005; NMMBP 7481 (1, 62.9), Ta-shi, Yi-lan, NE Taiwan; NMMBP 5285 (5, 69.4-78.9), Nan-fang-ao, Yi-lan, NE Taiwan; NMMBP 5286 (1, 80.8), Tong-kang, Ping-tong, S Taiwan; NNMSP 8096 (1, 64.6), Tong-kang, Ping-tong, S Taiwan; NMMBP 8184 (1, 53.8), Tong-kang, Ping-tong, S Taiwan; NMMBP 7916 (1, 56.9), Tong-kang, Ping-tong, S Taiwan; NMMNSF 0418 (1, 60.9), Tong-kang, Ping-tong, S Taiwan, 8 Jan. 2003; NMMNSF 0421 (1, 60.1), Ta-shi, Yi-lan, NE Taiwan, 7 Jun. 2001; NMMNSF 0435 (1, 77.7), Tong-sha Is., South China Sea, 18 Apr. 1995; NMMNSF 1367 (1, 58.9), Ta-shi, Yi-lan, NE Taiwan, 28 Oct. 2003; NTMP 0007 (1, 74.0), Ta-shi, Yi-lan, NE Taiwan, 26 Jul. 1985; NTMP 0183

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**Fig. 11.** *Malthopsis annulifera*, ASIZP 64588, 82.8 mm SL.
(1, 75.0), Ta-shi, Yi-lan, NE Taiwan, 24 Jan. 1985; NTMP 0365 (3, 64.0-70.2), Ta-shi, Yi-lan, NE Taiwan, 7 Mar. 1986.

**Diagnosis.** Dorsal fin rays 4-6 (usually 5); pectoral fin rays 12-13; anal fin ray 4. Rostral spine sharp, directed forward rather than upward; lateral profile of skull oblique anteriorly; teeth on vomer forming a square patch; skin tough, cover with large flat principal bucklers, totally naked between principal bucklers; ventral surface covered with few small bucklers, usually naked on belly; subopercular buckler bears one forward-directed spine; tail relatively long, about 2.1 in standard length; longest anal fin ray not reaching base of caudal; 5-20 ocellus on dorsal surface. Dorsal surface grayish when fresh, yellowish to brown when preserved; ventral surface pale to grayish. A species with adult size up to 90 mm SL.

**Distribution.** Known from the western Pacific off Japan, Taiwan, the Philippines and Vanuatu.

*Malthopsis lutea* Alcock 1891

棘海蝙魚

(Fig. 12)

*Malthopsis luteus* Alcock 1891: 26 (Syntypes: BMNH 1898.7.13.6 (ex. ZSI F13024), BMNH 1891.9.2.2, ZSI F13014-16 (3), ZSI 13018 (1), ZSI 13021 (1); Andaman Sea, 11°31′40″N, 92°46′06″E, 188-220 fm.).


**Specimen examined.** ASIZP 56024 (1, 65.2), Tong-kang, Ping-tong, S Taiwan, 1 May 1964; ASIZP 58054 (2, 49.0-59.3), Nan-fang-ao, Yi-lan, NE Taiwan, 21 May 1992; ASIZP 58055 (9, 48.2-63.6); Tong-sha Is., South China Sea, 1 May 1993; ASIZP 64596 (1 of 2, 41.2), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64599 (2, 35.2-68.3), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; NMMBP 5335 (5, 58.1-63.3), Tong-kang, Ping-tong, S Taiwan (dry out); NMMBP 7915 (1, 48.8), Tong-kang, Ping-tong, S Taiwan.

**Diagnosis.** Dorsal fin rays 5-6 (usually 5); pectoral fin rays 12-13; anal fin rays 4. Rostrum a long and sharp spine, directed upward and forward; teeth on vomer forming a square; dorsal surface densely covered with low principal bucklers; smaller bucklers and spines present between principal buckler and entire ventral surface; subopercular buckler bears few small

Fig. 12. *Malthopsis lutea*, ASIZP 58055, 64.0 mm SL.
spinules, none directed forward; longest anal fin ray not reaching caudal fin base; few ocellus may present on dorsal surface; grayish in color when fresh and yellowish-brown in preservation. A species with adult size up to 80 mm SL.

**Distribution.** Known from Indo-west Pacific off Madagascar, Kenya, India, Indonesia, the Philippines, Taiwan and Japan.

**Remark.** Bradbury (2003) mentioned the syntypes represent not only *M. lutea* but also *M. mitrigera*. We examined two syntypes in BMNH and found one specimen, BMNH 1891.9.2.2, may represent a third species.

**Malthopsis mitrigera** Gilbert and Cramer 1897
(Fig. 13)


*Malthopsis jordani*: Gilbert 1905: 695 (at least one paratype is *M. mitrigera*).

**Specimen examined.** ASIZP 64420 (2, 56.0-58.3), R/V OR I, st. CD210, 24.48°N, 122.21°E, NE Taiwan, 45 m, 31 May 2003; ASIZP 64529 (9, 48.0-59.5), Nan-fang-ao, Yi-lan, NE Taiwan, 27 Jun. 2004; ASIZP 64586 (1, 60.0), Nan-fang-ao, Yi-lan, NE Taiwan, 22 May 2004; ASIZP 64597 (24, 39.0-58.3), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64605 (18, 32.2-51.6), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 66869 (1, 45.0), R/V OR I, st. CP314, 21.67°N, 117.72°E, South China Sea, 506 m, 17 Aug. 2005; ASIZP 67352 (1, 46.5) and ASIZP 67355 (1, 53.2), OR I, st. CP371, 24.45°N, 122.21°E, NE Taiwan, 725 m, 26 Aug. 2006.

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**Fig. 13.** *Malthopsis mitrigera*, ASIZP 64586, 60.0 mm SL.
Diagnosis. Dorsal fin rays 4-5 (usually 5); pectoral fin rays 13-15 (usually 14-15); anal fin rays 3-4. Rostral spine usually blunt but sometimes pointed, directed upward; teeth on vomer forming a wide band; body surfaces covered with large, relatively blunt principal bucklers, totally naked between principal bucklers; subopercular buckler bears few well-developed spines, two directed forward and two directed backward; caudal peduncle rounded, relatively slender. Dorsal surface without ring-like markings, color on dorsal surface yellowish to greenish when fresh, paler when preserved; fins black in younger stage. A species with adult size up to 80 mm SL.

Distribution. Widespread in Indo-west Pacific region off Madagascar, Japan, Taiwan, New Caledonia, north Australia; and central North Pacific off Hawaii.

Malthopsis tiarella Jordan 1902
(Fig. 14)


Specimen examined. ASIZP uncat. (1, 43.0), Tong-kang, Ping-tong, S Taiwan, 16 Nov. 2007, coll. H.-C. Ho; NMMBP 3366 (1, 34.1), Kaohsiung, S Taiwan; NMMBP 2585 (1, 48.1), Ta-shi, Yi-lan, NE Taiwan; NTUM 6503 (1, 50.0), Tong-kang, Ping-tong, S Taiwan, 18 Mar. 1978.

Diagnosis. Dorsal fin rays 6-7 (usually 6); pectoral fin rays 12-13 (usually 12). Rostral spine sharp and pointed, directed forward horizontally; teeth on vomer forming a square; skin relatively thin, dorsal surface covered with few principal bucklers rather apart; small spinules present between principal bucklers and entire ventral surface; subopercular buckler not well-developed, bears some small spines, none directed forward; longest anal fin ray not reaching base of caudal fin. Body uniformly grayish in color when fresh, paler when preserved; some small black spots usually present on dorsal surface; black band present on dorsal fin, caudal peduncle and caudal fin. A small species usually less than 50 mm SL.

Distribution. Known from the western

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Fig. 14. Malthopsis tiarella, 46 mm SL, Tongkang, Pingtung, SW Taiwan.
Pacific off Japan and Taiwan. Specimens collected from other places may represent other species.

Remark. *Malthopsis tiarella* is similar to *M. lutea*, body surface of both densely covered with numerous spinules; but *M. tiarella* has fewer and rather apart principal bucklers. The authors examined some specimens of *M. tiarella* collected from Taiwan and Japan. The specimens called *M. tiarella* represent two different forms. One has a smaller body size, sharp bucklers and rather apart principal bucklers. The other one has a larger body size, low bucklers and dense principal bucklers. The former is considered to be truly *M. tiarella*. The latter is those fish used by Ochiai and Mitani (1956) and is considered to be misidentification of *M. lutea*. There is another possibility that specimens of *M. tiarella* are younger stage of *M. lutea* since all specimens examined by the author were smaller than 50 mm SL and immature. More investigations are needed to verify this hypothesis. Specimens recorded from South Africa (Bradbury, 1986) are probably misidentification.

*Malthopsis sp. (cf. jordani)*

(Fig. 15)


Specimen examined. ASIZP 56025 (1, 88.2), Tong-kang, Ping-tong, S Taiwan, 10 May 1968; ASIZP 58056 (1, 74.0), Nan-fang-ao, Yi-lan, NE Taiwan, 21 May 1992; ASIZP 62595 (1, 83.5), Ta-shi, Yi-lan, NE Taiwan; ASIZP 63084 (1, 94.6), Ta-shi, Yi-lan, NE Taiwan, 2 Apr. 2004; ASIZP 64577 (1, 84.7), Nan-fang-ao, Yi-lan, NE Taiwan, 13 Jul. 2004; ASIZP 64578 (1, 66.8), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64584 (1, 69.4), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64594 (2, 80.7-84.7), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64595 (2, 71.8-76.7), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 64596

Fig. 15. *Malthopsis sp. (cf. jordani)*, ASIZP 64584, 69.4 mm SL.
(1, 80.7), Nan-fang-ao, Yi-lan, NE Taiwan, 7 Jul. 2004; ASIZP 65124 (1, 70.5), Tong-kang, Ping-tong, S Taiwan, 10 Mar. 2005; ASIZP 65891 (1, 67.5), Tong-kang, Ping-tong, S Taiwan, 10 Mar. 2005; FRIP 0671 (3, 79.6-91.0), Taiwan, 400-420 m; NMNSF 0428 (1, 106.9), Tong-kang, Ping-tong, S Taiwan, 28 Sep. 2000; NMNSF 0433 (1, 83.4), Tong-kang, Ping-tong, S Taiwan, 25 Feb. 1999; NMNSF 0434 (1, 71.4), Tong-kang, Ping-tong, S Taiwan, 24 Sep. 2001.

**Diagnosis.** Dorsal fin rays 5-6; pectoral fin rays 12-13; anal fin rays 4. Rostral spine pointed, directed upward rather than forward, relatively strong; teeth on vomer forming a square; skin relatively thick, dorsal surface covered with large pyramid-like principal bucklers and numerous small bucklers between principal bucklers; ventral surface usually densely covered with mid-size bucklers, totally naked between those bucklers; subopercular buckler bears with several well-developed spines, one directed forward and some directed outward and backward; tail relatively short, about 2.4 in standard length; longest anal fin ray extends beyond the base of caudal fin. Some black dots may present on dorsal surface, uniformly grayish to brownish in color, dorsal and caudal fins dark brown; ventral surface darker or paler when fresh; uniformly yellowish to grayish when preserved. A large species with adult size up to 120 mm SL.

**Distribution.** Currently known from the western Pacific off Japan and Taiwan.

**Remark.** This species has long been misidentified as *M. jordani*. We examined the type series of *M. jordani* deposited at USNM and specimens collected form Hawaii. Our specimens differ from *M. jordani* in the dorsal surface without fine reticular color pattern, a much larger body size (usually > 80 mm, versus < 60 mm SL in *M. jordani*) and the different squamation. Ochial & Mitani (1956) reviewed this genus from Japan and recognized several specimens as *M. jordani*. The first author examined all their specimens deposited at FAKU and they are all identical to present species.

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Lacepède, B. G. E. (1798). Histoire naturelle des
台灣的棘茄魚類兼記八個新紀錄種

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本文報導台灣地區所採獲之棘茄魚科之物種，共計6屬18種。其中包含2新紀錄
屬：腔蝦屬(Coelophrys)和棘茄屬(Halieutopsis)以及8新紀錄種：短尾腔蝦魚(C. brevicaudata)、扁頭腔蝦魚(C. micropa)、異擬棘茄魚(H. ingerorum)、準擬棘茄魚(H. simula)、印度棘茄魚(Halieutaea indica)、鈷棘海蝦魚(Malthopsis mitrigera)、斑點海蝦魚
(M. tiarella)和星點長鳕鰭魚(Solocisquama stellulata)。本文提供台灣棘茄魚科屬及種的檢
索表以及各種之鑑別特徵、異名及地理分布。

關鍵詞：分類學，魚，蝦蝦魚，新紀錄種，台灣。

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