

A REVIEW OF THE MYRIPRISTIN FISHES FROM TAIWAN WITH DESCRIPTION OF A NEW SPECIES¹

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Jeng-Ping Chen, Kwang-Tsao Shao and Hin-Kiu Mok (1990) A review of the Myripristin fishes from Taiwan with description of a new species. *Bull. Inst. Zool., Academia Sinica* 29(4): 249-264. This paper reports on fourteen species of fishes of the subfamily Myripristinae, which belong to three genera of the *Myripristis*, *Ostichthys* and *Plectrypops* occurring in the surrounding waters of Taiwan. Among them, one species, *Ostichthys sheni* is new and five species are new records. These newly added species are *Myripristis berndti* Jordan and Evermann, *M. chryseres* Jordan and Evermann, *M. seychellensis* Cuvier, *M. vittata* Cuvier and *Ostichthys kaianus* (Günther). The species of *M. parvidens* Cuvier which has been added by Shen *et al.* (1980), should be changed to its senior synonym of *M. murdjan* (Forsskal) according to Randall and Guézé (1981). Keys, diagnoses, synonyms and color pictures of all species are also given.

Key words: Myripristin, *Myripristis*, *Ostichthys*, *Plectrypops*.

The fishes of the family Holocentridae in the world were divided into two subfamilies, Myripristinae and Holocentrinae, by Nelson (1955). The former subfamily which was called soldierfishes consists of five genera: *Myripristis* (about twenty-one species), *Ostichthys* (one Atlantic and seven Indo-Pacific species), *Plectrypops* (one Atlantic and one Indo-Pacific species) and two monotypic genera *Pristilepis* (Indo-Pacific species) and *Corniger* (Atlantic species). The latter subfamily, so called squirrelfishes, consists of three genera: *Holocentrus*

(two Atlantic species), *Sargocentron* (five Atlantic and about twenty-one Indo-Pacific species) and *Neoniphon* (one Atlantic and four Indo-Pacific species).

The taxonomic status of these two subfamilies of Holocentridae has long been in debate. Dunkle and Olsen (1959) pointed out that there were two separate evolutionary lines of subfamilies of Holocentridae. Frizzell and Lamber (1961) provided evidences on the basis of their fossil otoliths and suggested that it should have been diversified since at least the Middle Eocene. Although, some other authors suggested that the two

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holocentrid subfamilies should be elevated to full family levels (Frizzell and Lamber, 1961; Hecht, 1982), most recent authors retained them as subfamilies (Woods and Sonoda, 1973; Greenfield, 1974; Shimizu and Yamakawa, 1979; Randall *et al.*, 1982; Randall and Hemstra, 1985).

Taxonomic studies on myripristin fishes have been achieved by some authors. For example, the genus *Myripristis* has been revised worldwide by Greenfield (1974), and some complex species have been clarified by Randall and Guézé (1981). Randall *et al.* (1982) revised the genus *Ostichthys* of the world and described a new monotypic genus *Pristilepis*. The genus *Holotrachys* (Günther) was treated as a junior synonym of *Plectrypops* by Lamber (1963) and the other monotypic genus, *Corniger*, was published very early by Agassiz (1829).

In Taiwan, the earliest records of this group of fishes was Jordan and Evermann (1902) who first reported on *Ostichthys japonicus* from Taiwan. Then, Jordan, Tanaka and Snyder (1913) reported on another species *Myripristis murdjan*. Yu (1963) first revised the family Holocentridae. He listed five species, *Ostichthys japonicus*, *Myripristis murdjan*, *M. adustus*, *M. microphthalmus* and *M. pralinius*, belonging to two separate genera of the subfamily Myripristinae in which the last three species were newly added. Later, Shen *et al.* (1980) increased six species in which two of them, *Myripristis kuntee* and *M. pralinius*, belonged to myripristin fishes and he changed *M. microphthalmus* to its senior synonym *M. violaceus*. Recently, Shao and Chen (1988) added two species, *Plectrypops lima* and *Myripristis melanostictus*. The former species was a new record of the genus. The species number of subfamily Myripristinae in the present paper has been increased up to fourteen

species included in three genera, *Myripristis*, *Ostichthys* and *Plectrypops*. Among them, *Ostichthys sheni* is a new species and the other five species were new records (*Myripristis berndti*, *M. chryseres*, *M. seychellensis*, *M. vittata* and *Ostichthys kaianus*). Additionally, the species of *M. parvidens* which has been added by Shen *et al.* (1980), should be changed to its senior synonym, *M. murdjan* according to Randall and Guézé (1981).

MATERIALS AND METHODS

Most of the specimens checked in the present paper were collected from fish markets or through SCUBA diving. Specimens were photographed when fresh and preserved for further observations and then deposited in the Museum of the Institute of Zoology, Academia Sinica (ASIZP) and the Museum of the Institute of Marine Biology, National Sun Yat-Sen University (NSYU). Additionally, the authors have checked the specimens deposited in the Museum of Department of Zoology, National Taiwan University (NTUM) and the Museum of Department of Biology, Tunghai University (THUP).

All methods of morphometric measurement and meristic count generally follow Hubbs and Lagler (1947). Standard length (SL) was taken from the tip of the upper jaw (mostly the medial part of the upper lip) to the base of the caudal fin; the head length (HL) was measured from the tip of the upper jaw to the hind margin of operculum; the upper jaw length was measured from the most posterior part of the maxilla to the front of the upper lip. All spines of fishes were measured to the uppermost scales of the back, not from the extreme base. Gill rakers were counted both on the upper and lower limbs of the first left gill arch including all

rudiments. The least depth of the interorbital bone width and caudal peduncle were measured.

SPECIES ACCOUNTS

Key to the genera of subfamily Myripristinae

1. Dorsal spines 11; dorsal fins completely divided into two parts with deep notch between 9th and 10th spines; lower gill rakers 19 to 32 ..
..... *Myripristis*
- Dorsal spines 12; dorsal fin continuous though deeply notched; lower gill rakers 11 to 18.....2
2. Premaxillary groove broadly V-shaped
..... *Ostichthys*
- Premaxillary groove broadly rhomboidal *Plectrypops*

Genus *Myripristis* Cuvier, 1829

Key to the species of Genus *Myripristis*

1. Lateral line scales 32 to 402
- Lateral line scales 27 to 305
2. Vertical fins golden yellow; third anal spine enlarged *M. chryseres*
- Vertical fins only part or none of them yellow; third anal spine not enlarged3
3. Opercular flap pale; symphysial teeth fit into deep notch *M. vittata*
- Opercular flap dark; symphysial teeth not fit into deep notch4
4. Opercular membrane dark brown above or little below opercular spine, never extending onto vertical edge of the notch below opercular spine
..... *M. pralinia*
- Opercular membrane dark brown formed a broad rectangular bar running from upper edge of gill opening into axil of pectoral
..... *M. kuntzei*
5. Tips of vertical fins with broad black

margin; spinous dorsal fin blackish with a submarginal unpigmented zone *M. adusta*

- Tips of vertical fins without broad black margin (although there may have a black blotch or streak on caudal lobes or on the tip of soft dorsal and anal fins); spinous dorsal fin not blackish6
- 6. Two pairs of symphysial teeth on lower jaw; pectoral axil scaleless..
..... *M. melanosticta*
- One pair of symphysial teeth on lower jaw; pectoral axil scaled7
- 7. Dorsal surface, above lateral line, notably darker than rest of body; interorbital and nape almost black
..... *M. violacea*
- Dorsal surface, above lateral line, not notably darker than rest of body..
..... 8
- 8. Mouth terminal or inferior; posterior border of vomerine teeth patch rounded (Fig. 1A) ... *M. seychellensis*
- Mouth superior; posterior border of vomerine teeth patch straight (Fig. 1B)9
- 9. A broad zone of orangish-yellow on outer part of spinous dorsal fin; least bony interorbital width 4.3-5.8 in HL *M. berndti*
- Outer part of spinous dorsal fin red; least bony interorbital width 3.8-4.4 in HL *M. murdjan*

The following descriptions of species are arranged alphabetically.



Fig. 1. Schematic diagram showing the shape of the vomerine tooth patch of species of *Myripristis*. (A) including *seychellensis*, *kuntzei* and *pralinia*; (B) including the rest of the species of *Myripristis* in Taiwan.

***Myripristis adusta* Bleeker, 1853**

(Fig. 2)

Myripristis adustus Bleeker, 1853 (type locality, Amboyna); Jordan and Seale, 1905 (1906): 220; Fowler, 1928: 106; Woods in Schultz *et al.*, 1953: 201; Yu, 1963: 4-6; Greenfield, 1974: 27-28; Masuda *et al.*, 1984: 114.

Myripristis adusta, Randall and Heemstra in Smith and Heemstra, 1986: 423; Myers, 1989: 75.

Materials: One specimen, ASIZP 056545, 194.7 mm in SL, July 14, 1989, Hengchun; 1 specimen, ASIZP 056563, 174.5 mm, in SL., Dec. 16, 1988; 1 specimen, THUP 01980, 295.0 mm in SL., Aug. 4, 1962, Kaohsiung.

Diagnosis: D. X-I, 15; A. IV, 13; P₁, 16; L. l. 28; rows of scales between lateral line and middle of spinous dorsal 2(1/2); G. R. 12+26-27. Body depth 2.29-2.41 and head length 3.10-3.12 both in standard length. Eye diameter 2.32-2.64, snout 5.93-7.76, least interorbital width 3.74-4.17, upper jaw extending to a vertical at posterior margin of pupil 1.54-1.55, third dorsal spine longest 1.92-1.93, longest soft dorsal ray (usually the third) 1.48-1.55, fourth anal spine (a little bit longer than third) 2.22-2.93, pectoral fin 1.50-1.55, pelvic fin 1.51-1.62, and least depth of caudal peduncle 2.98-3.12 all in head length. Pectoral axil with one (rarely two) large scales, never covered with numerous small scales. Two pairs of symphyseal tooth patches at tip of lower jaw just outside gape (lower pair usually smaller than upper pair and some specimens faded), symphyseal teeth do not fit into deep notch in upper jaw. Vomerine tooth patch triangular with the posterior border slightly concaved (Fig. 1B).

Color when fresh: It is shown in Fig. 2. Soft dorsal, anal and caudal fins pale with a broad blackish margin.

Distribution: It is distributed in Indo-West Pacific.

***Myripristis berndti* Jordan and Evermann, 1903**

(Fig. 3)

Myripristis berndti Jordan and Evermann, 1903: 170 (type locality, Honolulu); Randall and Guézé, 1981; Masuda *et al.*, 1984: 114; Randall and Heemstra in Smith and Heemstra, 1986: 423; Myers, 1989: 75.

Materials: One specimen, ASIZP 056357, 181.7 mm in SL, May 10, 1988, Tahsi; 2 specimens, ASIZP 056561, 160.0-181.1 mm in SL., May 17, 1989, Hengchun; 1 specimen, ASIZP 056560, 205.0 mm in SL., July 14, 1989, Hengchun.

Diagnosis: D. X-I, 14; A. IV, 12; P₁, 15; L. l. 29-30 (mostly 29); rows of scale between lateral line and middle of spinous dorsal base 2(1/2); G. R. 12-13+26. Body depth 2.5-2.51 and head length 2.87-3.07 both in standard length. Eye diameter 2.35-2.53, snout 5.70-5.98, least interorbital width 4.92-4.98, upper jaw extending to between verticals at hind edge of pupil and posterior edge of orbit 1.80-1.90, third dorsal spine longest 2.90-2.41 (which is similar to the length of the fourth), longest soft dorsal ray (usually second or third) 1.70-1.75, third anal spine (longer than fourth) 2.34-2.88, pectoral fin 1.42-1.48, pelvic fin 1.61-1.71, and least depth of caudal peduncle 3.42-3.56 all in head length. Lower half of inner pectoral axil with many small scales, upper partly unscaled and colored black. Lower jaw slightly projected, with single pair of symphyseal tooth patch just outside gape; symphyseal teeth do not fit into a deep notch in upper jaw. Vomerine teeth in a triangular patch (Fig. 1B) (one big specimen in our collections concaves on each edge).

Color after preserved: Body pale, scales with darker posterior margin; a blackish bar on the opercular membrane from opercular angular to a short distance below opercular spine. All fins

transparent. In some specimens, tip of dorsal ray, anal and caudal fins with blackish zone.

Color when fresh: The outer yellow or orangish-yellow part of the spinous dorsal is a significant characteristic.

Distribution: It is known from Pan Indo-Pacific.

***Myripristis chryseres* Jordan and Evermann, 1903**

(Fig. 4)

Myripristis chryseres Jordan and Evermann, 1903: 171-172 (type locality, Hawaii); Jordan and Evermann, 1905: 150-151; Woods in Schultz *et al.*, 1953: 195; Greenfield, 1974: 14-15; Masuda *et al.*, 1984: 113; Randall and Heemstra in Smith and Heemstra, 1986: 423; Myers, 1989: 76.

Materials: One specimen, ASIZP 056358, 179.3 mm in SL, May 19, 1988, Hengchun; 2 specimens, ASIZP 056366, 164.5-175.3 mm in SL., Aug. 27, 1988, Hengchun.

Diagnosis: D. X-I, 14; A. IV, 12; P₁. 15; L.l. 34-35; rows of scale between lateral line and middle of spinous dorsal base 2(1/2); G.R. 11+24-25. Body depth 2.48-2.53 and head length 2.82-2.92 both in standard length. Eye diameter 2.13-2.33, snout 5.33-6.25, least interorbital width 4.36-4.75, upper jaw extending to between verticals at hind edge of pupil and hind edge of orbital 1.85-1.95, third dorsal spine the longest 2.16-2.17, longest dorsal soft ray (usually the second) 1.80-1.88, third anal spine longest (0.72-0.79 in the fourth spine) 2.15-2.42, pectoral fin 1.37-1.42, pelvic fin 1.54-1.62, and least depth of caudal peduncle 3.63-4.05 all in head length. No scales in pectoral axil. A single pair of enlarged symphyseal tooth patch at the front of lower jaw; symphyseal teeth fit into a deep notch in upper jaw. Vomerine teeth in a triangular form, with the posterior border slightly concaved.

Color in formalin: Body yellowish; top of head is not darker than rest of body; opercular membrane blackish and reaching a line opposite to the origin of pectoral; no dark pigment on fins.

Color when fresh: Body color as illustrated in Fig. 4. All fins except pectoral fin golden yellow.

Distribution: Species distributed in Japan, Indo-Australian Archipelagos, Micronesia, Hawaiian Islands, Reunion and South Africa.

Remarks: All three congeneric species, *M. chryseres*, *M. randalli* and *M. vittata* have an enlarged third anal spine.

***Myripristis kuntee* Cuvier, 1831**

(Fig. 5)

Myripristis kuntee Cuvier (in Cuvier et Valenciennes), 1831: 487 (type locality, Mauritius); Greenfield, 1974: 28-30; Shen *et al.*, 1980: 233; Masuda *et al.*, 1984: 113; Randall and Heemstra in Smith and Heemstra, 1986: 423; Myers, 1989: 76.

Myripristis multiradius Jordan and Evermann, 1905: 149-150; Woods in Schultz *et al.*, 1953: 206-207.

Materials: One specimen, ASIZP 056362, 144.0 mm in SL, May 20, 1988, Hengchun; 2 specimens, ASIZP 056364, 138.8-142.0 mm in SL., Aug. 27, 1988, Hengchun; 1 specimen, ASIZP 056368, 77.9 mm in SL., Nov. 16, 1988, Lanyu; 1 specimen, ASIZP 056369, 122.2 mm in SL., Feb. 18, 1989, Hengchun; 1 specimen, NTUM 03656, 52.4 mm in SL., June 21, 1979, Lanyu; 1 specimen, NSYU 1149, 118 mm in SL., Jan. 10, 1985, Houpihu.

Diagnosis: D. X-I, 16; A. IV, 14-15 (mostly 15); P₁. 15; L.l. 38-39; rows of scale between lateral line and middle of spinous dorsal base 2(1/2); G.R. 11-12+24-25. Body depth 2.34-2.51, and head length 3.05-3.46 both in standard length. Eye diameter 2.01-2.06, snout 6.63-8.45, least interorbital width 3.68-4.02, upper jaw extending to between verticals at posterior margin of pupil 1.92-2.09, third

dorsal spine the longest 1.89–2.03, longest soft dorsal ray (usually second or third) 1.51–1.92, fourth anal spine (longer than third) 2.36–2.60, pectoral fin reaching a vertical of 8th spine 1.15–1.29, pelvic fin 1.46–1.83, and least depth of caudal peduncle 3.10–3.47 all in head length. No scales in pectoral axil. A single pair of symphyseal teeth at the front of lower jaw, but not an enlarged patch as in *M. chryseres*; symphyseal teeth do not fit into deep notch in upper jaw. Vomerine teeth with the posterior border rounded (Fig. 1A) (the shape of the tooth patch of young stage seems to resemble that of Fig. 1B).

Color in formalin: Body yellowish; scale center darker than the edges (especially on upper part of body above lateral line); all fins unpigmented; dark brown of opercular membrane extending onto pectoral axil forming a broad rectangular band; pectoral axil blackish.

Color when fresh: Body reddish, operculum with a broad dark zone extending to pectoral axil. Upper margins of spinous dorsal yellow, basal part white. Soft dorsal ray, anal and pelvic fins with red margin, outer lobes of caudal fin dark reddish.

Distribution: The species widely distributed in the Indo-Pacific area.

Remarks: *M. kuntee* and *M. pralinia* are two similar valid species although some meristic characters are similar and overlapping. The ratio of interorbital bone and head length in *M. kuntee* is about 3.00–5.00, while in *M. pralinia* 2.83–4.00. Additionally, *M. kuntee* has a broader rectangular bar than *M. pralinia*, and it is running from the upper edge of the gill opening into the axil of the pectoral in the former species, while the latter species only reaching the upper edge of the gill opening.

Myripristis melanosticta Bleeker, 1863

(Fig. 6)

Myripristis melanostictus Bleeker, 1863: 237 (type locality, Ternate) (not seen); Randall and Guézé, 1981: 3.

Myripristis melanosticta, Randall and Heemstra, in Smith and Heemstra, 1986: 424.

Materials: One specimen, ASIZP 056240, 198.2 mm in SL., Dec. 9, 1987, Hengchun; 2 specimen, ASIZP 056562, 179.2–194.6 mm in SL., May 19, 1989, Hengchun.

Diagnosis: D. X–I, 14; A. IV, 12; P₁. 15; L₁. 28; rows of scale between lateral line and middle of spinous dorsal base 2(1/2). Body depth 2.28, and head length 3.28 both in standard length. Eye diameter 2.08, snout 6.82, least interorbital width 4.57, No scales in pectoral axil. Two pairs of symphyseal teeth patches at the tip of lower jaw.

Color when fresh: Body reddish, upper opercular membrane blackish, the pigment disappearing about half the distance from opercular spine to level of upper pectoral base. A prominent black blotch distally in caudal lobes and elevated portions of soft dorsal and anal fins.

Distribution: Widely distributed in Indo-West Pacific.

Remarks: This species was misidentified by Shen (1980) as *M. murdjan*, and was changed to the valid name as one new record species (Shao and Chen, 1988) by the former two authors of the present paper.

Myripristis murdjan (Forsskål), 1775

(Fig. 7)

Sciaena murdjan Forsskål, 1775: 48 (type locality, Jeddah, Red Sea) (not seen).

Myripristis parvidens Cuvier, 1829: 151 (type locality, Port Praslin, New Ireland).

Myripristis axillaris Valenciennes, in Cuvier and Valenciennes, 1831: 491.

Myripristis murdjan, Weber and de Beaufort, 1929: 259; Yu, 1963: 6-8; Greenfield, 1974: 19-22; Randall and Guézé, 1981: 13-15; Masuda *et al.*, 1984: 114.

Materials: One specimen, ASIZP 05125, 80.8 mm in SL, Feb. 19, 1978, Wanlitung; 1 specimen, ASIZP 054986, 80.9 mm in SL, Dec. 28, 1977, Wanlitung; 2 specimens, ASIZP 056594, 165.8-141.7 mm in SL, May 21, 1988, Hengchun; 1 specimen, THUP 01350, 258.0 mm in SL, June 1960, Kaohsiung; 1 specimen, NTUM 03654, 99.0 mm in SL, Feb. 12, 1979, Olanpi; 6 specimens, NTUM 03702-03707, 67.0-172.0 mm in SL, Apr. 24, 1980, Lanyu.

Diagnosis: D. X-I, 13-15; A. IV, 11-13; P₁. 14-16; L. I. 27-29; G. R. 12-15+25-30. Body depth 2.40-2.54, and head length 2.84-3.2 both in standard length. Eye diameter 2.25-2.48, snout 6.92-10.3, least interorbital width 3.43-4.20, upper jaw extending to between verticals at posterior margin of pupil and orbit 1.68-1.89, the longest dorsal spine 2.02-2.43, longest soft dorsal ray (usually second or third) 1.42-1.70, third and fourth anal spines subequal 2.04-2.50; pectoral fin 1.35-1.42, pelvic fin 1.60-1.75, and least depth of caudal peduncle 3.14-3.62 all in head length. Lower one-fourth to three-fourths of pectoral axil with small scales. A single pair of symphyseal tooth patch at lower jaw. Vomerine teeth in a triangular patch with rounded corners and straight posterior border (Fig. 1B).

Color when fresh: It is shown in Fig. 7.

Distribution: The species is a common one and is distributed widely in the Indo-Pacific area.

Remarks: Greenfield (1974) distinguished the species of *M. parvidens* from *M. murdjan* based on the difference of their ratio of HL to interorbital bone width, less and greater than 4 respectively. Thus, Shen *et al.* (1980) listed *M.*

parvidens as one valid species in Taiwan. Nevertheless, we agree with Randall and Guézé's (1981) opinion that these two species are synonyms after careful examination of our specimens.

Myripristis pralinia Cuvier, 1829

(Fig. 8)

Myripristis pralinus Cuvier (in Cuvier et Valenciennes), 1829: 170 (type locality, New Ireland); Weber and de Beaufort, 1929: 253-256; Woods in Schultz *et al.*, 1953: 207-208; Yu, 1963: 10-11; Greenfield, 1974: 22-24; Masuda *et al.*, 1984: 113.

Myripristis bleekeri Günther, 1859: 20; Weber and de Beaufort, 1929.

Myripristis sanguineus Jordan and Seale, 1906: 26.

Myripristis pralinia, Randall and Heemstra (in Smith and Heemstra, 1986): 424; Myers, 1989: 76.

Material: One specimen, THUP 01668, 188.0 mm in TL, Feb. 13, 1961, Tungking.

Diagnosis: D. X-I, 17; A. IV, 15; P₁. 15; L. I. 39; G. R. 11+24. Body depth 2.50, and head length 3.0 both in standard length. Eye diameter 2.33, snout 6.7, least interorbital width 4.0, the longest dorsal spine 2.0, longest soft dorsal ray (usually second or third) 1.75, fourth anal spine (longer than third) 2.6, pectoral fin 1.2, pelvic fin 1.2, and least depth of caudal peduncle 2.4 all in head length. No scales in inner face of pectoral axil. Symphyseal teeth fit into a shallow notch in upper jaw; a single pair of enlarged symphyseal teeth on lower jaw.

Color after preserved: Body pale, with a short black bar on the upper edge of opercular membrane down to just below opercular spine, upper part of pectoral axil blackish.

Distribution: Known from South Africa to the Marshalls, north to the Ryukyu Islands and south to New Caledonia.

Remarks: Unfortunately the specimen shown in Fig. 8 was lost after the photo was taken.

***Myripristis seychellensis* Cuvier, 1829**

(Fig. 9)

Myripristis seychellensis Cuvier (in Cuvier et Valenciennes), 1829: 172 (type locality, Seychelles); Randall and Guézé, 1981: 10.

Material: One specimen, ASIZP 056565, 139.6 mm in SL, Jan. 19, 1990, Tahsi.

Diagnosis: D. X-I, 14; A. IV, 11; P₁. 15; L. L. 28; G. R. 11+22. Body depth 2.20 and head length 2.94 both in standard length. Eye diameter 2.17, snout 7.28, least interorbital width 4.88, upper jaw extending to between verticals at hind edge of pupil and hind edge of orbital 2.07, third dorsal spine the longest (about equal to fourth) 2.11, longest dorsal soft ray (usually the second) 1.54, fourth anal spine longest 2.44, and least depth of caudal peduncle 3.27 all in head length. Lower part of pectoral axil scaled, upper parts scales and blackish. A single pair of enlarged symphyseal tooth patch at the front of lower jaw; symphyseal teeth do not fit into a deep notch on upper jaw. Vomerine teeth in a form as in Fig. 1A.

Color when fresh: Body color as in Fig. 9.

Distribution: The species was previously only found in western Indian Ocean, however, the present paper, for the first time, extend its distribution to the Western Pacific.

***Myripristis violacea* Bleeker, 1851**

(Fig. 10)

Myripristis violaceus Bleeker, 1851: 234-235 (type locality, Banda Neira); Greenfield, 1974: 12-14; Masuda *et al.*, 1984: 114.

Myripristis microphthalmus Bleeker, 1852: 261; Woods (in Schultz *et al.*), 1953: 195-198; Yu, 1963: 8.

Myripristis violacea, Randall and Heemstra (in Smith and Heemstra), 1986: 425; Myers, 1989: 76.

Material: One specimen, ASIZP

056367, 136.5 mm in SL, Aug. 27, 1988, Hengchun.

Diagnosis: D. X-I, 14; A. IV, 12; P₁. 15; L. l. 28; rows of scale between lateral line and middle of spinous dorsal base 2(1/2); G. R. 13+28. Body depth 2.30, and head length 3.25 both in standard length. Eye diameter 2.1, snout 8.1, least interorbital width 3.5, upper jaw extending to between verticals at posterior margin of pupil 1.8, third dorsal spine the longest 1.74, longest soft dorsal ray (third ray) 1.58, fourth anal spine (longer than third) 2.35, pectoral fin 1.47, pelvic fin 1.61, and least depth of caudal peduncle 3.08 all in head length. Scales present on lower one-third to half of inner face of pectoral axil, upper part of pectoral axil brackish. A single pair of enlarged symphyseal teeth at the front tip of lower jaw; symphyseal teeth do not form a deep notch in upper jaw. Vomerine teeth in a triangular patch with rounded corners and slightly concaved posterior border (Fig. 1B).

Color when fresh: It is shown in Fig. 8.

Distribution: This species has been recorded in the Indo-Pacific area, north to the Ryukyu Islands, south to Natal, east to South Africa and west to Tuamotus.

***Myripristis vittata* Cuvier, 1831**

(Fig. 11)

Myripristis vittatus Cuvier (in Cuvier et Valenciennes), 1831: 370 (type locality, Mauritius); Greenfield, 1974: 18-19; Masuda *et al.*, 1984: 113.

Myripristis vittata, Randall and Heemstra (in Smith and Heemstra), 1986: 425; Myers, 1989: 76.

Material: One specimen, ASIZP 056360, 159.5 mm in SL, May 19, 1988, Hengchun.

Diagnosis: D. X-I, 15; A. IV, 12; P₁. 16; L. l. 37; rows of scale between lateral line and middle of spinous dorsal base

Table 1
A comparison of the characteristics among the species
of the genus *Myripristis* in Taiwan

Characteristic Species	Dorsal fin	Anal fin	L. I. scales	Gill rakers	Symphysial tooth pacth at tip of lower jaw just outside gape	Scales on pectoral fin axil
<i>Myripristis</i>						
<i>adusta</i>	X-I, 15	IV 13	28	12+26-27	2 pairs	yes
<i>berndti</i>	X-I, 14	IV 12	29-30	12-13+26	1 pair	yes
<i>chryseres</i>	X-I, 14	IV 12	34-35	11+24-25	1 pair or 2 pairs	no
<i>kuntze</i>	X-I, 16	IV 14-15	38-39	11-12+24-25	1 pair	no
<i>melanosticta</i>	X-I, 14	IV 12	28	11-13+22-27	2 pairs	no
<i>murdjan</i>	X-I, 13-15	IV 11-13	27-29	12-15+25-30	1 pair	yes
<i>pralia</i>	X-I, 17	IV 15	39	11+24	1 pair	no
<i>seychellensis</i>	X-I, 14	IV 11	28	11+22	1 pair	yes
<i>violacea</i>	X-I, 14	IV 12	28	13+28	1 pair	yes
<i>vittata</i>	X-I, 15	IV 12	37	12+23	1 pair	no

2(1/2); G. R. 12+23. Body depth 2.58, and head length 3.20 both in standard length. Eye diameter 2.13, snout 7.68, least interorbital width 3.36, upper jaw reaching a vertical at hind edge of pupil 2.33, third dorsal spine the longest 1.91, second or third soft dorsal ray longest 1.58, pectoral fin very long, extending to a vertical at the membrane between 9th and 10th dorsal spines 1.09, pelvic fin 1.41, enlarged third anal spine (as in *M. chryseres*) the longest 1.89, and least depth of caudal peduncle 3.75 all in head length. No scales in pectoral axil. A single pair of enlarged symphysial teeth at front of lower jaw; symphysial teeth fit into a notch in upper jaw. Vomerine teeth in a triangular patch with rounded corners as in Fig. 1B.

Color in formalin: Body uniformly yellowish, without any dark bar.

Color when fresh: Body color reddish, basal portion of spinous dorsal more whitish than body color, distal portions more reddish; anal, soft dorsal, pectoral and caudal fins the same color as body; upper part of second to sixth dorsal rays, and second to fourth anal rays more reddish than body color and outer filament of caudal fin; Opercular mem-

brane slightly reddish darker than body; as shown in Fig. 11.

Distribution: It is known from most Indo-Pacific regions, such as Japan, Philippines, Indo-Australian Archipelagos, the Seychelle Islands, the Mauritius Islands, New Guinea, Tuamotu Archipelagos and the Marquises Islands.

Remarks: Table 1 lists the comparison of some characters of species of *Myripristis*.

Genus *Ostichthys* Jordan and Evermann, 1896

Key to the species of Genus *Ostichthys*

1. Scales above lateral line to middle of spinous dorsal base 2(1/2)
..... *O. kaianus*
- Scales above lateral line to middle of spinous dorsal base 3(1/2) 2
2. Height of 2nd suborbital bone below eye center about 1/2 of eye diameter; last dorsal spine significantly longer than penultima one, twice to three times longer than it; median prepelvic scales 9
..... *O. japonicus*

- Height of 2nd suborbital bone below eye center about 1/3 of eye diameter; last dorsal spine slightly shorter or equal to penultima one; median prepelvic scales 10-11.....
..... *O. sheni*

***Ostichthys kaianus* (Günther)**

(Fig. 12)

Myripristis kaianus Günther, 1880: 39 (type locality, Kai Island, Easter Banda Sea) (not seen).

Ostichthys kaianus Randall *et al.*, 1982: 20; Masuda *et al.*, 1984: Randall and Heemstra (in Smith and Heemstra, 1986): 424.

Materials: One specimen, ASIZP 056559, 210.4 mm in SL., May 19, 1988, Hengchun; 1 specimen NSYU 209, 177.9 mm in SL., June 28, 1985, Wanlitung.

Diagnosis: D. XII, 12-13; A. IV, 11; P₁. 16; L.1. 28; rows of scales between lateral line and middle of spinous dorsal base 2(1/2); G.R. 7-9+13-14; preopercular scales rows 5. Body depth 2.09-2.12 and head length 2.38-2.41 both in standard length. Eye diameter 2.79-2.95, snout 4.97-5.73, least interorbital width 6.59-7.34, upper jaw extended to between verticals at posterior margin of pupil and hind edge of orbital 1.88-1.89. The third dorsal spine the longest 2.09-2.11, penultimate spine is slightly longer or equal to the last dorsal spine, third is the longest 2.96-3.13, pectoral fin 1.76-1.84, pelvic fin 2.51-2.74, and least depth of caudal peduncle 4.77-4.81 all in head length.

Color when fresh: Body reddish, middle of each scale with a horizontal streak forming longitudinal band on body side.

Distribution: It is only known in the following localities, Reunion, Indonesia, Taiwan and the Ryukyu Islands.

Remarks: This species is one of the species of the genus *Ostichthys* which have 2(1/2) rows of scales above lateral line. According to Randall *et al.* (1982),

this species is living in the deep sea, the depth is about 310 to 640 meters. Probably, this is the reason why this species has shown discontinuous distribution in the world. The specimens were collected from a fish market of knowing nothing about the depth where they were caught. The only information available was that the fishing gear used was longline.

***Ostichthys japonicus* (Cuvier, 1829)**

(Fig. 13)

Myripristis japonicus Cuvier (in Cuvier et Valenciennes, 1829): 173 (type locality, Japan).

Holotrachys major Whitley, 1950: 33 (type locality, New South Wales).

Ostichthys japonicus Jordan and Evermann, 1896: 846; Randall *et al.*, 1982: 12; Masuda *et al.*, 1984: 114.

Materials: One specimen, THUP 00479, 207.4 mm in SL., June 5, 1960, Taichi; 2 specimens, NTUM 03681, 43.2-63.7 mm in SL., Oct. 1, 1969, Tahsi; ASIZP 055453, 72.7 mm in SL., Dec. 19, 1979, Tungkan.

Diagnosis: D. XII-XIII, 12-14; anal fin ray IV, 10-12; pectoral fin 16-17; L.1. 28-30; rows of scales between lateral line and middle of spinous dorsal base 3(1/2); G.R. 7-10+12-14=20+23. Body depth 2.02-2.22 and head length 2.36-2.51 both in standard length. Last dorsal spine distinctly longer than penultimate spine, a space between last dorsal spine and first dorsal ray remarkably less than space between last dorsal spine and penultimate spine.

Distribution: It is recorded in Japan, Korea, Taiwan, Australia and Andaman Sea; and might be widely distributed in the Western Pacific.

***Ostichthys sheni* sp. nov.**

(Fig. 14)

Ostichthys japonicus (nec Cuvier) Shen, 1980 (in part); Shen, 1988: 33.

Holotype: NSYU 792, 119.1 mm in SL., Mar. 2, 1985, Chungchou.

Paratype: One specimen, NTUM 03682, 64.3 mm in SL., Oct. 26, 1978, Tungkan; 1 specimen, THUP 00478, 201.9 mm in SL., June 6, 1960, Taichi.

Diagnosis: D. XII, 13; A. IV, 11; P₁ 16-17; L.1. 28-29 (mostly 29); rows of scale between lateral line and middle of dorsal base 3(1/2); G.R. 6-7+11-13=19-20; preopercular scale rows 5. Body depth 2.04-2.72 and head length 2.41-2.49 both in standard length. Height of infra-orbital (measured vertically below eye center) 3.71-5.42 in eye diameter.

Description: Dorsal fin rays XII 13; Anal fin rays IV, 11; Pectoral fin rays 16-17; Lateral line scales 28-30 (mostly 29); rows of scales between lateral line and middle of dorsal base 3(1/2); Gill rakers 6-7+11-13=19-20; preopercular scale rows 5. The following values of morphometric measurements were measured based on the holotype. The range in parenthesis is based on paratypes. Body depth 2.04(2.15-2.72) and head length 2.41(2.42-2.49) both in standard length. Eye diameter 2.83(2.36-2.54), snout length 5.77(5.40-6.41), least interorbital width 6.27(5.74-6.41), upper jaw extending beyond a verticals at posterior margin of eye 1.64(1.70-1.81). The third dorsal spine the longest 2.03(1.86-2.27), longest dorsal ray 2.17(2.05-2.17), third anal spine longest 3.05(2.85-3.07), longest anal ray 2.17(2.12-2.41), pectoral fin 1.76(1.82-1.96), pelvic fin 1.83(1.72-1.99), least depth of caudal peduncle 4.49(4.70-4.92) all in head length. Height of infraorbital (measured vertically below eye center) 4.12(3.71-5.42) in eye diameter. Last dorsal spine is slightly shorter than or equal to penultimate spine; and the space between last dorsal spine and first dorsal ray is very narrow and almost connected, which is distinctly more narrow than the space between last dorsal spine and penultimate spine.

Color when fresh: Body uniformly light red.

Etymology: We named this species, *sheni* for expressing our gratitude to Dr. S.C. Shen, National Taiwan University for his contribution in the fish taxonomic works in Taiwan.

Remarks: All specimens of this species available in Taiwan were previously identified as *O. japonicus*. However, we consider that they should be two valid species since they differ in height of suborbital depth 4.12-5.14 vs. 2.44-3.31 (in eye diameter) and median preopercular scales 10-11 vs. 9-10 with respect to *O. sheni* vs. *O. japonicus*. Besides, these two species also differ in the ratio of penultimate spine/least dorsal spine as *O. sheni*: 1.0-1.15, and *O. japonicus*: 0.74-0.96. Table 2 lists some characteristics which show that these new species also differ from the other two closely related species: *O. hypsityrgion* from Okinawa and *O. sanix* from Hawaii (Randall *et al.*, 1982). Both species have the same 3(1/2) rows of scales above lateral line.

Genus *Plectrypops* Gill, 1862

Plectrypops lima (Valenciennes, 1831)

(Fig. 15)

Myripristis lima Valenciennes (in Cuvier et Valenciennes), 1831: 493 (type locality, Mauritius).

Plectrypops lima Masuda *et al.*, 1984: 114; Randall and Heemstra (in Smith and Heemstra), 1986: 132; Myers, 1989: 75.

Material: One specimen, ASIZP 056239, 105.4 mm in SL., July 25, 1986, Hsiaoliuchiu.

Diagnosis: D. XII, 16; A. IV, 11; P₁ 17; L.1. 40; scales above lateral line to middle of spinous dorsal base 4(1/2). Body depth 2.45 and head length 2.67 both in standard length. Eye diameter 3.08, snout 7.14 and least interorbital width 6.16 all in head length. Operculum

Table 2
A comparison of characteristics among *Ostichthys hypsipterygion*,
O. sheni, *O. sandix*, and *O. japonicus*

Species	Characteristic	<i>Ostichthys</i>			
		<i>hypsipterygion</i> **	<i>sheni</i>	<i>sandix</i> **	<i>japonicus</i> ***
Dorsal fin rays		XII, 13	XII, 13	XII, 13	XII, 13
Anal fin rays		IV, 11	IV, 11	IV, 11	IV, 11
Pectoral fin rays		15-16 (usually 15)	17 (16-17)	16-17 (16)	15-17 (usually 17)
Gill rakers		8+13	6-7+11-13	7-9+15-16	7-10+12-14
Lateral line scales		28	29	27 or 28 (usually 27)	28-29
Scales below 1.1 to anal fin		8	8	7	8
Preopercular scale rows		5	5	4	5
Space between last dorsal spine and first dorsal ray vs. space between last two dorsal spines		equal	smaller than half	half	smaller than half
Penultimate spine v. last dorsal spine		P<L*	P=L	P<=L	P<<L
SL/					
Body depth (BD)		2.2(2.1-2.6)	2.04(2.15-2.72)	2.0(2.0-2.1)	2.02-2.22
Head length (HL)		2.6(2.1-2.6)	2.41(2.42-2.49)	2.45(2.35-2.5)	2.36-2.51
HL/					
Eye diameter (ED)		2.9(2.6-3.1)	2.83(2.36-2.54)	3.2(3.0-3.2)	2.57-3.34
Least interorbital bone width (IS)		5.9(6.1-7.4)	6.27(5.47-6.41)	7.3(6.5-7.0)	5.90-5.43
Snout (SnL)		4.9(4.8-5.6)	5.77(5.40-6.34)	4.7(4.3-4.7)	4.82-5.72
Length of upper jaw		1.7(1.7-1.8)	1.64(1.70-1.81)	1.75(1.7-1.8)	1.75-1.81
Height of maxilla and supramaxilla		4.4(4.4-4.7)	4.01(4.10-4.28)	4.0	3.60-4.00
Dorsal third spine		1.8(1.8-1.9)	2.03(1.86-2.27)	2.2(2.25-2.35)	1.72-2.15
Dorsal ray		2.0(2.1)	2.17(2.05-2.17)	2.0(0.19-2.0)	1.98-2.23
Anal third spine		2.3(2.1-2.2)	3.05(2.85-3.07)	2.45(2.3-2.4)	2.47-3.17
Longest anal ray		2.1(2.2)	2.17(2.12-2.41)	1.85-2.1	2.09-2.55
Pectoral fins rays		1.5(1.5-1.7)	1.76(1.82-1.96)	1.65(1.5-1.6)	1.52-1.82
Pelvic fin rays		1.8(1.7-2.0)	1.83(1.72-1.99)	1.75(1.7-1.85)	2.19-2.58
Caudal peduncle		4.4(4.3-4.4)	4.49(4.70-4.92)	4.3(4.2-4.45)	4.17-4.88
ED/					
Gill filaments		2.9(2.6-2.7)	3.11(2.88-3.65)	3.0	2.62-3.83
Gill ranker		2.3(2.7)	1.92(1.56-2.12)	2.0	1.63-2.0
Suborbital depth below center of eye		4.0(3.6-4.9)	4.12(3.17-5.42)	3.7-3.8	2.44-3.31

* P: the abbreviation of "Penultimate spine"; L: the abbreviation of "Last dorsal spine".

** The descriptions *O. hypsipterygion* and *O. sandix* were extracted from Randall *et al.* (1982).

*** The data of *O. japonicus* was measured from two specimens (BPBM 22765, HUMZ 62606) which were borrowed from Dr. Randall and Dr. Amaoka, added to the specimens collected in Taiwan.

with strong serrae on posterior margin but no large spine; preopercular angle and infraorbital bones spineless. Both nasal bones projecting over upper jaw forming a rhomboidal groove. No tooth patch on premaxillary symphysis. Body uniformly bright red.

Distribution: Indo-Pacific including Easter Island, South Africa, Hawaiian Islands and Natal.

Remarks: This genus and species is newly added by Shao and Chen (1988). The characteristics of this newly added genus is the the absence of a large spine at both the preopercular angle and infraorbital bones. The genus only includes two species, one distributed in the Western Atlantic while the other in the Indo-Pacific.

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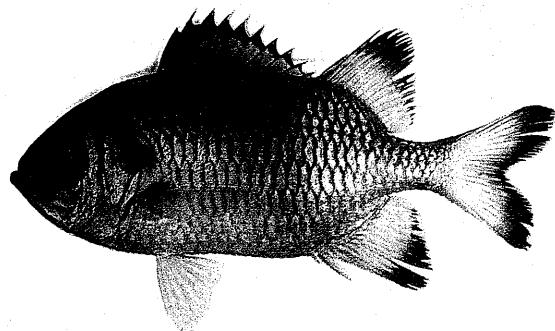


Fig. 2. *Myripristis adusta*, 174.5 mm SL.

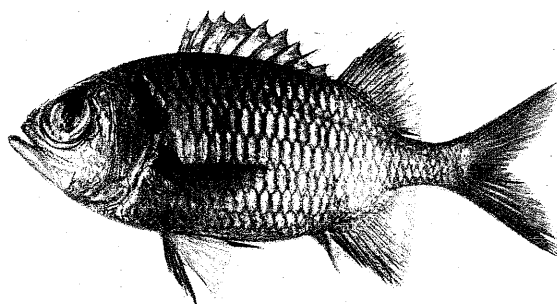


Fig. 3. *M. berndti*, 181.7 mm SL.

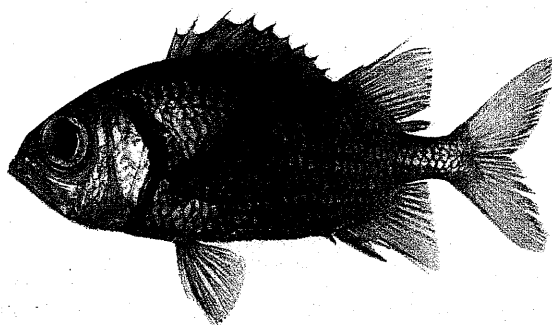


Fig. 4. *M. chryseres*, 159.4 mm SL.

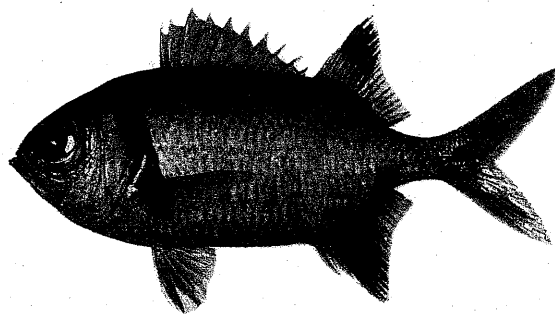


Fig. 5. *M. kuntee* 144.0 mm SL.

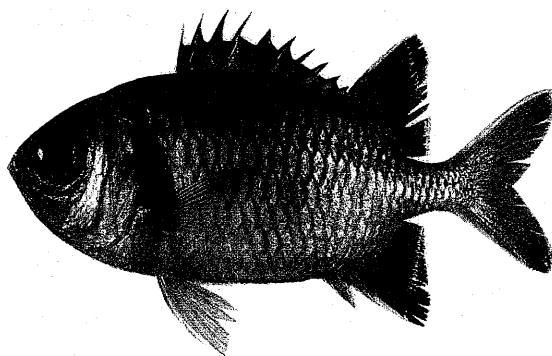


Fig. 6. *M. melanosticta*, 198.2 mm SL.

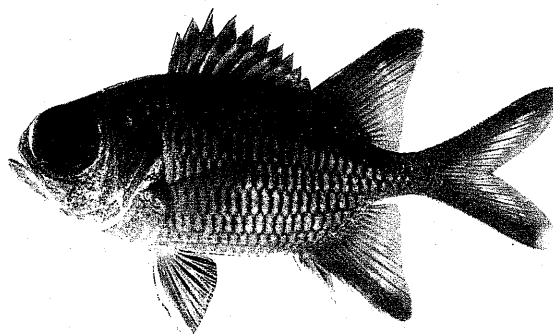


Fig. 7. *M. murdjan*, 80.2 mm SL.

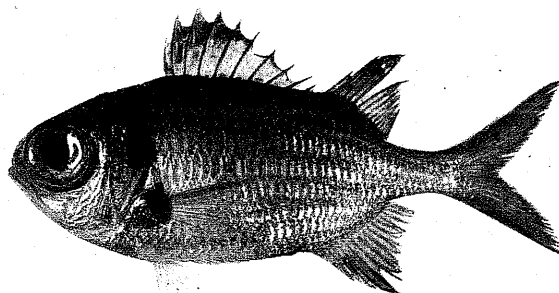


Fig. 8. *M. pralinia*,

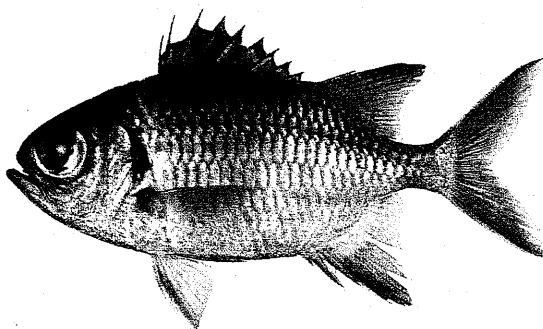


Fig. 9. *M. seychellensis*, 139.6 mm SL.

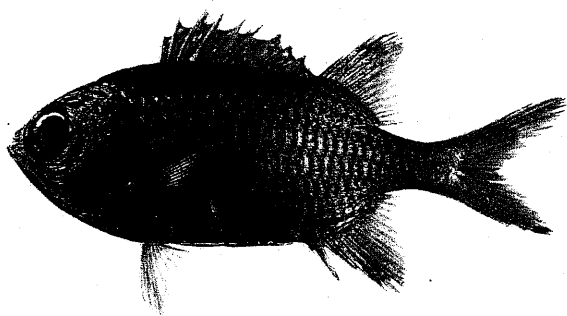


Fig. 10. *M. violacea*, 136.5 mm SL.

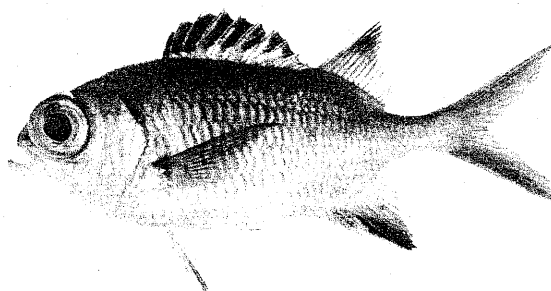


Fig. 11. *M. vittata*, 159.5 mm SL.

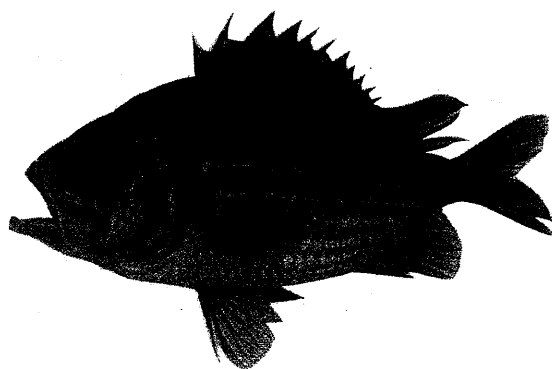


Fig. 12. *Ostichthys kaianus*, 177.9 mm, SL.

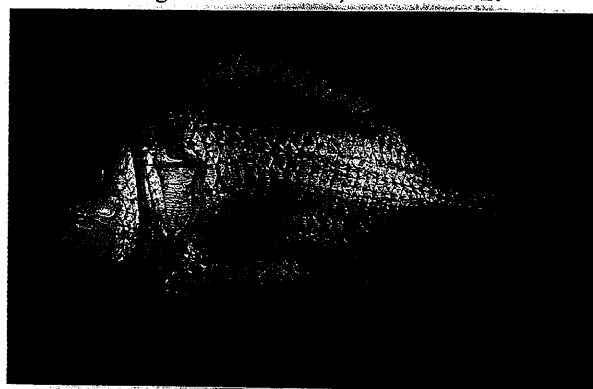


Fig. 13. *O. japonicus* (Photo by J. E. Randall)

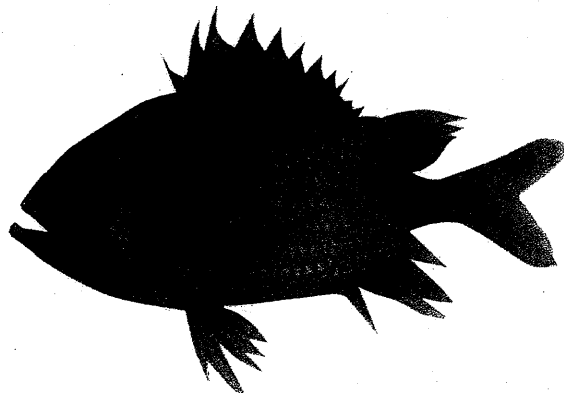


Fig. 14. *O. sheni*, 119.1 mm SL.

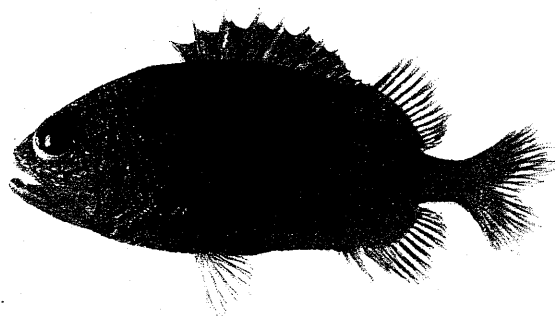


Fig. 15. *Plectrypops lima*, 105.4 mm SL.

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臺灣產鋸鱗魚亞科魚類之整理及兼計一新種

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本報告重新分類整理臺灣鋸鱗魚亞科 (Myripristinae) 魚類，共計十四種，分屬於鋸鱗魚屬 (*Myripristis*)、骨鱗魚屬 (*Ostichthys*) 和固棘鰾 (*Plectrypops*) 等三屬。在記錄到的魚種中，有一種新種：沈氏骨鱗魚 (*Ostichthys sheni*) 及五種新記錄種：伯特氏鋸鱗魚 (*Myripristis berndti*)、金黃鋸鱗魚 (*M. chryseres*)、塞昔耳鋸鱗魚 (*M. seychellensis*)、紅鋸鱗魚 (*M. vittatus*) 及開恩骨鱗魚 (*Ostichthys kainanus*)。沈等 (1980) 原發表產於臺灣的小齒鋸鱗魚 (*M. parvidens*)，筆者等支持 Randall and Guézé (1981) 的意見，應視為白邊鋸鱗魚 (*M. murdjan*) 的同種異名。文中並附上所有魚種的檢索、特徵描述、同種異名錄及標本照以利參考。