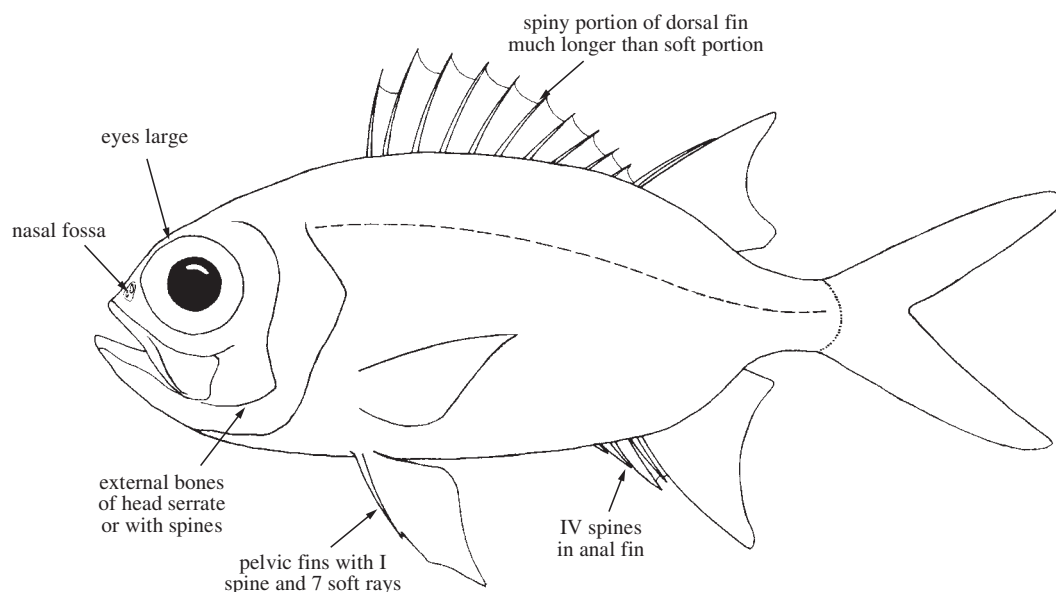


**HOLOCENTRIDAE****Squirrelfishes (soldierfishes)**

by J.E. Randall and D.W. Greenfield

**Diagnostic characters:** Body ovate to moderately elongate; body compressed; caudal peduncle slender; ridges and mucous channels dorsally on head; **edges of external bones of head serrate or with spines. Eyes very large.** Mouth terminal or with lower jaw projecting; gape slightly to strongly oblique; mouth moderately large, the maxilla extending posterior at least to a vertical at front edge of pupil (often beyond middle of eye); upper jaw protractile; 2 supramaxillae present; small villiform teeth in bands in jaws and on roof of mouth (on vomer, palatines, and for some species on ectopterygoids). Branchiostegal rays 8. Dorsal-fin base long, base of spinous portion 2 to 4 times that of soft portion; **dorsal fin with XI to XIII (rarely XIII) stout spines and 12 to 17 soft rays, deeply or completely notched between spinous and soft portions or between last 2 dorsal-fin spines;** **anal fin with IV spines, the third stoutest and often longest, and 7 to 16 soft rays;** **pelvic fins with I spine and 7 soft rays;** **caudal fin forked with 17 branched rays. Lateral-line complete, the pored scales 25 to 56; scales of body strongly ctenoid;** surface of scales smooth or with ridges. **Colour:** usually red or pink, scale centres of body often lighter (may be silvery white), thus forming longitudinal bands; black pigment may be present on opercular membrane or as markings in fins; fins may also have yellow or white markings.



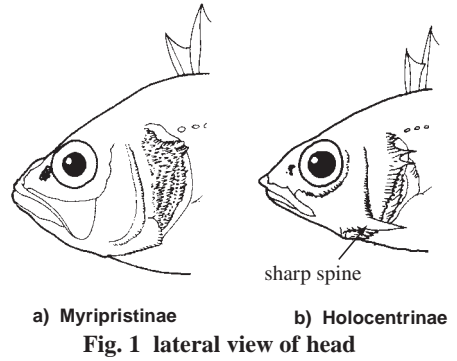
**Habitat, biology, and fisheries:** Most of the squirrelfishes (subfamily Holocentrinae) and soldierfishes (subfamily Myripristinae) live in relatively shallow water on coral reefs or rocky bottoms, but a few (particularly the genus *Ostichthys*) occur in depths of 200 m or more. The holocentrid fishes are believed to be derived from deep-dwelling berycoid ancestors. Their large eyes suit them well for their nocturnal habits. The family is also well known for sound production. The squirrelfishes feed mainly on crustaceans living on or near the bottom, whereas the soldierfishes of the genus *Myripristis* feed on the larger elements of the zooplankton. The preopercular spine of at least some species of *Sargocentron* is venomous. Although wounds from these spines may be very painful, they are not as serious as those from the dorsal-fin spines of most scorpionfishes. Many of the holocentrids are too small to be of any commercial value; the largest are frequently seen in local markets, but rarely in abundance.

**Similar families occurring in the area**

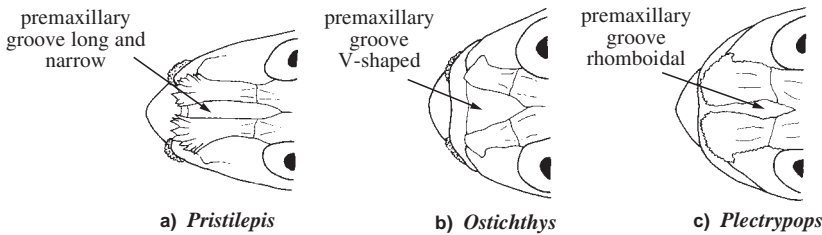
None. The serrate bony edges and spines on the head, in combination with the large eyes, the very long base on the spinous portion (as compared to soft portion) of the dorsal fin, the presence of IV spines in the anal fin and of 7 soft rays in the pelvic fins, readily distinguishes the squirrelfishes and soldierfishes from other fish families occurring in the area.

**Key to the genera of Holocentridae occurring in the area**

- 1a. Corner of preopercle either rounded or without a sharp spine (at most with a short, very broad spine) (Fig. 1a); front of swimbladder bifurcate, each anterior projection connected to an auditory bulla of skull; anal-fin rays 10 to 16 (rarely 10, except for *Ostichthys delta*) . . . . . (subfamily **Myripristinae**) → 2
- 1b. Corner of preopercle with a sharp stout spine, longer than broad (Fig. 1b); front of swimbladder blunt, with no connection to auditory bullae of skull; anal-fin rays 7 to 10 (rarely 10, except in *Sargocentron spiniferum* and *S. ensifer*) . . . . . (subfamily **Holocentrinae**) → 5



- 2a. Dorsal-fin spines XI; first gill arch with 19 to 33 gill rakers on lower limb; scales finely to moderately ctenoid . . . . . *Myripristis*
- 2b. Dorsal-fin spines XII (except *Ostichthys delta* with XI); first gill arch with 11 to 18 gill rakers on lower limb; scales coarsely ctenoid . . . . . → 3
- 3a. Premaxillary groove long and narrow, nasal bone margins parallel (Fig. 2a); vertebrae 29 . . . *Pristilepis* (a single species, *P. oligolepis* (Whitley), in the genus; known from Western Australia, Lord Howe Island, Japan, and Easter Island, but not yet recorded from the area)
- 3b. Premaxillary groove either broadly V-shaped or rhomboidal (Fig. 2b, c); vertebrae 26 or 27 . . . . . → 4



**Fig. 2 dorsal view of head**

- 4a. Premaxillary groove broadly V-shaped; longest dorsal-fin spine 1.9 to 2.6 times in head length; lateral-line scales 28 to 38 . . . . . *Ostichthys*
- 4b. Premaxillary groove narrow and rhomboidal; longest dorsal-fin spine 2.5 to 2.9 times in head length; lateral-line scales 40 to 42 (in Indo-Pacific species) . . . . . *Plectrypops* (a single species, *P. lima*, occurring in the area)
- 5a. Last dorsal-fin spine shortest, equidistant between penultimate spine and first soft ray (Fig. 3a); lower jaw not projecting (except in *S. spiniferum*); ground colour red . . . . *Sargocentron*<sup>1/</sup>
- 5b. Last dorsal-fin spine longer than penultimate spine, much closer to first soft ray than to penultimate spine (Fig. 3b); lower jaw projecting; ground colour silvery to silvery pink . . . *Neoniphon*<sup>2/</sup>

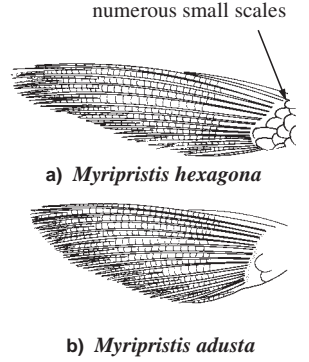


**Fig. 3 dorsal fin**

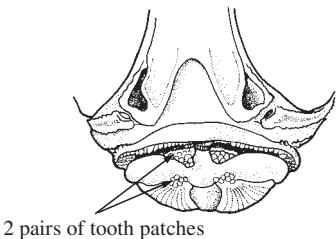
1/ The genus *Adioryx* is a junior synonym.  
 2/ The genus *Flammeo* is a junior synonym.

**Key to the species of *Myripristis* occurring in the area**

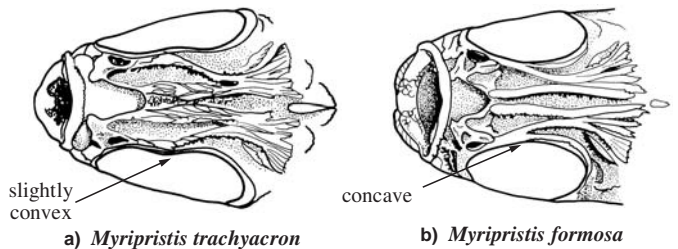
- 1a. No scales in axil of pectoral fins (except occasionally in *M. amaena*, then only a few small scales ventrally in axil); lateral-line scales 27 to 44 . . . . . → 2
- 1b. Numerous small scales (Fig. 4a) or 1 or 2 large scales (Fig. 4b) in axil of pectoral fins (except Marquesan specimens of *M. berndti* which lack scales in axil of pectoral fins, or have only a few); lateral-line scales 25 to 32 . . . . . → 12
- 2a. Two pairs of symphyseal tooth patches, one above the other, at tip of lower jaw just outside gape (Fig. 5) (lower pair usually absent in specimens smaller than about 9 cm standard length); peritoneum black; lateral-line scales 27 to 29; total gill rakers on first gill arch 30 to 38 . . . . . → 3
- 2b. A single pair of symphyseal tooth patches at tip of lower jaw just outside gape (occasional large specimens of *M. chryseres* from Hawaii, and specimens of *M. trachyacron*, with a second smaller lower pair); peritoneum translucent whitish; lateral-line scales 28 to 44; total gill rakers on first gill arch 29 to 48 . . . . . → 4
- 3a. Interorbital not very narrow, its width 4.5 to 5.65 times in head length; caudal-peduncle length 6.2 to 7.25 times in standard length; first gill arch with 10 to 13 gill rakers on upper limb (total gill rakers on first gill arch 32 to 38); a prominent black spot distally on caudal-fin lobes and elevated portions of soft dorsal and anal fins . . . . . *Myripristis botche*  
(western Pacific and Indian oceans)
- 3b. Interorbital very narrow, its width 5.75 to 5.95 times in head length; caudal-peduncle length 8.4 to 9.1 times in standard length; first gill arch with 10 gill rakers on upper limb (total gill rakers on first gill arch 30 to 32); no distinct black spot distally on caudal-fin lobes and elevated portions of soft dorsal and anal fins (but some black pigment may be present on rays at these locations) . . . . . *Myripristis robusta*  
(Philippines and Papua New Guinea)
- 4a. A broad dark reddish brown bar from upper end of gill opening to base and axil of pectoral fins; outer part of spinous portion of dorsal fin yellow to yellow-orange; dorsal-fin rays 15 to 17 (modally 16, rarely 15); anal-fin rays 14 to 16 (modally 15); lateral-line scales 37 to 44 . . . . . *Myripristis kuntzei*  
(Indo-Pacific)
- 4b. No continuous broad dark reddish brown bar from upper end of gill opening to base and axil of pectoral fins; outer part of spinous portion of dorsal fin red or red with white spine tips; dorsal-fin rays 12 to 16 (modally 14 or 15); anal-fin rays 10 to 15 (modally 12 to 14); lateral-line scales 28 to 40 . . . . . → 5
- 5a. Lateral edge of frontal bone (in dorsal view) above anterior half of orbit slightly convex (Fig. 6a); longest anal-fin spine 1.3 to 1.55 times in head length; no dark pigment on opercular membrane or axil of pectoral fins . . . . . → 6
- 5b. Lateral edge of frontal bone (in dorsal view) above anterior half of orbit slightly concave (Fig. 6b); longest anal-fin spine 1.55 to 2.8 times in head length; dark pigment present on opercular membrane and axil of pectoral fins . . . . . → 7



**Fig. 4 axil of pectoral fin**  
(after Randall and Greenfield, 1996)



2 pairs of tooth patches  
**Fig. 5 frontal view of head**

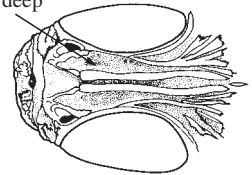


**Fig. 6 dorsal view of head**

- 6a. Lateral-line scales 31 to 33; total gill rakers on first gill arch 38 to 41; third anal-fin spine very long, 1.3 to 1.55 times in head length; dorsal surface of frontal bone next to edge of orbit obliquely striated anteriorly and rugose (from small nodules) posteriorly; leading edge of soft dorsal, anal, caudal, and pelvic fins not white; dorsal-fin spines not tipped with white . . . . . *Myripristis trachyacron*  
(Indo-Malayan region)
- 6b. Lateral-line scales 35 to 40; total gill rakers on first gill arch 33 to 38; third anal-fin spine 1.55 to 1.8 times in head length; dorsal surface of frontal bone next to edge of orbit smooth to slightly rugose; leading edge of soft dorsal, anal, caudal, and pelvic fins white; dorsal-fin spines tipped with white . . . . . *Myripristis vittata*  
(Indo-Pacific)
- 7a. Third dorsal-fin spine clearly longer than fourth spine (both measured from base of scaly sheath), its tip usually extending beyond fourth spine when depressed . . . . . → 8
- 7b. Third dorsal-fin spine shorter than or about equal to fourth spine (both measured from base of scaly sheath), its tip not extending beyond fourth spine when depressed . . . . . → 9
- 8a. Lateral-line scales 32 to 38; total gill rakers on first gill arch 33 to 38; pair of symphyseal tooth patches outside gape in lower jaw separated by less than a tooth-patch diameter, the narrow anterior part of lower jaw bearing these teeth fitting into a distinct notch in upper jaw; median and pelvic fins largely bright yellow in life . . . . . *Myripristis chryseres*  
(Indo-Pacific)
- 8b. Lateral-line scales 28 to 31; total gill rakers on first gill arch 41 to 45; pair of symphyseal tooth patches outside gape in lower jaw separated by a space equal to or greater than a tooth-patch diameter, the anterior part of jaw bearing these teeth not fitting into a distinct notch in upper jaw; median and pelvic fins mainly red with white leading edges . . *Myripristis randalli*  
(Pitcairn, Austral Islands, Samoa, and Tonga)
- 9a. Total gill rakers on first gill arch 39 to 48 (modally 44); dorsal-fin rays 13 or 14 (modally 14); anal-fin rays 12 or 13 (modally 12); lateral-line scales 30 to 34 (modally 32); a small white spot in life at top of pectoral-fin base, adjacent to black or deep red of axil of pectoral fin . . . . . *Myripristis woodsi*  
(French Polynesia to Micronesia)
- 9b. Total gill rakers on first gill arch 34 to 42 (modally 37 or 38); dorsal-fin rays 13 to 17 (modally 15); anal-fin rays 12 to 15 (modally 13 or 14); lateral-line scales 32 to 40; no white spot at top of pectoral-fin base . . . . . → 10
- 10a. Anal-fin rays modally 14; posterior edge of nasal fossa strongly serrate; dark pigment of opercular membrane not extending ventral to notch below opercular spine; leading edges of soft dorsal, anal, and caudal fins white . . . . . *Myripristis pralinia*  
(Indo-Pacific)
- 10b. Anal-fin rays modally 13; posterior edge of nasal fossa smooth or with a few small serrae; dark pigment of opercular membrane extending ventral to notch below opercular spine; leading edges of soft dorsal, anal, and caudal fins not white or very narrowly white . . . . . → 11
- 11a. Lateral-line scales 35 to 40 (modally 37); cteni on scale edges 27 to 47; body elongate for the genus, its depth 2.5 to 3 times in standard length; a distinct striped pattern on body in life and in preservative . . . . . *Myripristis tiki*  
(Easter Island, Pitcairn Group, and Rapa)
- 11b. Lateral-line scales 32 to 36 (modally 34); cteni on scale edges 45 to 94; body less elongate, its depth 2.3 to 2.7 times in standard length; body not distinctly striped . . . . . *Myripristis amaena*  
(islands of Oceania)

- 12a. A single large scale (rarely 2) in lower half of axil of pectoral fins; outer third of caudal-fin lobes and elevated part of soft dorsal and anal fins black; spinous dorsal fin reddish black with a median whitish band; scales rimmed with black dorsally on body, and salmon pink on sides and ventrally; largest species of the genus (to 25 cm standard length) . . . *Myripristis adusta* (Indo-Pacific)
- 12b. Numerous small scales in ventral part of axil of pectoral fins; outer part of median fins not black; scales rimmed with brownish red, red, or pink (except dorsally on *M. violacea* where edged in black) . . . → 13
- 13a. Two pairs of tooth patches, one above the other, at front of lower jaw outside gape in specimens larger than about 9 cm standard length; lateral-line scales 25 to 29 (modally 27); leading edges of caudal-fin lobes, soft dorsal, anal, and pelvic fins not white . . . . . *Myripristis hexagona* (Samoa to East Africa)
- 13b. A single pair of tooth patches at front of lower jaw just outside gape; lateral-line scales 27 to 32 (modally 28 to 30); leading edge of soft dorsal, anal, caudal, and pelvic fins white . . . . . → 14
- 14a. Scales dorsally on body with broad dark brown to black edges, those on nape almost completely black; modally 14 gill rakers on upper limb of first gill arch . . . . . *Myripristis violacea* (Indo-Pacific)
- 14b. Scales dorsally on body without dark brown to black edges; modally 10 to 13 gill rakers on upper limb of first gill arch . . . . . → 15
- 15a. Mucous channel on each side of anterior interorbital space deep (Fig. 7); first gill arch with 10 gill rakers on upper limb (total gill rakers on first gill arch 32); scales of body strongly silvery in life . . . . . *Myripristis aulacodes* (known from a single specimen taken off Lombok, Indonesia)
- 15b. Mucous channel on each side of anterior interorbital space not deep; first gill arch with 11 to 15 gill rakers on upper limb (total gill rakers on first gill arch 35 to 44); scales of body not strongly silvery in life . . . . . → 17
- 16a. Interorbital space narrow, its width 4.5 to 5.2 times in head length; lower jaw of adults strongly projecting when mouth is closed; modally 12 gill rakers on upper limb of first gill arch; outer part of spinous dorsal fin yellow or yellow-orange in life . . . . . *Myripristis berndti* (Indo-Pacific and tropical eastern Pacific)
- 16b. Interorbital space broad, its width 3.65 to 4.4 times in head length; lower jaw of adults slightly projecting when mouth closed; modally 13 gill rakers on upper limb of first gill arch; outer part of spinous dorsal fin red in life . . . . . *Myripristis murdjan* (Samoa and Marshall islands to East Africa and Red Sea)

mucous channel deep



dorsal view of head

Fig. 7 *Myripristis aulacodes*

**Key to the species of *Neoniphon* occurring in the area**

- 1a. Scales above lateral line to base of middle dorsal-fin spines 3 ½; lateral-line scales 42 to 47; silvery pink with yellow stripes on body . . . . . *Neoniphon aurolineatus* (Indo-Pacific)
- 1b. Scales above lateral line to base of middle dorsal-fin spines 2 ½; lateral-line scales 36 to 43; no yellow stripes on body . . . . . → 2
- 2a. First dorsal fin without dark markings; pectoral-fin rays usually 13 . . . . . *Neoniphon argenteus* (Indo-Pacific)
- 2b. Spinous portion of dorsal fin with a conspicuous black spot or large black area; pectoral-fin rays usually 14 . . . . . → 3

- 3a.** A black spot about as large as eye between first and third dorsal-fin spines; anal-fin rays 8  
 . . . . . *Neoniphon sammara*  
 (Indo-Pacific)
- 3b.** A broad black median zone across entire spinous portion of dorsal fin; anal-fin rays  
 usually 9 . . . . . *Neoniphon opercularis*  
 (Indo-Pacific)

### Key to the species of *Ostichthys* occurring in the area

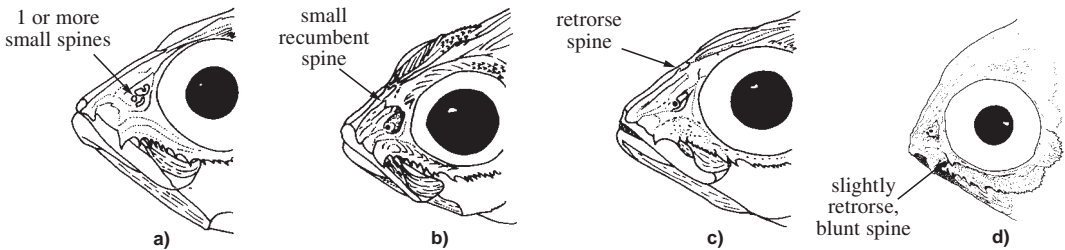
- 1a.** Scales above lateral line to middle of spinous portion of dorsal fin  $3\frac{1}{2}$  . . . . . → **2**
- 1b.** Scales above lateral line to middle of spinous portion of dorsal fin  $2\frac{1}{2}$  . . . . . → **5**
- 2a.** Anterior end of each nasal bone with a sharp forward-directed spine projecting to or beyond median part of upper lip; a short stout spine at corner of preopercle; gill rakers on first gill arch 10 to 12 on upper limb and 16 to 18 on lower limb. . . . . *Ostichthys acanthorhinus*  
 (Gulf of Oman to southern Indonesia)
- 2b.** Anterior end of nasal bones without a forward-directed spine (except juveniles); no spine at corner of preopercle notably larger than spinules along entire margin; gill rakers on first gill arch 6 to 11 on upper limb and 12 to 17 on lower limb . . . . . → **3**
- 3a.** Lateral-line scales 38; dorsal fin with XI spines and 16 rays; pectoral-fin rays 15. . . . .  
 . . . . . *Ostichthys ovaloculus*  
 (known from a single specimen taken off Tahiti at a depth of about 300 m)
- 3b.** Lateral-line scales 28 to 30; dorsal fin with XII spines and 12 to 14 rays; pectoral-fin rays 16 or 17 . . . . . → **4**
- 4a.** Last dorsal-fin spine 2 to 3 times longer than penultimate spine; depth of second suborbital bone (measured vertically below eye centre) about  $\frac{1}{2}$  orbit diameter; dorsal profile of head convex; pectoral-fin rays usually 17; first gill arch with 12 to 14 gill rakers on lower limb . . . . . *Ostichthys japonicus*  
 (western Pacific and Andaman Sea)
- 4b.** Last 2 dorsal-fin spines subequal; depth of second suborbital bone about  $\frac{1}{3}$  to  $\frac{1}{4}$  orbit diameter; dorsal profile of head to above rear edge of eye nearly straight; pectoral-fin rays usually 16; first gill arch with 15 or 16 gill rakers on lower limb . . . . . *Ostichthys sandix*  
 (Society Islands and Hawaii)
- 5a.** Anal-fin origin below anterior soft portion of dorsal fin; anal-fin rays 9 to 11 (usually 10); lateral-line scales 27 or 28 (usually 27); upper procurrent spiniform caudal-fin rays 5, and lower procurrent spiniform caudal-fin rays 4 . . . . . → **6**
- 5b.** Anal-fin origin below posterior spinous portion of dorsal fin; anal-fin rays 11 or 12 (usually 11); lateral-line scales 28 to 30; upper procurrent spiniform caudal-fin rays 4, and lower procurrent spiniform caudal-fin rays 3 . . . . . → **7**
- 6a.** Dorsal fin with XI spines and 13 or 14 rays; vomerine teeth in a near-triangular patch; head length 2.5 to 2.65 times in standard length; longest dorsal-fin spine 2.05 to 2.3 times in head length; first gill arch with 7 or 8 gill rakers on upper limb, 13 or 14 on lower limb . . . . . *Ostichthys delta*  
 (Réunion and Samoa)
- 6b.** Dorsal fin with XII spines and 12 rays; vomerine teeth in a V-shaped patch; head length 2.45 times in standard length; longest dorsal-fin spine 2.6 times in head length; first gill arch with 8 gill rakers on upper limb, 15 on lower limb. . . . . *Ostichthys brachygnathus*  
 (known from a single specimen taken off Guam at a depth of 230 m)



- 7a. A half scale directly anterior to upper half of first pored scale of lateral line; pectoral-fin rays 15; dorsal profile of head straight to above posterior edge of preopercle; snout length 3.7 to 4.3 times in head length . . . . . *Ostichthys archiepiscopus*  
(Réunion, Tahiti, southern Japan, and Hawaii)
- 7b. No half scale anterior to upper half of first pored scale of lateral line; pectoral-fin rays 15 to 17 (strongly modal as 16); dorsal profile of head slightly convex, especially region of nape; snout length 4.2 to 4.9 times in head length . . . . . *Ostichthys kaianus*  
(Réunion, northwestern Australia, and Indonesia to southern Japan)

**Key to the species of *Sargocentron* occurring in the area**

- 1a. Scales above lateral line to base of middle dorsal-fin spines 3 ½ . . . . . → 2
- 1b. Scales above lateral line to base of middle dorsal-fin spines 2 ½ . . . . . → 7
- 2a. Lateral-line scales 57 to 58; eyes very large, 2.6 times in head length . . . . . *Sargocentron megalops*  
(known from a single 7.9 cm specimen, Henderson Island, Pitcairn Group)
- 2b. Lateral-line scales 38 to 48; eyes not very large, the orbit diameter 2.85 to 4.8 times in head length (in specimens more than 7 cm standard length) . . . . . → 3
- 3a. Anal-fin rays 10 (rarely 9); membranes of spinous portion of dorsal fin not or only slightly incised; maximum standard length greater than 20 cm . . . . . → 4
- 3b. Anal-fin rays 9 (rarely 8); membranes of spinous portion of dorsal fin distinctly incised; maximum standard length about 8.5 cm . . . . . → 5
- 4a. No small spines at edge of nasal fossae; dorsal-fin rays usually 15; preopercular spine of adults usually greater than orbit diameter; first dorsal-fin spine about 3/4 length of second spine; body very deep, its depth 2.4 to 2.6 times in standard length; a large oval dark red spot on preopercle behind eye; spinous portion of dorsal fin uniform dark red . . . . .  
. . . . . *Sargocentron spiniferum*  
(Indo-Pacific)
- 4b. One or more small spines at edge of nasal fossae (Fig. 8a); dorsal-fin rays usually 14; preopercular spine of adults less than orbit diameter; first and second dorsal-fin spines subequal; body not very deep, its depth 2.5 to 2.8 times in standard length; no large dark red spot behind eye; spinous portion of dorsal fin yellow with a red margin . . . . . *Sargocentron ensifer*  
(Hawaii, Japan, New Caledonia, Pitcairn, and Paracel Islands in South China Sea)



**Fig. 8 lateral view of head**

- 5a. No spine on nasal bone between edge of nasal fossa and premaxillary groove; lateral-line scales 42; pectoral-fin rays 14; total gill rakers on first gill arch 20 or 21 . . . . . *Sargocentron shimizui*  
(2 specimens: Sulawesi, Indonesia)
- 5b. A small recumbent spine on nasal bone between edge of nasal fossa and premaxillary groove (Fig. 8b); lateral-line scales 43 to 49; pectoral-fin rays usually 15; total gill rakers on first gill arch 17 to 20 . . . . . → 6

- 6a.** A retrorse spine at edge of premaxillary groove (Fig. 8c); body very deep, its depth 2.3 to 2.6 times in standard length; length of upper jaw 2.6 to 2.9 times in head length . . . *Sargocentron iota*  
(Hawaii, Fiji, New Caledonia, Chesterfield Bank, Palau, Papua New Guinea, and Indonesia)
- 6b.** No spine at edge of premaxillary groove; body not very deep, its depth 2.65 to 2.9 times in standard length; length of upper jaw 2.35 to 2.6 times in head length . . . . . *Sargocentron lepros*  
(Pitcairn, Cook Islands, Samoa, Rotuma, and Christmas Island in Indian Ocean)
- 7a.** A retrorse spine on nasal bone between nasal fossa and premaxillary groove (Fig. 8c); edge of premaxillary groove with a small retrorse spine (occasionally 2 spines); largest specimen, 11.3 cm standard length . . . . . *Sargocentron inaequalis*  
(Comoro Islands, Chagos Archipelago, Seychelles, and Line Islands, Central Pacific)
- 7b.** No spine on nasal bone between nasal fossa and premaxillary groove; no spine at edge of premaxillary groove (except *S. microstoma*); maximum standard length 13 cm or more . . . . . → **8**
- 8a.** Lateral-line scales 32 to 38 . . . . . → **9**
- 8b.** Lateral-line scales 38 to 55 . . . . . → **14**
- 9a.** A serrate ridge on upper edge of suborbital bones, preceded by a laterally projecting, slightly retrorse, blunt spine on suborbital below or slightly posterior to anterior edge of orbit (Fig. 8d) . . . . . → **10**
- 9b.** No serrate ridge along upper edge of suborbital bones (or only a few small serrae below posterior part of orbit), and without a laterally projecting blunt spine on suborbital below anterior edge of orbit . . . . . → **13**
- 10a.** A large black blotch on first 2 membranes of dorsal fin; tips of caudal-fin lobes broadly rounded; body light orange-red with narrow darker red stripes following scale edges; no blackish spot at base of soft dorsal, anal, and caudal fins; lateral-line scales modally 33 . . . . . *Sargocentron dorsomaculatum*  
(Ryukyu Islands, Palau, and Caroline Islands)
- 10b.** No blackish blotch on first 2 membranes of dorsal fin (or if blackish pigment is present on these membranes, it is also present on remaining spinous membranes of fin); tips of caudal-fin lobes pointed to slightly rounded; body alternately striped with red and silvery white; a blackish spot at base of soft dorsal, anal, and caudal fins (may be faint at base of anal and caudal fins); lateral-line scales modally 34 to 36 . . . . . → **11**
- 11a.** Spinous portion of dorsal fin largely blackish red in life (dark brown in preservative); upper-jaw length 2.75 to 2.95 times in head length; body depth 2.7 to 3 times in standard length; spinules present on edge of nasal fossae . . . . . *Sargocentron cornutum*  
(East Indies and Great Barrier Reef)
- 11b.** Spinous portion of dorsal fin largely red in life (not dark brown in preservative); upper-jaw length 2.35 to 2.75 times in head length; body depth 2.4 to 2.8 times in standard length; no spinules present on edge of nasal fossae (or rarely a single spinule in large *S. praslin*) . . . . . → **12**
- 12a.** Oblique rows of scales on cheek 4; lateral-line scales modally 34; least interorbital width 3.9 to 4.4 times in head length; upper-jaw length 2.35 to 2.55 times in head length; dark pigment on pelvic fins mainly on first soft ray . . . . . *Sargocentron praslin*  
(East Africa to Society Islands)
- 12b.** Oblique rows of scales on cheek 5; lateral-line scales modally 35; least interorbital width 4.5 to 5.2 times in head length; upper-jaw length 2.5 to 2.75 times in head length; dark pigment on pelvic fins confined to distal part of second to sixth (or fewer) membranes . . . . . *Sargocentron rubrum*  
(Red Sea and Gulf of Oman to western Pacific)



**13a.** Dorsal-fin rays modally 14; membranes of spinous portion of dorsal fin not incised; body depth 2.3 to 2.6 times in standard length; no blackish spot at base of median fins; body dark brownish to purplish red with a silvery white vertical line on each scale; a black spot on upper opercular membrane . . . . . *Sargocentron violaceum*  
(islands of western Indian Ocean to Society Islands)

**13b.** Dorsal-fin rays modally 13; membranes of spinous portion of dorsal fin incised; body depth 2.6 to 3 times in standard length; a large black oval spot at base of soft portion of dorsal fin, a second smaller spot at base of caudal fin, and usually a third spot at base of soft portion of anal fin; body orange-red to orange-yellow with silvery white stripes; no black spot on opercular membrane . . . . . *Sargocentron melanospilos*  
(East Africa to Marshall Islands and Samoa)

**14a.** Lateral-line scales 38 to 43; preopercular-spine length usually more than 2/3 orbit diameter. . . . . → 15

**14b.** Lateral-line scales 41 to 55; preopercular-spine length less than 2/3 orbit diameter (except *S. tiere*) . . . . . → 16

**15a.** Premaxillary groove not reaching or just reaching a vertical at anterior edge of orbit (Fig. 9a); dorsal-fin rays usually 14; oblique rows of scales on cheek 5; edge of nasal fossa usually with 1 or more spinules; body red without stripes, the edges of scales narrowly silver; a prominent silvery white spot anterodorsally on caudal peduncle (posterior third of body silvery white on some individuals) . . . . . *Sargocentron caudimaculatum*  
(Indo-Pacific)

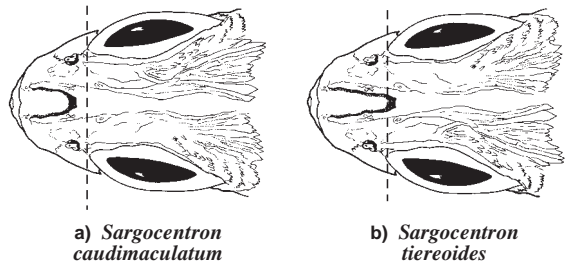


Fig. 9 dorsal view of head

**15b.** Premaxillary groove extending distinctly posterior to a vertical at anterior edge of orbit (Fig. 9b); dorsal-fin rays usually 13; oblique rows of scales on cheek 4; edge of nasal fossa usually without spinules; body with alternating stripes of red and silvery white; no silvery white spot on caudal peduncle . . . . . *Sargocentron tiereoides*  
(Indo-Pacific)

**16a.** Dorsal-fin spines short, the longest 2.6 to 3.5 times in head length; preopercular spine of adults about equal to orbit diameter; head and body primarily red (faint silvery stripes on body, those on lower part with blue iridescence); maximum standard length 27 cm . . . . . *Sargocentron tiere*  
(islands of western Indian Ocean to Hawaii and Pitcairn)

**16b.** Dorsal-fin spines not short, the longest 1.5 to 2.6 times in head length; preopercular spine of adults less than 2/3 orbit diameter; body distinctly striped with red and silvery white; maximum standard length 17.5 cm . . . . . → 17

**17a.** Lateral-line scales 41 to 49 . . . . . → 18


**17b.** Lateral-line scales 48 to 56 . . . . . → 20

**18a.** Pectoral-fin rays usually 14; membranes of spinous portion of dorsal fin reddish black (black in preservative) with a disjunct longitudinal whitish band (lower in anterior part of fin and higher in posterior part) and whitish tips . . . . . *Sargocentron diadema*  
(Indo-Pacific)















**18b.** Pectoral-fin rays usually 15; membranes of spinous portion of dorsal fin not reddish black (if a whitish longitudinal band is present, it is not interrupted) . . . . . → 19

- 19a.** Snout very short, its length less than interorbital width; body usually peppered with small blackish dots; outer part of membranes of spinous portion of dorsal fin red; no blackish blotch on first 1 or 2 interspinous membranes of dorsal fin; lateral-line scales 41 to 47  
 . . . . . *Sargocentron punctatissimum*  
 (Indo-Pacific)
- 19b.** Snout not short, its length equal to or greater than interorbital space; body without numerous small blackish dots; tips of membranes of spinous portion of dorsal fin white (except posteriorly); preserved specimens often with a large blackish blotch on first 1 or 2 interspinous membranes of dorsal fin; lateral-line scales 43 to 49 . . . . . *Sargocentron itodai*  
 (Indo-Pacific)
- 20a.** Third anal-fin spine very long, its length 1 to 1.2 times in head length; longest dorsal-fin spine 1.7 to 1.95 times in head length; spinous portion of dorsal fin completely separate from soft portion; silvery white stripes on body broader than red stripes (except for narrow white stripe following lateral line) . . . . . *Sargocentron microstoma*  
 (islands of western Indian Ocean to French Polynesia)
- 20b.** Third anal-fin spine not very long, 1.2 to 1.45 times in head length; longest dorsal-fin spine 1.95 to 2.2 times in head length; spinous portion of dorsal fin linked by last membrane to base of exposed part of first dorsal-fin ray; red stripes on body much broader than silvery white stripes . . . . . *Sargocentron hormion*  
 (Pitcairn Group, Rapa, and Rarotonga in Cook Islands)

**List of species occurring in the area**

The symbol  is given when species accounts are included.

**Subfamily MYRIPRISTINAE**

-  *Myripristis adusta* Bleeker, 1853
-  *Myripristis amaena* (Castelnau, 1873)
- Myripristis aulacodes* Randall and Greenfield, 1996
-  *Myripristis berndti* Jordan and Evermann, 1903
-  *Myripristis botche* Cuvier, 1829
-  *Myripristis chryseres* Jordan and Evermann, 1903
-  *Myripristis hexagona* (Lacepède, 1802)
-  *Myripristis kuntee* Valenciennes, 1831
-  *Myripristis murdjan* (Forsskål, 1775)
-  *Myripristis pralinia* Cuvier, 1829
-  *Myripristis randalli* Greenfield, 1974
- Myripristis robusta* Randall and Greenfield, 1996
-  *Myripristis tiki* Greenfield, 1974
-  *Myripristis trachyacron* Bleeker, 1863
-  *Myripristis violacea* Bleeker, 1851
-  *Myripristis vittata* Cuvier, 1831
- Myripristis woodsi* Greenfield, 1974
- Ostichthys acanthorhinus* Randall, Shimizu, and Yamakawa, 1982
-  *Ostichthys archiepiscopus* (Valenciennes, 1862)
- Ostichthys brachygnathus* Randall and Myers, 1993
- Ostichthys delta* Randall, Shimizu, and Yamakawa, 1982
-  *Ostichthys japonicus* (Cuvier, 1829)
-  *Ostichthys kaianus* (Günther, 1880)
- Ostichthys ovaloculus* Randall and Wrobel, 1988
- Ostichthys sandix* Randall, Shimizu, and Yamakawa, 1982
- Plectrypops lima* (Valenciennes, 1831)

**Subfamily HOLOCENTRINAE**

- Neoniphon argenteus* (Valenciennes, 1831)  
*Neoniphon aurolineatus* (Liénard, 1839)  
 ✦✦*Neoniphon opercularis* (Valenciennes, 1831)  
 ✦✦*Neoniphon sammara* (Forsskål, 1775)  
 ✦✦*Sargocentron caudimaculatum* (Rüppell, 1835)  
*Sargocentron cornutum* (Bleeker, 1853)  
*Sargocentron diadema* (Lacepède, 1802)  
*Sargocentron dorsomaculatum* (Shimizu and Yamakawa, 1979)  
*Sargocentron ensifer* (Jordan and Evermann, 1904)  
*Sargocentron hormion* Randall, 1998  
*Sargocentron inaequalis* Randall and Heemstra, 1985  
*Sargocentron iota* Randall, 1998  
*Sargocentron ittodai* (Jordan and Fowler, 1903)  
*Sargocentron lepros* (Allen and Cross, 1983)  
*Sargocentron melanospilos* (Bleeker, 1858)  
*Sargocentron megalops* Randall, 1996  
*Sargocentron microstoma* (Günther, 1859)  
 ✦✦*Sargocentron prasinum* (Lacepède, 1802)  
*Sargocentron punctatissimum* (Cuvier, 1829)  
 ✦✦*Sargocentron rubrum* (Forsskål, 1775)  
 ✦✦*Sargocentron spiniferum* (Forsskål, 1775)  
 ✦✦*Sargocentron tiere* (Cuvier, 1829)  
*Sargocentron tiereoides* (Bleeker, 1853)  
*Sargocentron violaceum* (Bleeker, 1853)

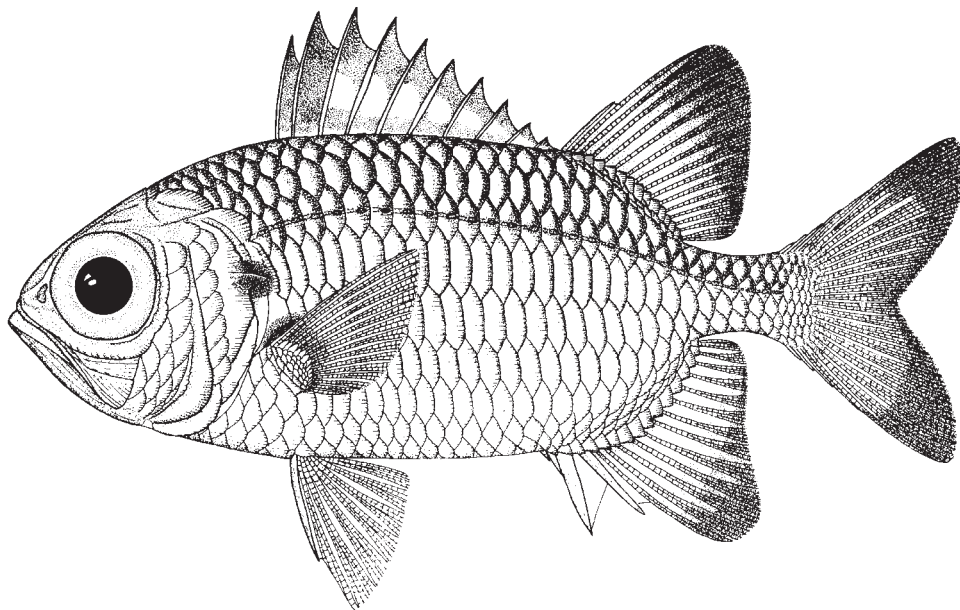
**References**

- Greenfield, D.W. 1978. A revision of the squirrelfish genus *Myripristis* Cuvier (Pisces: Holocentridae). *Sci. Bull. Nat. Hist. Mus. Los Angeles County*, (19):54 p.
- Randall, J.E. 1998. Revision of the Indo-Pacific squirrelfishes (Beryciformes: Holocentridae: Holocentrinae) of the genus *Sargocentron*, with descriptions of four new species. *Indo-Pac. Fishes*, (27):105 p.
- Randall, J.E. and D.W. Greenfield. 1996. Revision of the Indo-Pacific holocentrid fishes of the genus *Myripristis*, with descriptions of three new species. *Indo-Pac. Fishes*, (25):61 p.
- Randall, J.E. and P. Guézé. 1981. The holocentrid fishes of the genus *Myripristis* of the Red Sea, with clarification of the *murdjan* and *hexagonus* complexes. *Contr. Sci. Nat. Hist. Mus. Los Angeles County*, (334):16 p.
- Randall, J.E. and P.C. Heemstra. 1985. A review of the squirrelfishes of the subfamily Holocentrinae from the western Indian Ocean and Red Sea. *Ichthyol. Bull.*, (49):27 p.
- Randall, J.E., T. Shimizu, and T. Yamakawa. 1982. A revision of the holocentrid fish genus *Ostichthys*, with descriptions of four new species and a related genus. *Japan. J. Ichthyol.*, 29(1):1-26.
- Shimizu, T. and T. Yamakawa. 1979. Review of the squirrelfishes (subfamily Holocentrinae: order Beryciformes) of Japan, with description of a new species. *Japan. J. Ichthyol.*, 26(2):109-147.

***Myripristis adusta* Bleeker, 1853**

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** **En** - Shadowfin soldierfish; **Fr** - Marignan ombré; **Sp** - Candil sombreado.

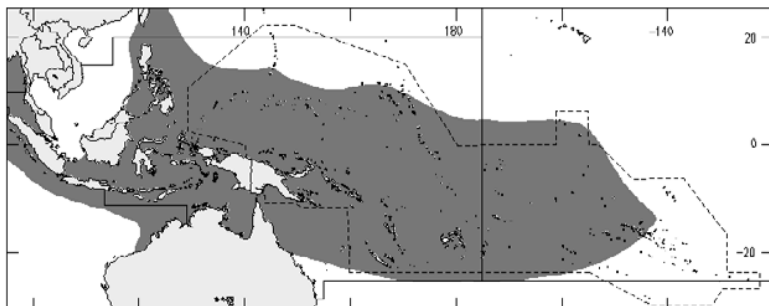


**Diagnostic characters:** Body oblong, its depth 2.1 to 2.55 times in standard length. **Usually a single pair of tooth patches at front of lower jaw just outside nape** (rarely a smaller second pair below). Dorsal fin with XI spines and 14 to 16 soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third spines strongest, but fourth spine longest) and 12 to 14 soft rays. **Lateral-line scales 27 to 29 (usually 28); a single scale (occasionally 2) on lower part of pectoral-fin axil. Total gill rakers on first gill arch 35 to 40.** **Colour:** scale centres pale bluish dorsally, pale pink on sides and ventrally, the **scale edges dark brown to black dorsally and orangish brown to salmon pink on sides and ventrally**; a large blackish spot posteriorly on gill cover; **distal third of soft dorsal fin, anal fin, and caudal-fin lobes black**; spinous dorsal fin reddish black with a broad median whitish band.

**Size:** The largest of the soldierfishes; maximum total length about 32 cm, commonly to 25 cm.

**Habitat, biology, and fisheries:** Occurs on coral reefs and rocky areas in relatively shallow water; seeks refuge in caves and beneath ledges by day, often in aggregations. Usually caught at night with gill nets or hook-and-line; sometimes speared during daylight hours.

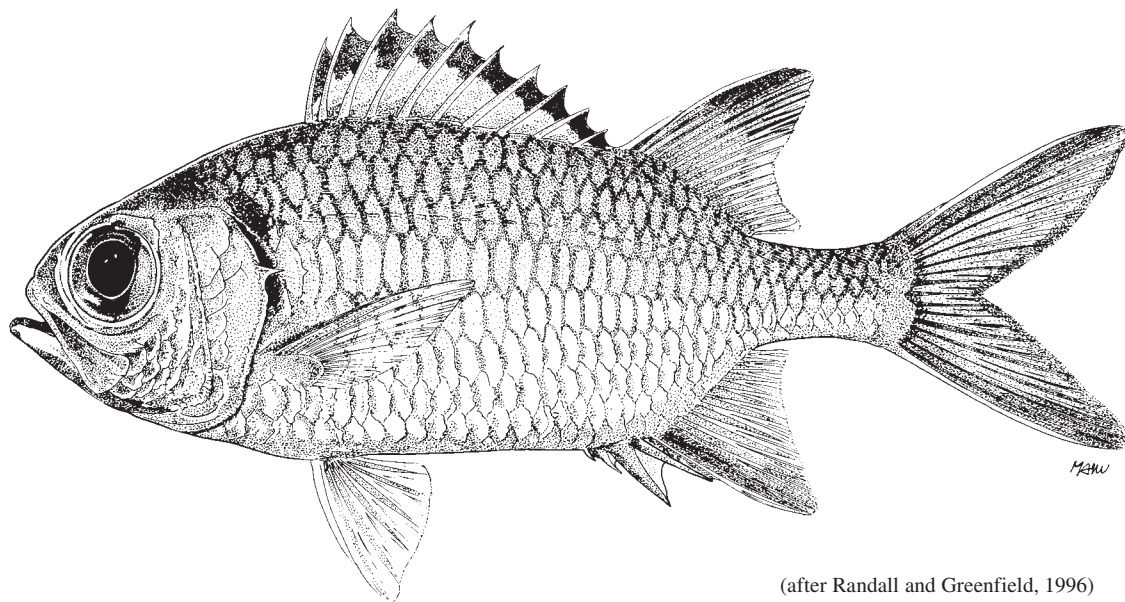
**Distribution:** Indo-Pacific except the Red Sea, Arabian Sea, and Persian Gulf in the Indian Ocean region and Hawaii and Pitcairn Group in the Pacific.



***Myripristis amaena*** (Castelnaeu, 1873)

**Frequent synonyms / misidentifications:** *Myripristis argyromus* Jordan and Evermann, 1904 / None.

**FAO names:** En - Brick soldierfish.



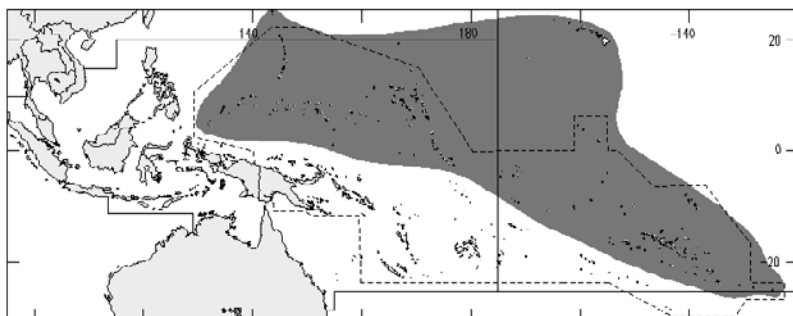
(after Randall and Greenfield, 1996)

**Diagnostic characters:** Body depth 2.3 to 2.7 times in standard length; interorbital width 3.4 to 4 times in head length. Lower jaw not projecting when mouth closed. **A single pair of tooth patches at front of lower jaw outside mouth.** Dorsal fin with XI spines and 13 to 16 (usually 15) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third and fourth spines subequal, the third most stout) and 12 to 15 (usually 13) soft rays. **Lateral-line scales 32 to 36 (modally 34).** Axil of pectoral fins naked. **Total gill rakers on first gill arch 34 to 41.** **Colour:** red, the centres of scales pale red dorsally and silvery white on sides and ventrally, thus forming a longitudinal banding; black on opercular membrane extending well below opercular spine; **median fins red without conspicuous white leading edges.**

**Size:** Largest specimen 26 cm, commonly to 18 cm.

**Habitat, biology, and fisheries:** Nocturnal, like others of the genus, hiding in caves and beneath ledges by day. Occurs in shallower water, in general, than other species. Usually caught by gill nets or by spearing.

**Distribution:** Islands of Oceania, including Hawaii and Pitcairn Group.

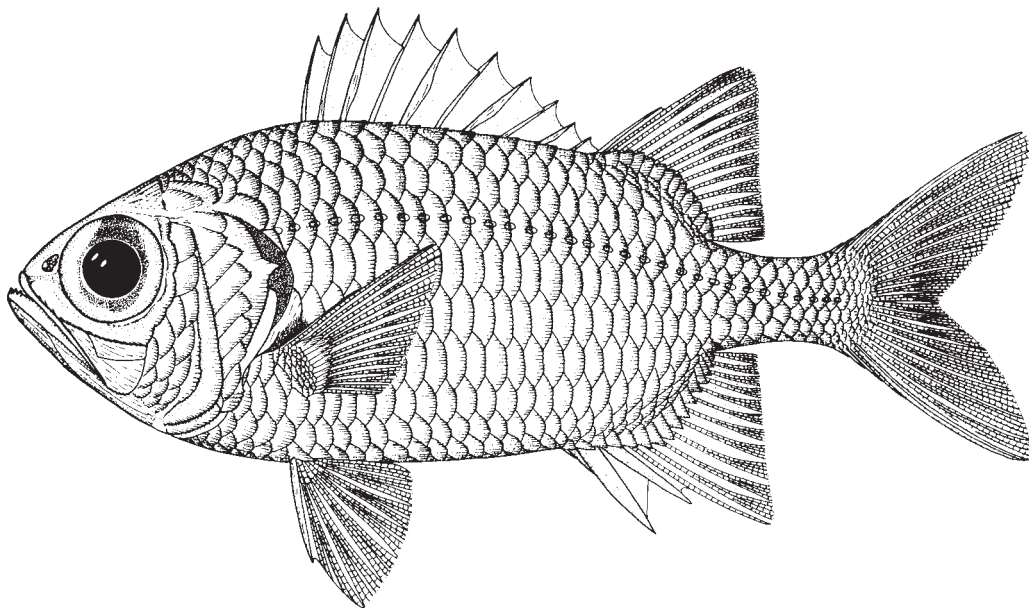




*Myripristis berndti* Jordan and Evermann, 1903

**Frequent synonyms / misidentifications:** None / *Myripristis murdjan* (Forsskål, 1775).

**FAO names:** En - Blotcheye soldierfish; Fr - Marignan à oeillères; Sp - Candil ojo manchado.

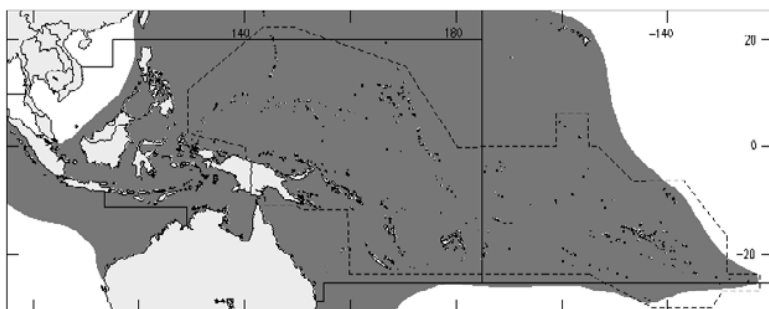


**Diagnostic characters:** Body depth 2.3 to 2.65 times in standard length; interorbital narrow, its width 4.5 to 5.2 times in head length. **Lower jaw of adults strongly projecting when mouth closed. A single pair of tooth patches at front of lower jaw outside mouth;** vomerine teeth in a triangular patch with rounded corners. Dorsal fin with XI spines and 13 to 15 (usually 14) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third and fourth spines subequal, the third strongest) and 11 to 13 (usually 12) soft rays. **Lateral-line scales 28 to 31 (modally 29). Small scales on lower half to three-quarters of pectoral-fin axil. Total gill rakers on first gill arch 35 to 42.** **Colour:** red, the scale centres pale red dorsally and silvery white on sides and ventrally; opercular membrane black to well below opercular spine; axil of pectoral fins black; **outer third to half of spinous dorsal fin yellow to orange-yellow;** leading edges of caudal-fin lobes, soft dorsal, anal, and pelvic fins white.

**Size:** Maximum total length 29 cm, commonly to 22 cm.

**Habitat, biology, and fisheries:** Among the most common of the larger species of the genus; generally found at moderate depths of 10 to 30 m; a cave resident by day. Caught mainly by gill nets, hook-and-line, and by spear.

**Distribution:** This species has the broadest distribution of the genus, from the coast of East Africa (but not the Red Sea or Persian Gulf) to islands of the tropical eastern Pacific; in the western Pacific it ranges from southern Japan to Lord Howe Island.

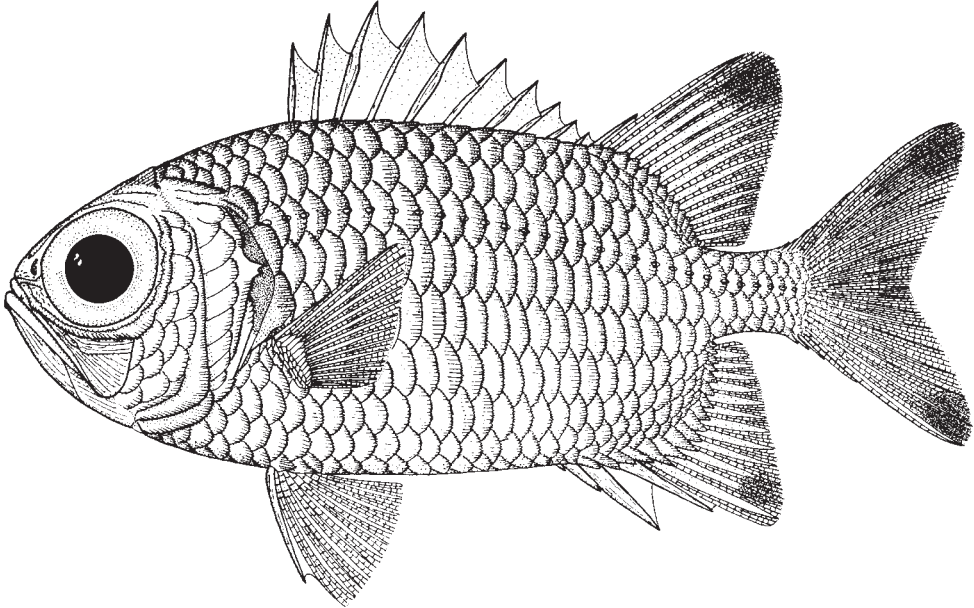




***Myripristis botche*** Cuvier, 1829

**Frequent synonyms / misidentifications:** *Myripristis melanostictus* Bleeker, 1863 / *Myripristis hexagona* (non Lacepède, 1802).

**FAO names:** En - Blacktip soldierfish; Fr - Marignan potelé; Sp - Candil rechoncho.

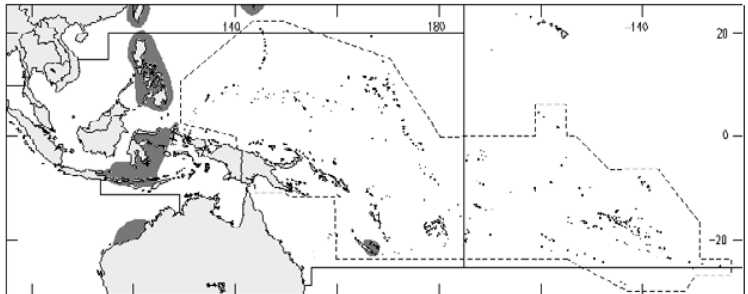


**Diagnostic characters:** Body robust, its depth 2.1 to 2.45 times in standard length; interorbital width 4.5 to 5.65 times in head length. Lower jaw of adults slightly projecting when mouth closed. **Two pairs of tooth patches at front of lower jaw outside mouth;** vomerine teeth in a triangular patch with rounded corners. Dorsal fin with XI spines and 13 or 15 (usually 14) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third spine stoutest, but fourth usually slightly longer) and 11 or 12 (usually 12) soft rays. **Lateral-line scales 27 to 29 (modally 28). No small scales in pectoral-fin axil. Total gill rakers on first gill arch 32 to 38. Colour:** silvery white, the scales rimmed with brownish red dorsally and red on sides and ventrally; black pigment of opercular membrane extending to about level of lower edge of eye; outer part of spinous dorsal fin and most of soft dorsal and anal fins red; **tips of soft dorsal and anal fins and caudal-fin lobes with a black spot, the leading edges of these fins white.**

**Size:** Maximum total length 31 cm, commonly to 22 cm.

**Habitat, biology, and fisheries:** A species of moderate to relatively deep water (generally more than 30 m). Not common, but of importance as a food fish due to its larger size than most species of *Myripristis*.

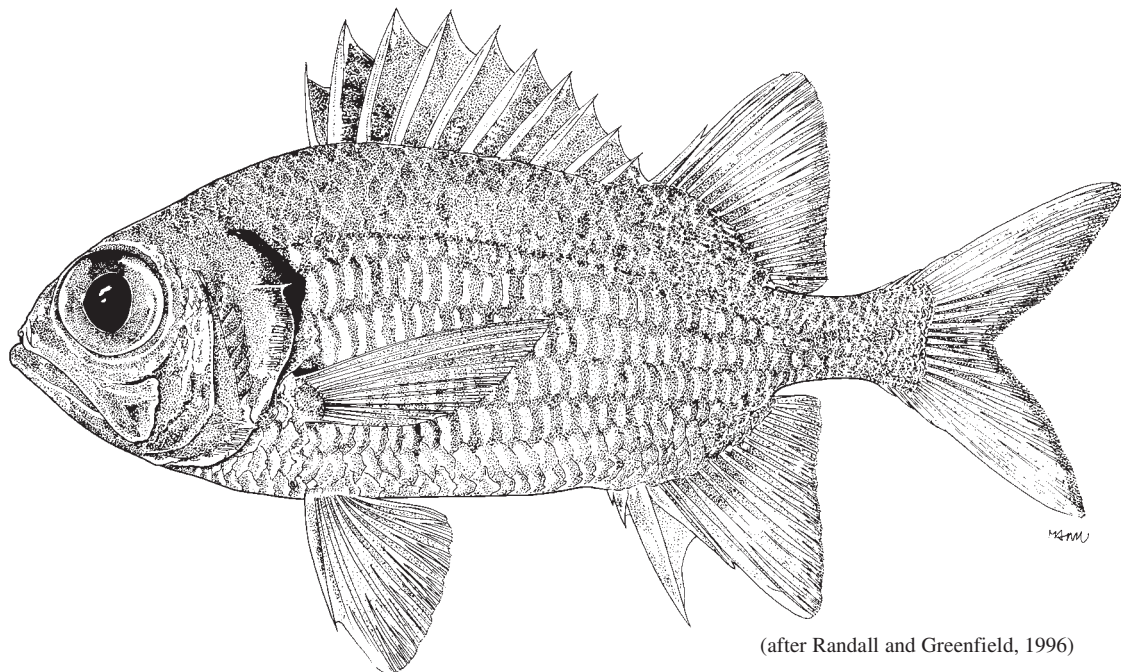
**Distribution:** Coast of East Africa to the western Pacific, east to New Caledonia.



*Myripristis chryseres* Jordan and Evermann, 1903

**Frequent synonyms / misidentifications:** None / None.

**FAO names:** En - Yellowfin soldierfish.



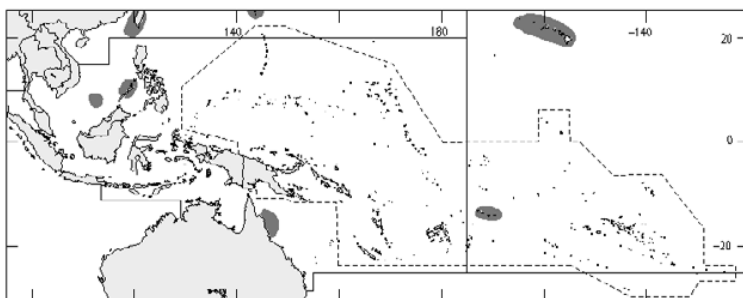
(after Randall and Greenfield, 1996)

**Diagnostic characters:** Body depth 2.3 to 2.6 times in standard length; interorbital narrow, its width 4.55 to 5.2 times in head length. Lower jaw of adults slightly projecting when mouth closed. **A single pair of tooth patches on knob-like front of lower jaw outside mouth, the knob fitting into a distinct notch in upper jaw when mouth closed.** Dorsal fin with XI spines and 14 or 15 (usually 14) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (**third anal-fin spine longer and stronger than fourth**) and 11 to 13 (usually 12) soft rays. **Lateral-line scales 32 to 38 (modally 34). No small scales in pectoral-fin axil. Total gill rakers on first gill arch 33 to 39.** **Colour:** red, the scale centres lighter; opercular membrane black to well below opercular spine; axil of pectoral fins black; **soft dorsal, anal, and caudal fins largely bright yellow.**

**Size:** Maximum total length 26 cm, commonly to 20 cm.

**Habitat, biology, and fisheries:** Generally found at depths greater than 30 m; seeks refuge in caves or crevices by day.

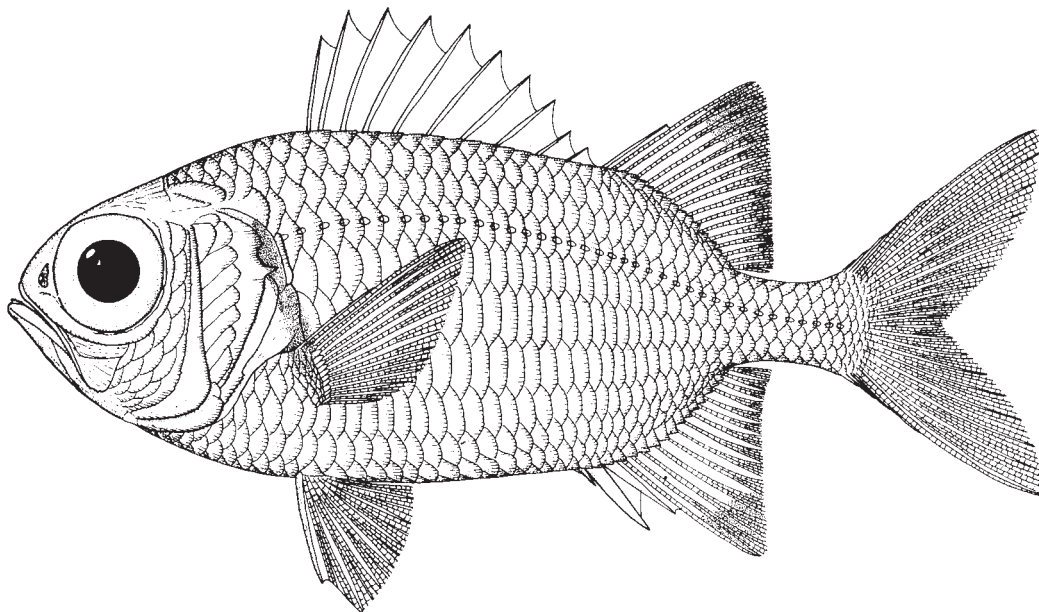
**Distribution:** East Africa to the Samoa Islands and Hawaii, but not reported from many intervening localities. Its occurrence in deeper water is no doubt the reason for the relatively few records.



***Myripristis kuntzei*** Valenciennes, 1831

**Frequent synonyms / misidentifications:** *Myripristis borbonicus* Valenciennes, 1831; *M. multiradiatus* Günther, 1874 / None.

**FAO names:** En - Shoulderbar soldierfish; Fr - Marignan ardoisé; Sp - Candil de lomo manchado.



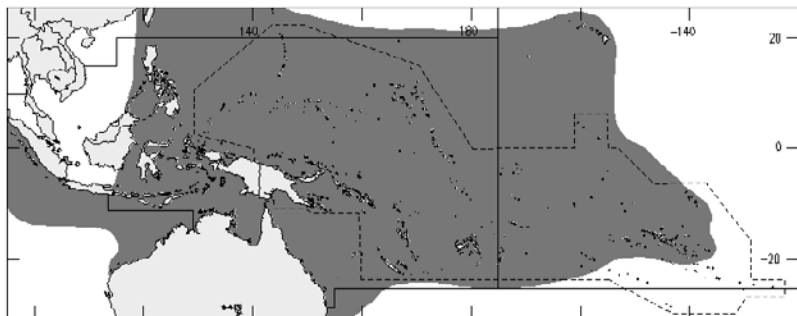
**Diagnostic characters:** Body depth 2.2 to 2.6 times in standard length; interorbital width 3 to 5 times in head length. Lower jaw of adults slightly projecting when mouth closed. **A single pair of tooth patches at front of lower jaw outside mouth. Dorsal fin with XI spines and 15 to 17 (usually 16) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third spine stoutest, but fourth slightly longer) and 14 to 16 (usually 15) soft rays. Lateral-line scales 37 to 44. No small scales in pectoral-fin axil. Total gill rakers on first gill arch 33 to 41. Colour:** light red, the edges of the scales darker than centres; **a continuous reddish brown bar from upper end of gill opening to axil of pectoral fins;** outer part of spinous dorsal fin orange-yellow; red pigment in soft dorsal and anal fins concentrated in a large spot at tip of fins.

**Size:** Maximum total length 20 cm, commonly to 16 cm.

**Habitat, biology, and fisheries:** A coral-reef species generally found in relatively shallow water. Often seen in aggregations in and at the entrance to caves. Although one of the most common of soldierfishes, its small size reduces its value as a food fish.

**Distribution:** A widespread Indo-Pacific species (though absent from the Red Sea and Persian Gulf).

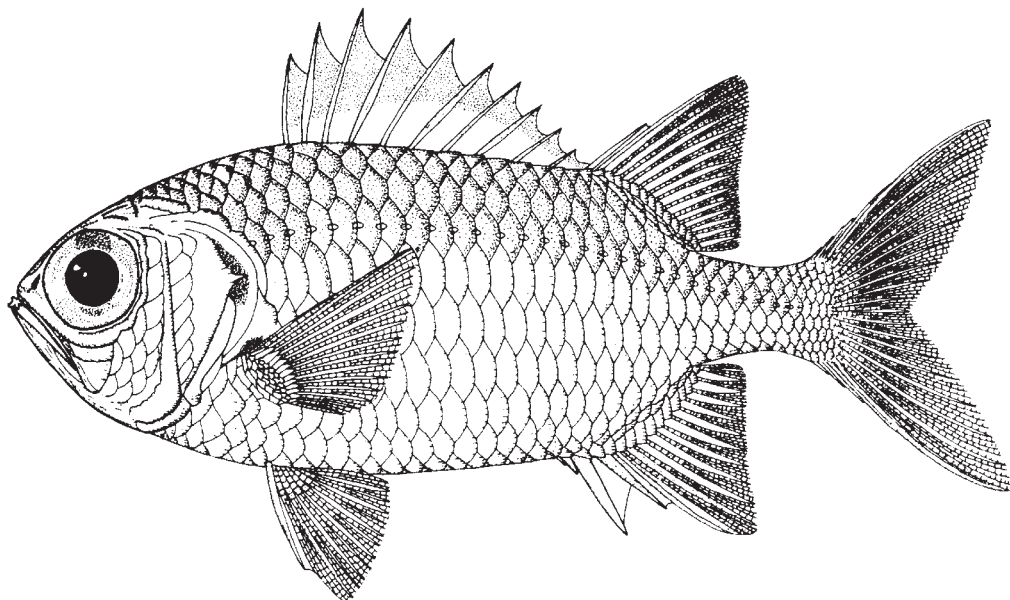
**Remarks:** *Myripristis kuntzei* is similar in counts to another common small species, *M. pralinia* (see abbreviated species account below), but the dark pigment on the opercular membrane of the latter extends only slightly below the opercular spine.



***Myripristis murdjan*** (Forsskål, 1775)

**Frequent synonyms / misidentifications:** *Myripristis parvidens* Cuvier, 1829; *M. axillaris* Valenciennes, 1831 / None.

**FAO names:** En - Pinecone soldierfish; Fr - Marignan pomme de pin; Sp - Candil piñón.

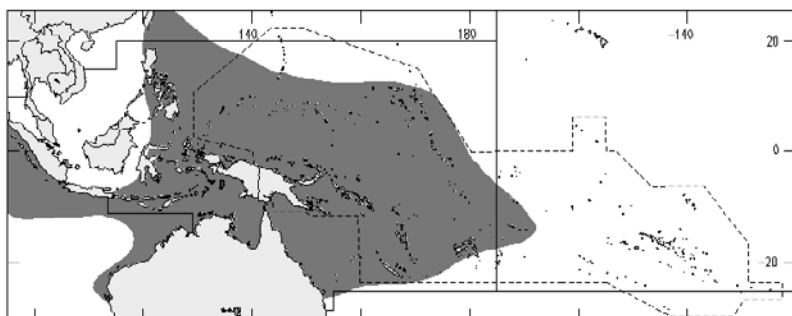


**Diagnostic characters:** Body depth 2.3 to 2.5 times in standard length; interorbital width narrow, 3.65 to 4.4 times in head length. Lower jaw of adults slightly projecting when mouth closed. **A single pair of tooth patches at front of lower jaw outside mouth;** vomerine teeth in a triangular patch with rounded corners. Dorsal fin with XI spines and 13 to 15 (usually 14) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third and fourth spines subequal, the third stoutest) and 11 to 14 (usually 12 or 13) soft rays. **Lateral-line scales usually 28 to 30 (modally 29). Small scales on lower one-fourth to three-fourths of pectoral axil. Total gill rakers on first gill arch 36 to 44.** **Colour:** light red, the edges of scales reddish brown; opercular membrane dark brown to black to about level of middle of eye; axil of pectoral fins dark brown to black; **spinous dorsal fin light red on basal two-thirds, bright red on outer third;** leading edges of soft dorsal, anal, caudal, and pelvic fins white, sometimes with blackish pigment submarginal to the white on soft dorsal and anal fins; a blackish blotch on iris above pupil, and a lesser blotch below.

**Size:** Maximum total length 23 cm, commonly to 18 cm.

**Habitat, biology, and fisheries:** A common coral-reef species, usually found in less than 10 m, but known to depths of at least 50 m. Nocturnal like others of the genus, feeding mainly on larger animals of the zooplankton.

**Distribution:** Red Sea and coast of East Africa to the Marshall and Samoa islands; in the western Pacific from southern Japan to New South Wales.

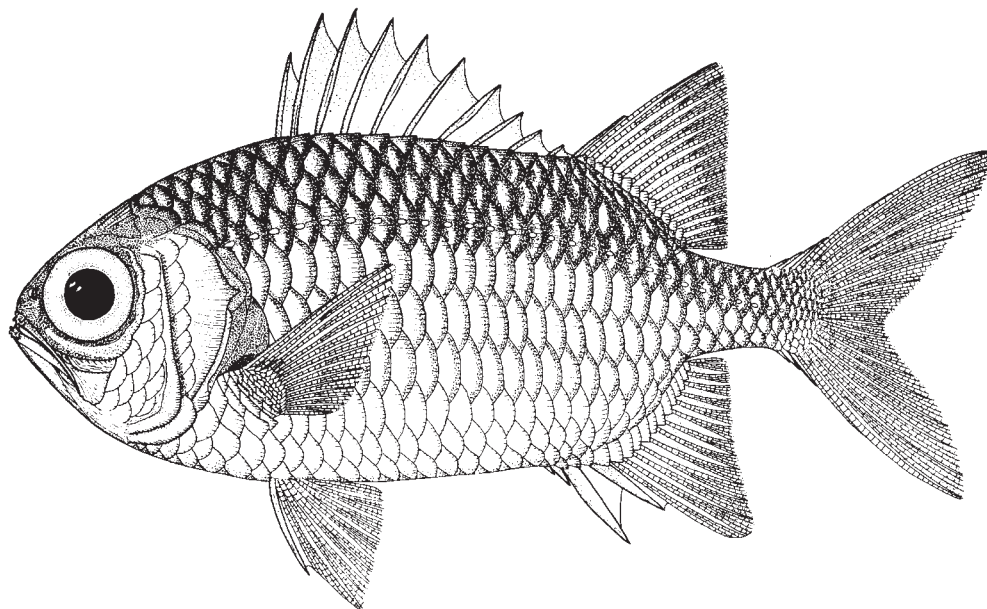




***Myripristis violacea*** Bleeker, 1851

**Frequent synonyms / misidentifications:** *Myripristis microphthalmus* Bleeker, 1852 / None.

**FAO names:** En - Violet soldierfish; Fr - Marignan violacé; Sp - Candil guru-guru.

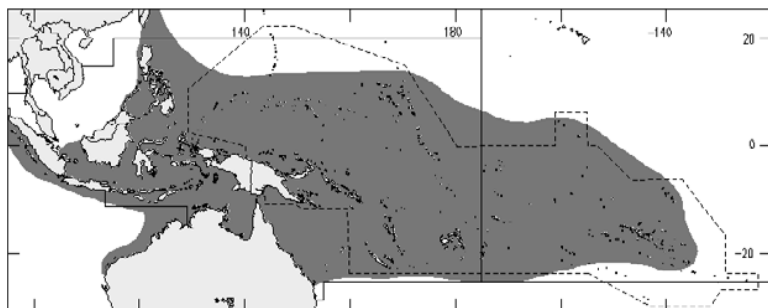


**Diagnostic characters:** Body moderately deep, its depth 2.15 to 2.45 times in standard length; interorbital width 3.6 to 4.1 times in head length. Lower jaw of adults slightly projecting when mouth closed. **A single pair of tooth patches at front of lower jaw outside mouth.** Dorsal fin with XI spines and 13 to 16 (usually 15) soft rays, notched to back between last 2 spines; eleventh spine more than twice length of tenth; anal fin with IV spines (third and fourth spines subequal, the third strongest) and 12 to 14 (usually 13) soft rays. **Lateral-line scales 27 to 29 (modally 28). Small scales usually present on lower half of pectoral-fin axil. Total gill rakers on first gill arch 38 to 48. Colour:** scale centres bluish silver (sometimes pinkish silver), the edges of scales above lateral line dark brown to black (broadest on nape); lateral-line scales rimmed with reddish brown, and scales below lateral line edged with brownish red; opercular membrane dark reddish brown, the darker pigment ending at about level of middle of eye; axil of pectoral fins black; spinous dorsal fin largely bright red; caudal fin and outer part of soft dorsal and anal fins bright red; leading edges of caudal-fin lobes, soft dorsal, anal, and pelvic fins white (narrow on median fins).

**Size:** Maximum total length 23 cm, commonly to 18 cm.

**Habitat, biology, and fisheries:** A common coral-reef species generally found in shallow protected waters such as lagoons.

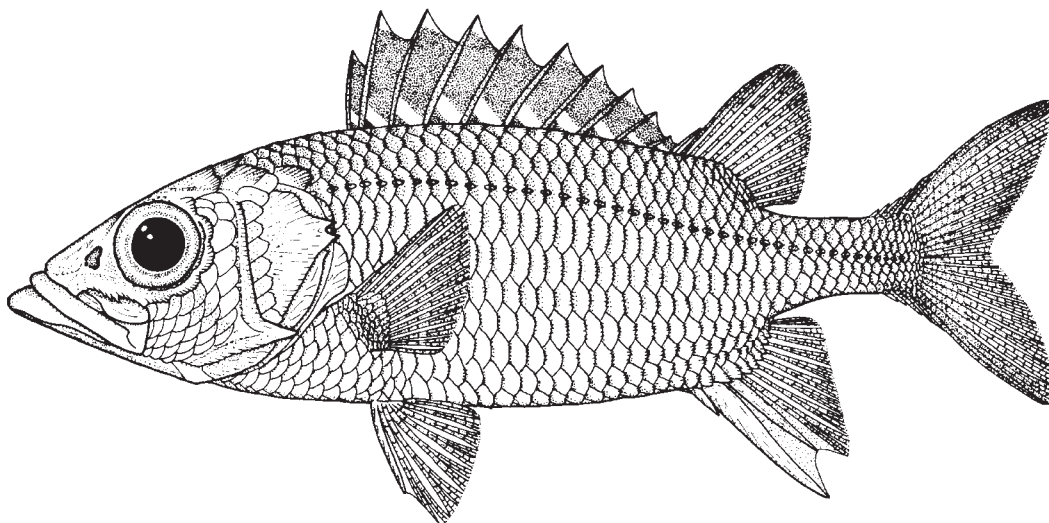
**Distribution:** Indo-Pacific (except the Red Sea, Persian Gulf, Hawaii, and Pitcairn Group); in the western Pacific from the Ryukyu Islands to the Great Barrier Reef (Australia).



***Neoniphon opercularis*** (Valenciennes, 1831)

**Frequent synonyms / misidentifications:** *Flammeo opercularis* (Valenciennes, 1831); *Holocentrus opercularis* Smith and Smith, 1963; *Kutaflammeo opercularis* Carcasson, 1977 / None.

**FAO names:** En - Blackfin squirrelfish; Fr - Marignan aile noire; Sp - Candil de aleta negra.



**Diagnostic characters:** Body moderately elongate, its depth 3.1 to 3.3 times in standard length. Dorsal profile of head slightly convex; snout pointed; **lower jaw strongly projecting when mouth closed**; preopercular spine short, less than 1/2 eye diameter. Nasal fossa large, without spinules. **Dorsal fin with XI spines, the last longer than the penultimate and close to first soft ray, the soft rays 13**; anal fin with IV spines and 9 soft rays; pectoral-fin rays 13 or 14 (usually 14). **Lateral-line scales 38 to 40**; scales above lateral line to middle of spinous portion of dorsal fin 2 ½. **Colour:** silvery pink (scale centres light red, the edges broadly silver); snout and top of head light red; **spinous dorsal fin black, the membranes tipped with white, with a diagonal white spot near base of each membrane**; lobes of caudal fin broadly light red, the rest of fin yellowish; soft dorsal and anal fins yellow, tinged with pink; pectoral fins light red; pelvic fins pinkish white.

**Size:** Maximum total length about 32 cm, commonly to 23 cm.

**Habitat, biology, and fisheries:** A reef species which may be found in shallow to moderate depths. The largest member of the genus *Neoniphon*. Taken by hook-and-line and in traps. Marketed fresh.

**Distribution:** Occurs throughout the Indo-Pacific region (except the Red Sea and Hawaii); in the western Pacific from the Ryukyu Islands to the Great Barrier Reef.

