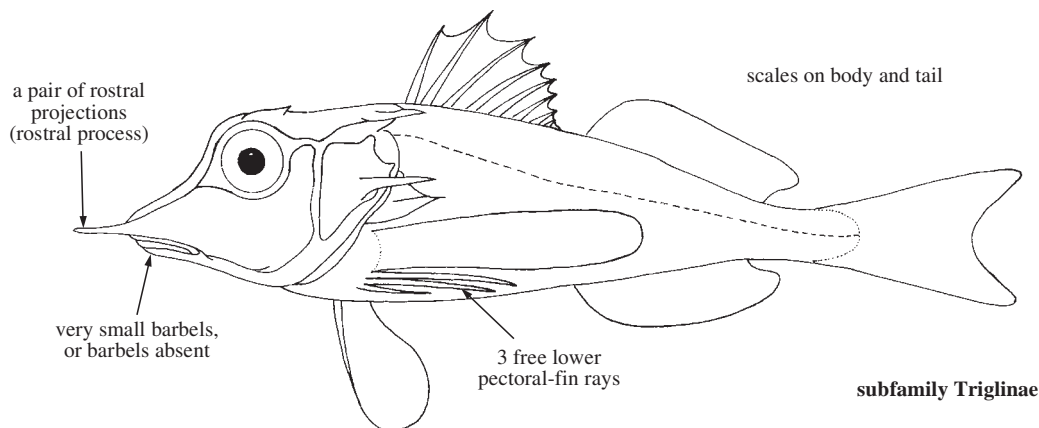


TRIGLIDAE

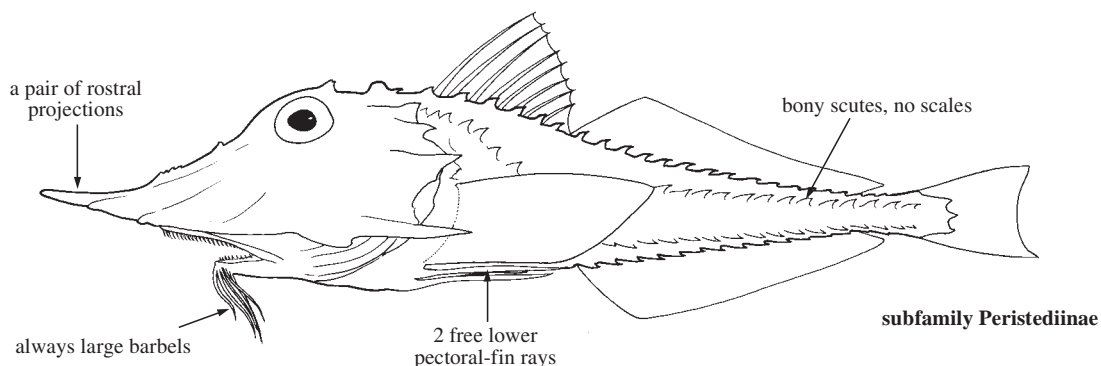
Gurnards, sea robins (also, armoured gurnards, armoured sea robins)

by W.J. Richards

Diagnostic characters (subfamily Triglinae): Body elongate. **Head large, bony, with a pair of rostral projections (rostral process), with spines but no scales or skin covering musculature on head. Very small barbels present on lower jaw in a few species.** Teeth present on upper and lower jaws. Two separate dorsal fins, first spinous; with either bony plates at spinous base or plates and spines along bases of both dorsal fins; single anal fin; **pectoral fins large, with 3 free lower rays**; pelvic fins with I spine and 5 soft rays. **Trunk and tail covered with scales of varying size; lateral line distinct, composed of tube-like scales to enlarged bony scales.** **Colour:** brownish, but often red or reddish when caught; body often with dark spots, blotches or saddles; first dorsal fin often with black or red blotch; pectoral fins dark but often with bright blue spots on black background and often with greenish or bluish margins.



Diagnostic characters (subfamily Peristediinae): Body elongate. **Head large, bony, with rostral projections, with spines but no scales or skin covering musculature on head. Large barbels on lower jaw.** Teeth present or absent on both jaws. Two separate dorsal fins, first spinous; single anal fin; **pectoral fins with 2 free lower rays**; pelvic fins with I spine and 5 soft rays. **Trunk and tail completely covered with large bony scutes.** **Colour:** red or reddish; some with dark spots or markings on body; pectoral fins generally dark without bright colours.



Habitat, biology, and fisheries: Members of the subfamily Triglinae are benthic species with several of commercial importance inhabiting continental shelves and insular areas from shallow water to 500 m. The Peristediinae comprise deep benthic species of limited commercial value inhabiting warm tropical seas of all oceans along continental shelf edge and slope and insular areas from 200 to 500 m.

Remarks: A recent study (Inamura, 1996) provides strong evidence that the Triglidae and Peristediidae should be recognized as separate families based principally on pelvic bone differences.

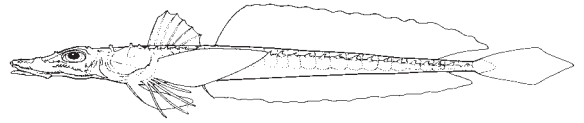
Similar families occurring in the area

Dactylopteridae: also with large bony head, but lack rostral projections and have no barbels; bony scutes always absent; pectoral fins much enlarged and brightly coloured, lacking free lower soft rays.

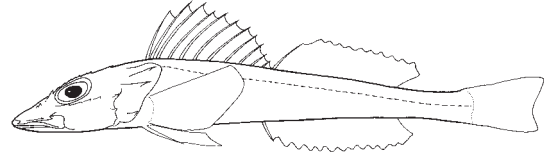
Hoplichthyidae: also have (3 or 4) free lower pectoral-fin rays, but are distinguished by having the large bony head extremely depressed, lacking rostral projections, and scales or bony scutes absent.

Bembridae: head also bony, but depressed; no free lower pectoral-fin rays.

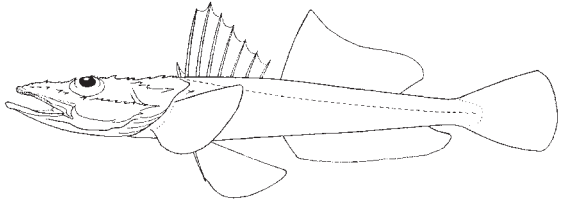
Platycephalidae: head also bony, but depressed; no free lower pectoral-fin rays.



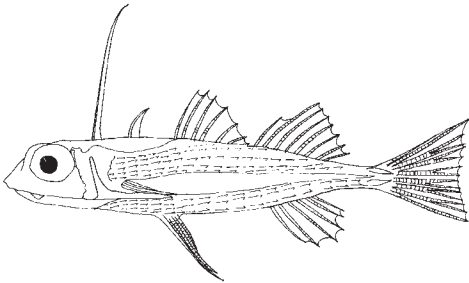
Hoplichthyidae



Bembridae



Platycephalidae



Dactylopteridae

Key to the genera of Triglidae occurring in the area

Note: the genus *Pterygotrigla* includes many species, several of which are undescribed. It is provisionally divided into subgenera which can be separated as follows:

1. Subgenus *Pterygotrigla* - nasal spine absent, opercular spine long, nuchal spine long, antrorse rostral spine absent, cleithral spine long and strong. Includes *P. andertonii* and *P. pauli*.
2. Subgenus *Otohime* - opercular spine long and slender, extending behind cleithrum, nasal spine absent, antrorse rostral spine absent, cleithral spine small if present (often absent). Includes *P. hemisticta* and *P. tagala*.
3. Subgenus *Bovitrigla* - nasal spine absent, opercular spine short, cleithral spine long and strong, rostral spine long, antrorse rostral spine absent. Includes *P. acanthomlopaté*.
4. Subgenus *Parapterygotrigla* - nasal spine present or absent, nuchal and cleithral spines long and strong, opercular spine small, rostral spines long in young and strong in large adults, antrorse rostral spine present in a single species (*P. multiocellata*). This subgenus may be divided into additional subgenera or species groups. Provisionally includes *P. hoplites*, *P. macrorhynchus*, *P. megalops*, *P. multiocellata*, and *P. ryukyuensis*.

1a. Pectoral fins with 3 free lower soft rays; body and tail covered with scales; no large barbels on lower jaw (Fig.1) (subfamily **Triglinae**) → 2

1b. Pectoral fins with 2 free lower soft rays; body and tail covered with large bony scutes; large barbels present on lower jaw (Fig. 2) (subfamily **Peristediinae**) → 5

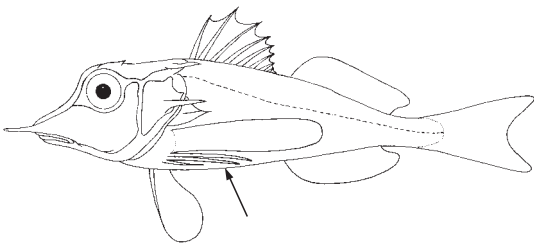


Fig. 1 Triglinae

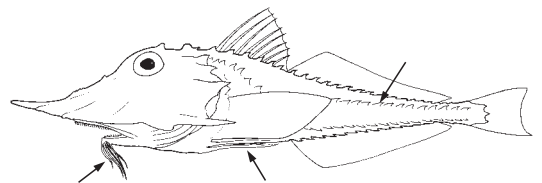


Fig. 2 Peristediinae

- 2a. Bony plates with sharp spines posteriorly along entire length of both dorsal fins (Fig. 3a) → 3
- 2b. Bony plates only along base of first dorsal fin (Fig. 3b) → 4

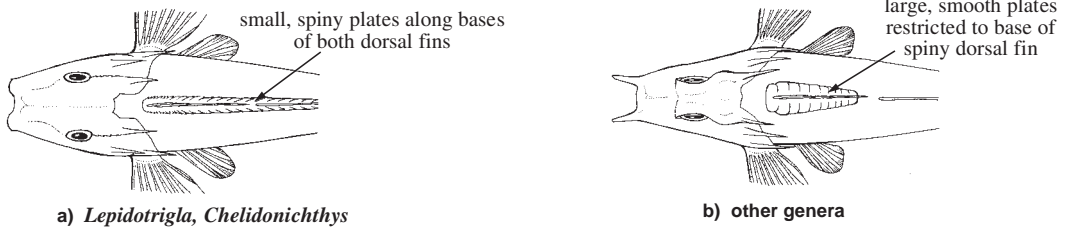


Fig. 3 head and anterior part of body (dorsal view)

- 3a. Trunk and tail scales large, usually less than 60 rows along lateral line; head usually with a deep occipital groove (Fig. 4a) *Lepidotrigla*
- 3b. Trunk and tail scales small, usually more than 60 rows along lateral line; head lacking deep occipital groove (Fig. 4b) *Chelidonichthys*

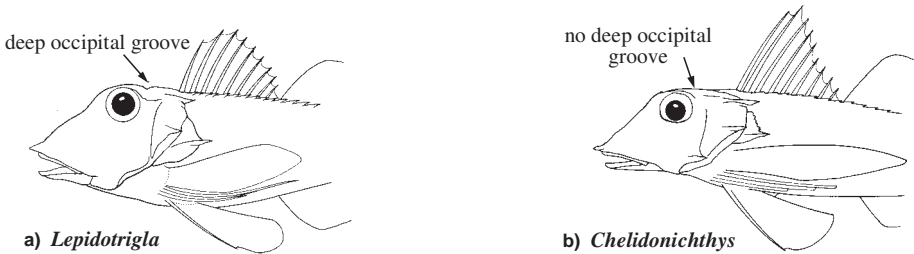


Fig. 4 head and anterior part of body (lateral view)

- 4a. Scales small, more than 60 rows along lateral line *Pterygotrigla*
(see note at beginning of identification key)
- 4b. Scales large, less than 60 rows along lateral line *Uradia*
- 5a. Upper jaw with villiform teeth → 6
- 5b. Upper jaw lacking teeth → 8
- 6a. Second dorsal fin with 14 soft rays *Gargariscus*
- 6b. Second dorsal fin with 20 or more soft rays → 7
- 7a. Rostral process short and triangular *Heminodus*
- 7b. Rostral process long and spatulate *Paraheminodus*
- 8a. Preopercular spine long well visible in dorsal view *Satyrichthys*
- 8b. Preopercular spine small, not visible in dorsal view *Peristedion*

List of species occurring in the area

The symbol is given when species accounts are included.

Subfamily TRIGLINAE

- Chelidonichthys kumu* (Cuvier, 1829)
- Chelidonichthys spinosus* (McClelland, 1844)
- Lepidotrigla abyssalis* Jordan and Starks, 1904
- Lepidotrigla alata* (Houttuyn, 1782)
- Lepidotrigla annamarae* Del Cerro and Lloris, 1997
- Lepidotrigla argyrosoma* Fowler, 1938
- Lepidotrigla deasoni* Herre and Kauffman, 1952

- Lepidotrigla eydouxi* Sauvage, 1878
Lepidotrigla japonica (Bleeker, 1857)
Lepidotrigla jimjoebob Richards, 1992
Lepidotrigla kanagashira Kamohara, 1936
Lepidotrigla lepidojugulata Li, 1981
Lepidotrigla longimana Li, 1981
Lepidotrigla macrobrachia Fowler, 1938
Lepidotrigla marisinensis Fowler, 1938
Lepidotrigla musorstom Del Cerro and Lloris, 1997
Lepidotrigla nana Del Cerro and Lloris, 1997
Lepidotrigla oglina Fowler, 1938
Lepidotrigla pectoralis Fowler, 1938
Lepidotrigla punctipectoralis Fowler, 1938
Lepidotrigla sereti Del Cerro and Lloris, 1997
 ↗ *Lepidotrigla spiloptera* Günther, 1880
Lepidotrigla venusta Fowler, 1938
Lepidotrigla spp. (possibly 20 undescribed forms and in need of revision)
- ↗ *Pterygotrigla acanthomoplate* (Fowler, 1938)
 ↗ *Pterygotrigla andertoni* Waite, 1910
 ↗ *Pterygotrigla hemisticta* (Temminck and Schlegel, 1843)
 ↗ *Pterygotrigla hoplites* (Fowler, 1938)
 ↗ *Pterygotrigla leptacanthus* (Günther, 1880)
 ↗ *Pterygotrigla macrorhynchus* (Kamohara, 1936)
 ↗ *Pterygotrigla megalops* (Fowler, 1938)
 ↗ *Pterygotrigla multiocellata* (Matsubara, 1937)
Pterygotrigla pauli Hardy, 1982
Pterygotrigla robertsi Del Cerro and Lloris, 1997
 ↗ *Pterygotrigla ryukyuensis* Matsubara and Hiyama, 1932
 ↗ *Pterygotrigla tagala* (Herre and Kauffman, 1952)
Pterygotrigla n. sp. (close to *Pterygotrigla tagala*)
Pterygotrigla n. sp. (close to *Pterygotrigla hemisticta*)
Pterygotrigla n. sp. (about 2 undescribed species)
Pterygotrigla n. sp. (several undescribed species)
- ↗ *Uradia macrolepidota* Kamohara, 1938

Subfamily PERISTEDEDIINAE

- ↗ *Gargariscus prionocephalus* (Dumeril, 1868)
Heminodus japonicus Kamohara, 1952
 ↗ *Heminodus philippinus* Smith, 1917
 ↗ *Paraheminodus murrayi* (Günther, 1880)
Peristedion amblygenys Fowler, 1938
Peristedion halyi (Alcock, 1899)
Persitedion investigatoris (Alcock, 1898)
 ↗ *Peristedion liorhynchus* Günther, 1871
Peristedion moluccense Bleeker, 1850
Peristedion nierstraszi Weber, 1913
Peristedion orientale Temminck and Schlegel, 1843
Peristedion riversandersoni (Alcock, 1899)
- Satyrichthys adeni* (Lloyd, 1907)
Satyrichthys amiscus (Jordan and Starks, 1904)
Satyrichthys clavilapis Fowler, 1938
Satyrichthys engyceros (Günther, 1871)
Satyrichthys hians (Gilbert and Cramer, 1897)
Satyrichthys isokawae Yatou and Okamura, 1985
Satyrichthys magnus Yatou, 1985
Satyrichthys orientale (Fowler, 1938)
Satyrichthys piercei Fowler, 1938

- Satyrichthys quadratorostratus* (Fourmanoir and Rivaton, 1979)
 ➡ *Satyrichthys rieffeli* (Kaup, 1859)
Satyrichthys serrulatus (Alcock, 1898)
Satyrichthys welchi (Herre, 1925)

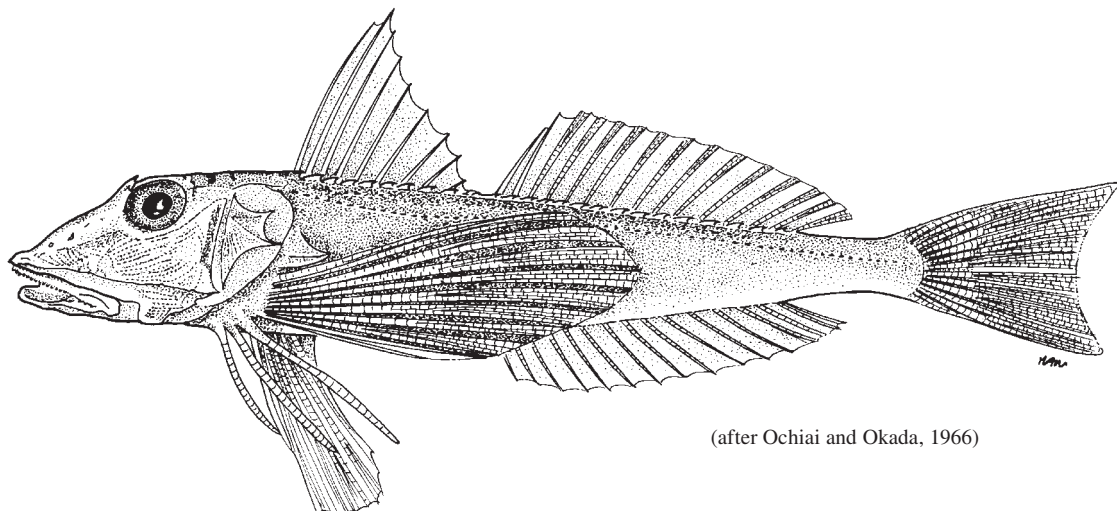
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Chelidonichthys kumu (Cuvier, 1829)

Frequent synonyms / misidentifications: *Trigla kumu* Lesson, 1830 / *Chelidonichthys spinosus* (McClelland, 1844).

FAO names: En - Bluefin gurnard; Fr - Grondin aile bleue; Sp - Testolín de aleta azul.



(after Ochiai and Okada, 1966)

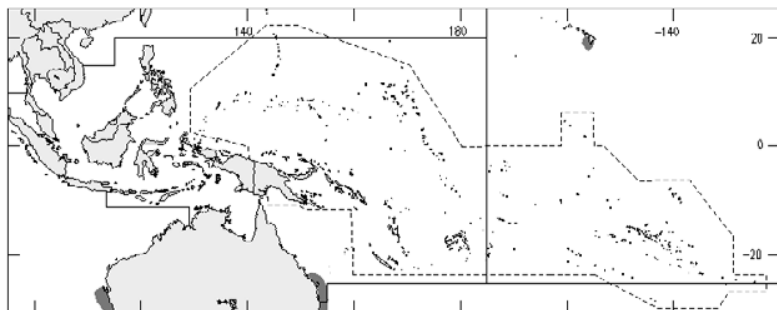
Diagnostic characters: Head large, triangular, with many ridges and spines, but without a fissure (occipital groove) on top of head. Eye diameter greater than interorbital width. First gill arch with 8 or 9 gill rakers. Soft dorsal- and anal-fin rays 14 to 17; bases of first and second dorsal fins with small plates bearing strong spines (often called bucklers and resulting from outgrowths of the pterygiophores). Body scales small, 70 to 80 along lateral line; breast scaleless. **Colour:** olive or brownish, becoming red when stressed; **lower half of inner part of pectoral fins with large black blotch surrounded by numerous pale spots (bluish in life, white or pale in preserved specimens).**

Size: Maximum standard length 40 cm.

Habitat, biology, and fisheries: A tropical and subtropical species. Found from estuaries to the edge of continental shelves generally over sandy bottoms. Separate statistics are generally not reported for this species except for Australia and New Zealand. Taken mainly by trawls off southern Africa, Australia, and New Zealand. Reported to be an excellent food fish. Dorsal-fin spines reported to be venomous.

Distribution: Known from South Africa and southern Mozambique, southern Australia, and New Zealand. One record from Hawaii and unconfirmed records from Chile. Because of Hawaiian record the Chilean record could be authentic.

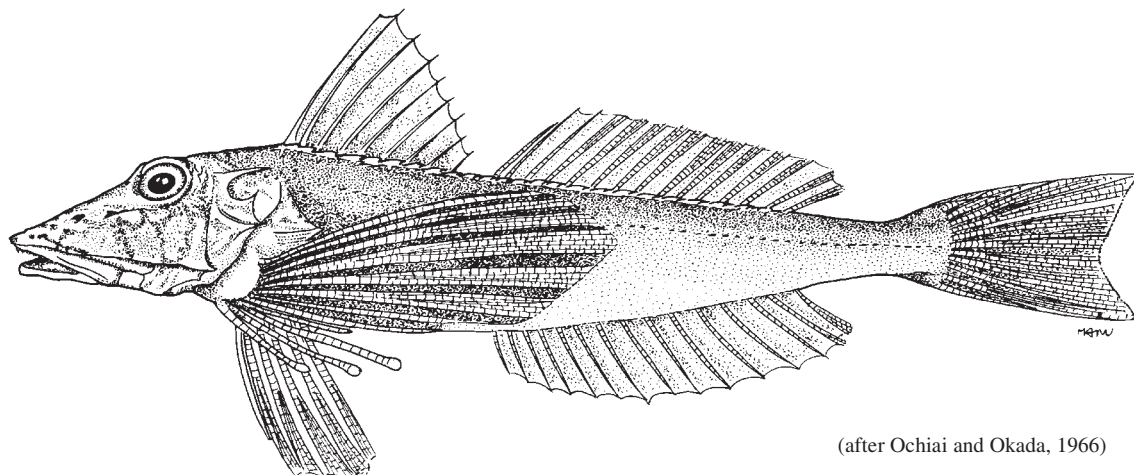
Remarks: A thorough study of the taxonomy of this species is called for throughout its range together with *Chelidonichthys spinosus* to resolve identification questions.



Chelidonichthys spinosus (McClelland, 1844)

Frequent synonyms / misidentifications: *Trigla spinosa* McClelland, 1844 / *Chelidonichthys kumu* (Lesson, 1830).

FAO names: En - Red gurnard.



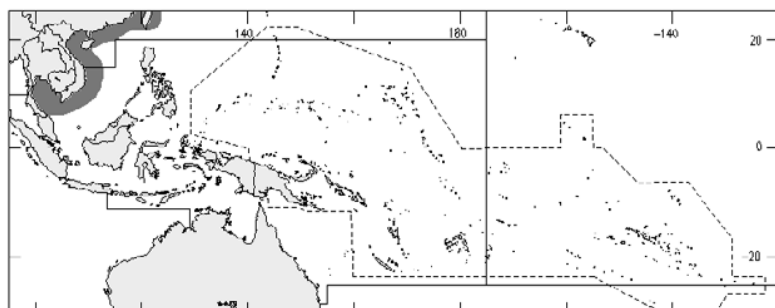
(after Ochiai and Okada, 1966)

Diagnostic characters: Head large, triangular, with many ridges and spines, but without a fissure (occipital groove) on top of head. Eye diameter greater than interorbital width. First gill arch with 8 or 9 gill rakers. Soft dorsal- and anal-fin rays 15 to 17; bases of first and second dorsal fins with small plates bearing strong spines (often called bucklers and resulting from outgrowths of the pterygiophores). Body scales small, 70 to 80 along lateral line; breast scaleless. **Colour:** olive or brownish, becoming red when stressed; **lower half of inner part of pectoral fins with scattered numerous pale spots (bluish in life, white or pale in preserved specimens); black blotch appears occasionally on lower inner part of pectoral fins.**

Habitat, biology, and fisheries: A tropical to warm-temperate species. Taken mainly in trawls throughout its range. Excellent food fish.

Distribution: Found in the China Sea, Yellow Sea, and Japan (principally west of Kyushu).

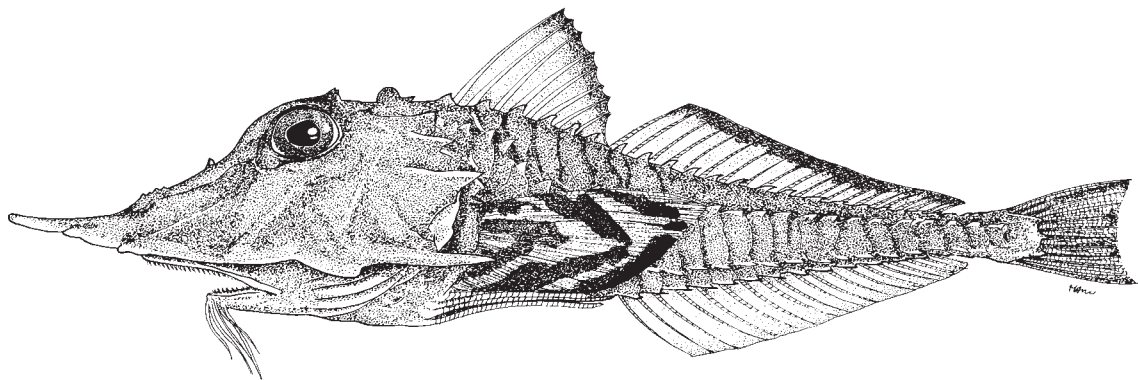
Remarks: A thorough study of the taxonomy of this species is needed throughout its range together with *Chelidonichthys kumu* to resolve identification questions.



***Gargariscus prionocephalus* Dumeril, 1868**

Frequent synonyms / misidentifications: *Peristedion undulatus* Weber, 1913; *Gargariscus semidentatus* Smith, 1917 / None.

FAO names: En - Jaggedhead armoured gurnard.

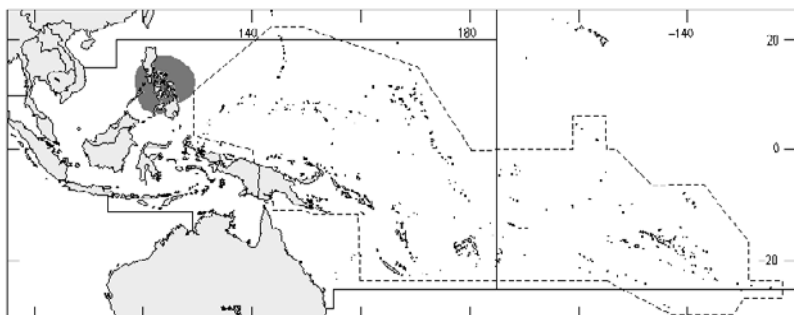


Diagnostic characters: Head large, expanded, and flattened with crenulations. Rostral process very broad and short. Preopercular spine sharp and strong. Filamentous barbel short, extending below eye. **Teeth on both jaws.** **Colour:** orange reddish in life with black bands in pectoral fins and black edge on dorsal fins.

Size: Maximum standard length 25 cm.

Habitat, biology, and fisheries: A deep-water species. No present fishery, but taken incidentally throughout its range. Bony scutes reduce commercial value.

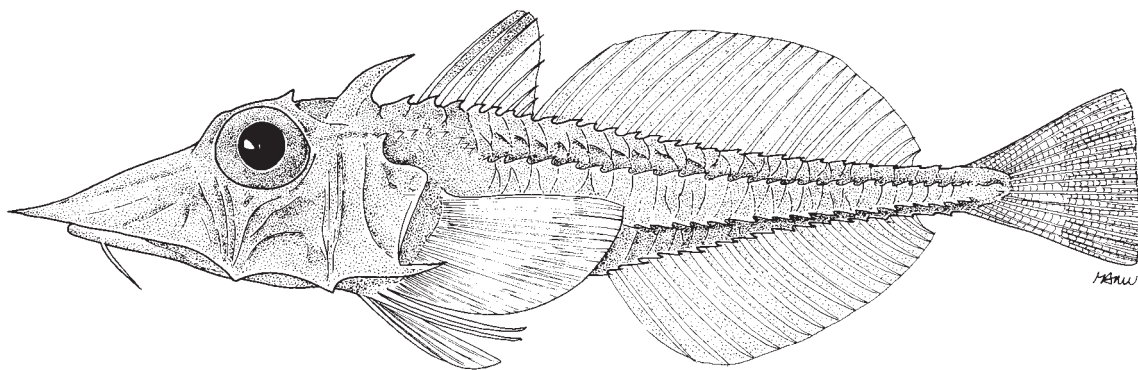
Distribution: Only known from the Philippines.



Heminodus philippinus Smith, 1917

Frequent synonyms / misidentifications: None / Other species of the subfamily Peristediinae.

FAO names: En - Philippine armoured gurnard.

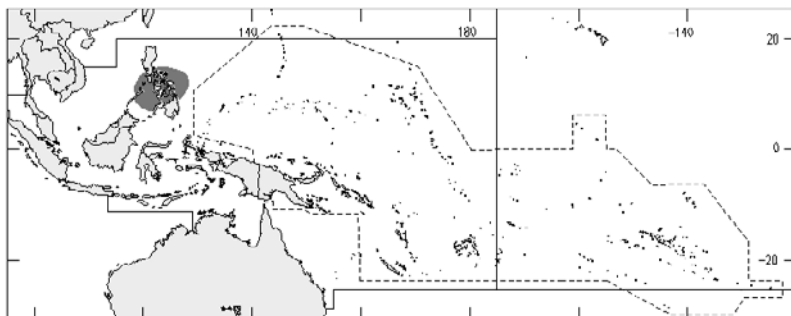


Diagnostic characters: Head large. Rostral process short. Filamentous barbel short. Teeth present on both jaws. **Colour:** preserved specimens pale, reddish in life.

Size: Maximum standard length 15 cm.

Habitat, biology, and fisheries: A deep-water species. No present fishery, but taken incidentally throughout its range. Bony scutes reduce commercial value.

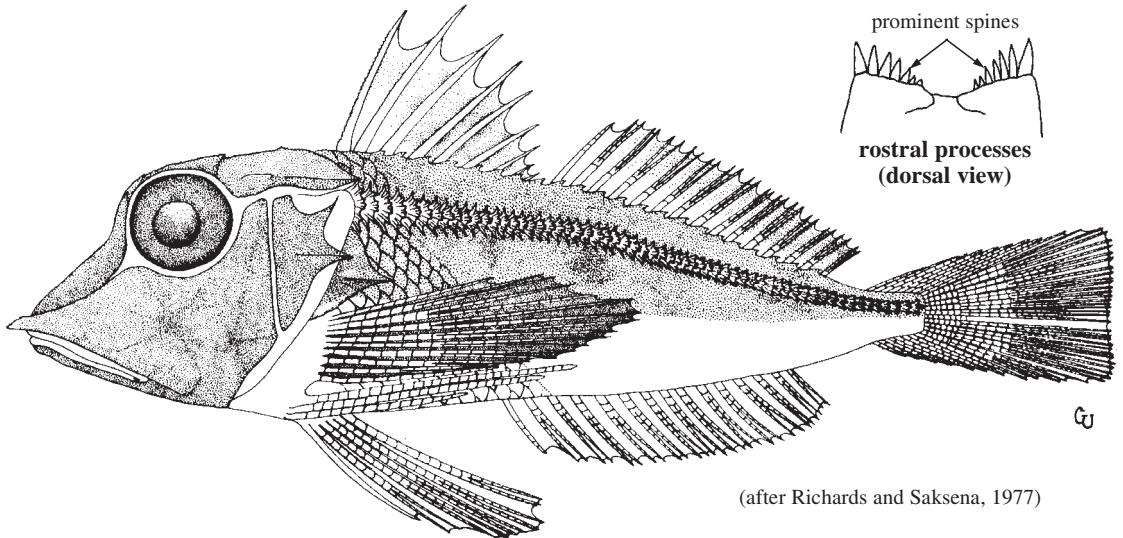
Distribution: Only known from the Philippines.



Lepidotrigla spiloptera (Günther, 1880)

Frequent synonyms / misidentifications: None / *Chelidonichthys kumu* (Lesson, 1830).

FAO names: En - Spotwing gurnard; Fr - Grondin aile tacheté; Sp - Cabete aleta manchada.



Diagnostic characters: Head large, triangular, with many ridges and spines, and a fissure on top of head, behind eyes (occipital groove). **Rostral process with several prominent spines.** Bases of first and second dorsal fins with many small plates bearing strong lateral spines. Large lateral-line scales, fewer than 70 rows; scale rows below lateral line 19 to 21; breast lacking scales; body scale attachment weak.

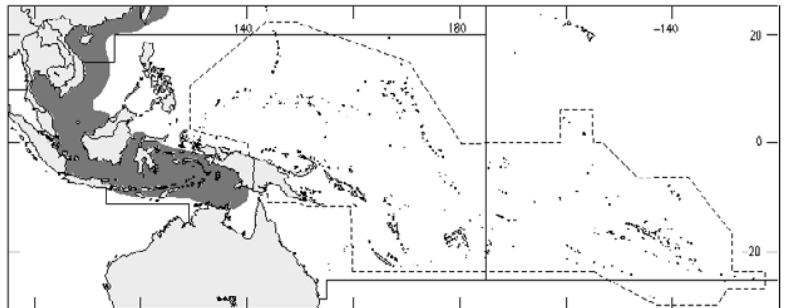
Colour: mostly red with definite silvery white breast, belly, and lower flank.

Size: Maximum standard length less than 11 cm.

Habitat, biology, and fisheries: A tropical to warm-temperate species. Taken mainly in trawls throughout its range. Excellent food fish.

Distribution: Found in the China Sea, Yellow Sea, and Japan (principally west of Kyushu). Also found off East Africa and northern Australia.

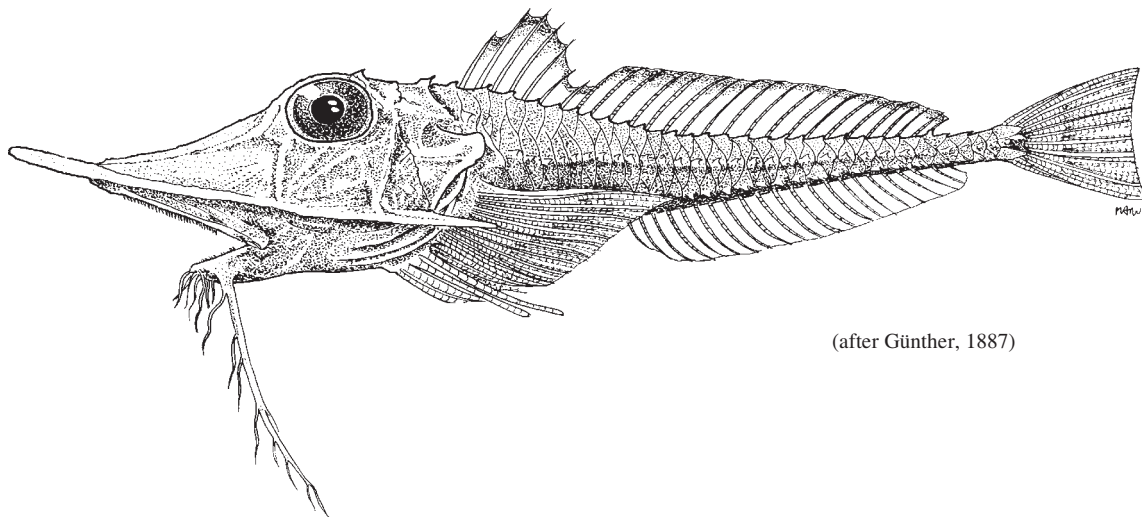
Remarks: As with *Chelidonichthys kumu* and *C. spinosus*, a thorough taxonomic study is needed throughout the range of *Lepidotrigla spiloptera*.



Paraheminodus murrayi (Günther, 1880)

Frequent synonyms / misidentifications: *Satyrichthys murrayi* (Günther, 1880) / *Satyrichthys* spp.

FAO names: En - Murray's armoured gurnard.



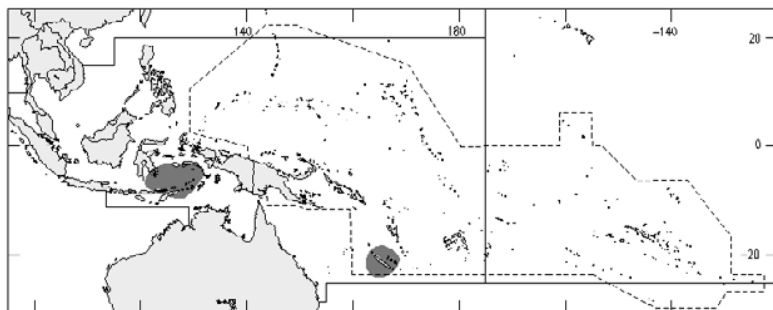
(after Günther, 1887)

Diagnostic characters: Head large, broadly expanded laterally. Rostral process long and flattened. Preopercular spine long. Filamentous barbel long, extending to first dorsal-fin origin. Teeth on both jaws. Dorsal-fin spines VII; second dorsal-fin rays 20 to 22; anal-fin rays 20 to 22; pectoral-fin rays 14 or 15. **Colour:** reddish in life, preserved specimens pale; edge of dorsal fins black.

Size: Maximum standard length 10 cm.

Habitat, biology, and fisheries: A deep-water species. No present fishery, but taken incidentally throughout its range. Bony scutes reduce commercial value.

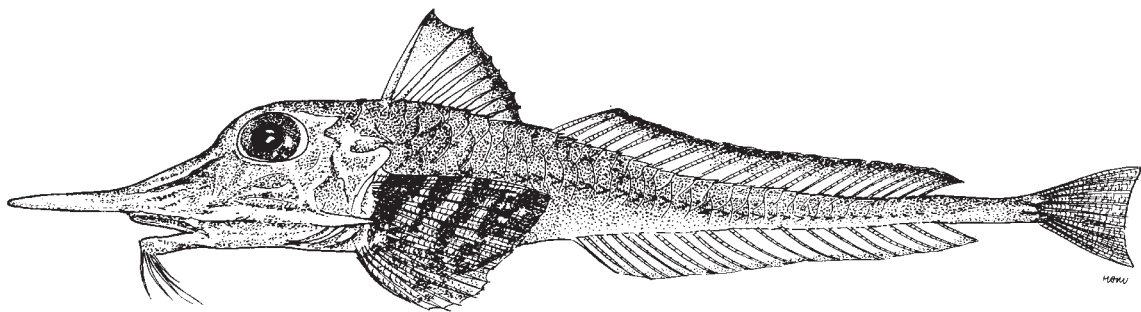
Distribution: Japan, Banda Sea, New Caledonia, and off Horn of Africa.



Peristedion liorhynchus Günther, 1871

Frequent synonyms / misidentifications: None / Other species of the subfamily Peristediinae.

FAO names: En - Smoothnose armoured gurnard.



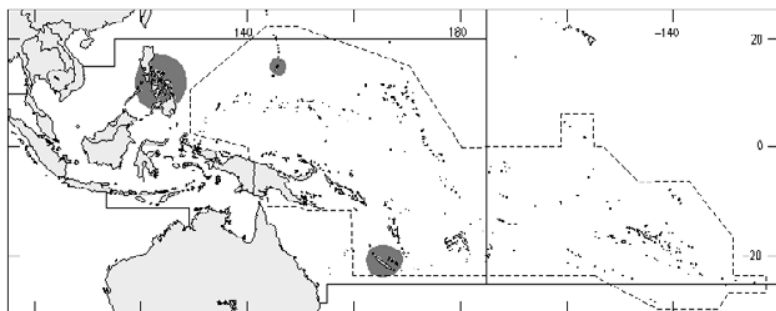
(after Okamura, 1985)

Diagnostic characters: Head large. Filamentous barbel moderately long, 12% of standard length. Dorsal-fin spines VIII; second dorsal-fin rays 21; anal-fin rays 20; attached pectoral-fin rays 11. **Colour:** mostly brownish red with **dark margin on dorsal fins and banded pectoral fins.**

Size: Maximum standard length 30 cm.

Habitat, biology, and fisheries: A deep-water species. No present fishery, but taken incidentally throughout its range. Bony scutes reduce commercial value.

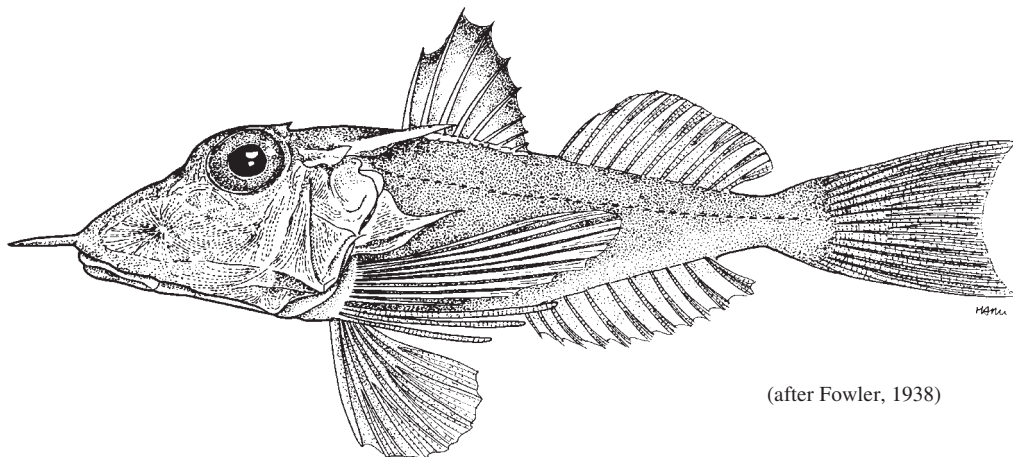
Distribution: Western Pacific and Indian Oceans.



Pterygotrigla acanthomoplate (Fowler, 1938)

Frequent synonyms / misidentifications: *Bovitrigla acanthomoplate* (Fowler, 1938) / None.

FAO names: En - Bullheaded gurnard.



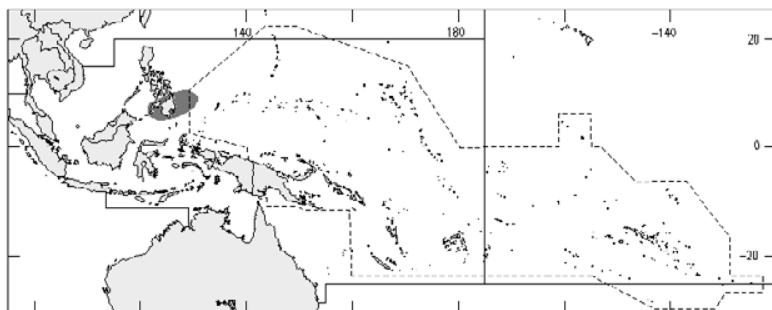
(after Fowler, 1938)

Diagnostic characters: Head large, triangular. **Nasal spine present**, opercular spine short, nuchal spine long, rostral spines moderately long, antrorse rostral spine absent, and cleithral spine long. Base of first dorsal fin with about 10 flat plates, **first plate extends in advance of first dorsal-fin spine**. Lateral-line scales small, about 50 rows. **Colour:** preserved specimens uniformly tan with no black spots on dorsum.

Size: Maximum standard length 12 cm.

Habitat, biology, and fisheries: A rare deep-water species. Incidentally caught by deep trawling or hook-and-line.

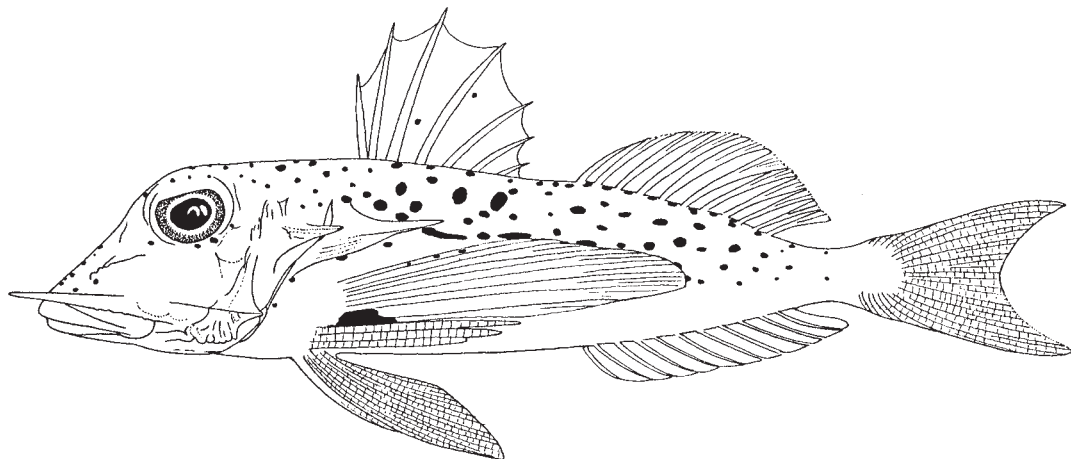
Distribution: Only known from northern Mindanao in the Philippines.



Pterygotrigla andertoni Waite, 1910

Frequent synonyms / misidentifications: None / *Pterygotrigla picta* (Günther, 1880).

FAO names: En - Spotted gurnard.



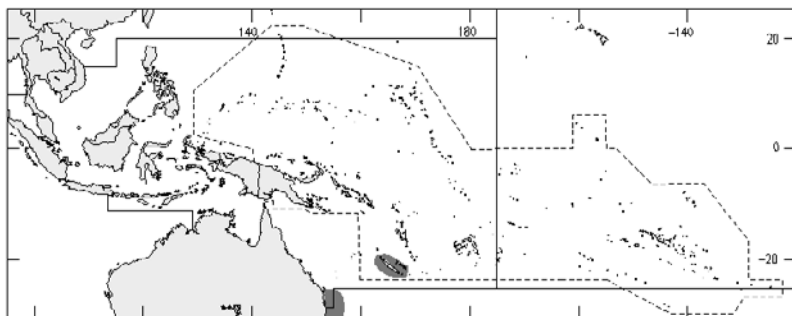
Diagnostic characters: Head large, triangular. No spines around orbit; nasal spine absent, opercular spine long, nuchal spine long, rostral spines strong but short, no antrorse rostral spine, cleithral spine long. Base of first dorsal fin with 10 flat plates, first plate extends in advance of first dorsal-fin spine. Lateral-line scales small, more than 70 rows. **Colour:** mostly red with prominent black spots; **head and dorsum covered with prominent black spots.**

Size: Maximum standard length 38 cm.

Habitat, biology, and fisheries: A tropical to warm-temperate species in generally deep water of 200 to 500 m, but shallower in New Zealand (90 m). Taken mainly in trawls off New Zealand and Australia. Excellent food fish but catches are rare.

Distribution: Occurs around both North Island and South Island of New Zealand, southeastern Australia, and north to New Caledonia (New Caledonia record from Del Cerro and Lloris, 1997, specimens not seen).

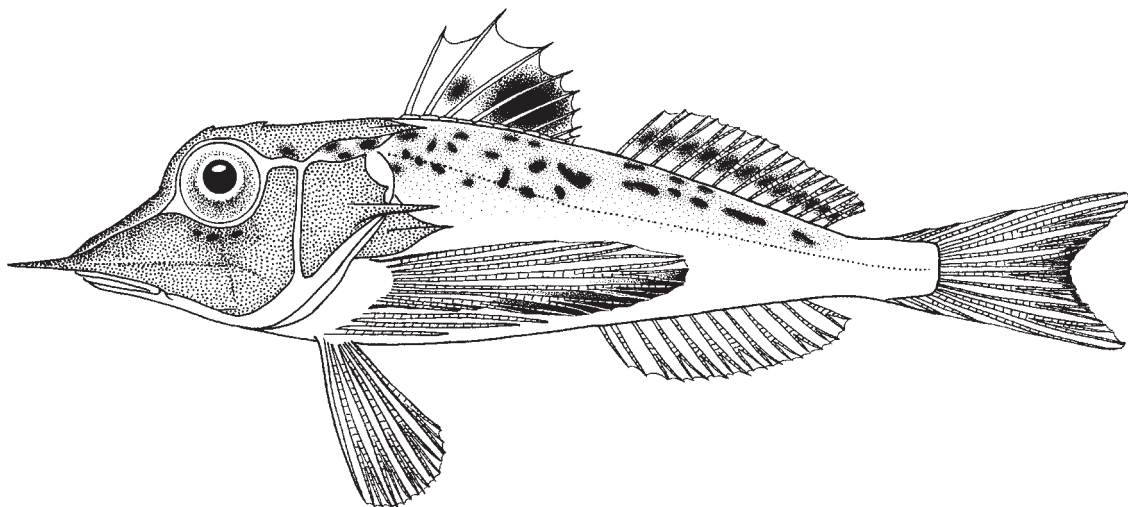
Remarks: The closely related *Pterygotrigla picta* occurs around islands and guyots off the coast of Chile and was considered to be the senior synonym of *P. andertoni* until recent revisionary studies.



Pterygotrigla hemisticta (Temminck and Schlegel, 1843)

Frequent synonyms / misidentifications: *Otohime hemisticta* (Temminck and Schlegel, 1843); *Trigla arabica* Boulenger, 1887; *Prionotus alepis* Alcock, 1889 / *Pterygotrigla picta* (Günther, 1880).

FAO names: En - Blackspotted gurnard; Fr - Grondin encre; Sp - Cabete tintero.



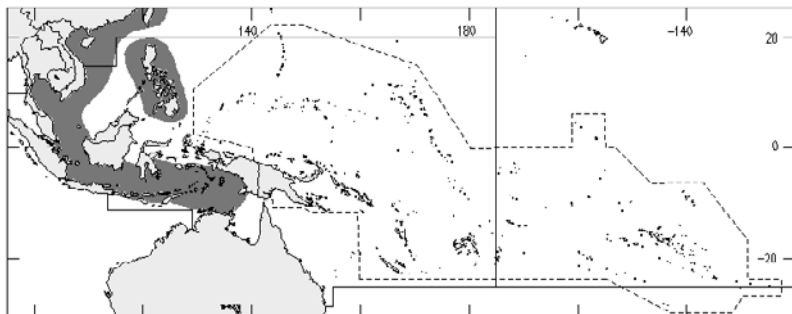
Diagnostic characters: Head large, triangular, with many ridges and spines. **Opercular spine long and slender, extending posteriorly of cleithrum;** nasal spine and antrorse rostral spine absent; cleithral spine small; rostral spines strong but short. Base of first dorsal fin with 10 flat plates, first plate extends in advance of first dorsal-fin spine. Pectoral fins with 12 connected rays. Lateral-line scales small, more than 70 rows. **Colour:** mostly red with prominent black spots and large black spot in first dorsal fin; **head and dorsum covered with prominent black spots; inner surface of pectoral fins with large dark area and diagonal band of separate white spots.**

Size: Maximum standard length 25 cm.

Habitat, biology, and fisheries: A wide depth range of 10 to 420 m. No present fishery, but taken incidentally throughout its range. Taken mainly in trawls. Excellent food fish but catches are rare.

Distribution: From Japan southwards to the China Sea, Philippines, and northern Australia.

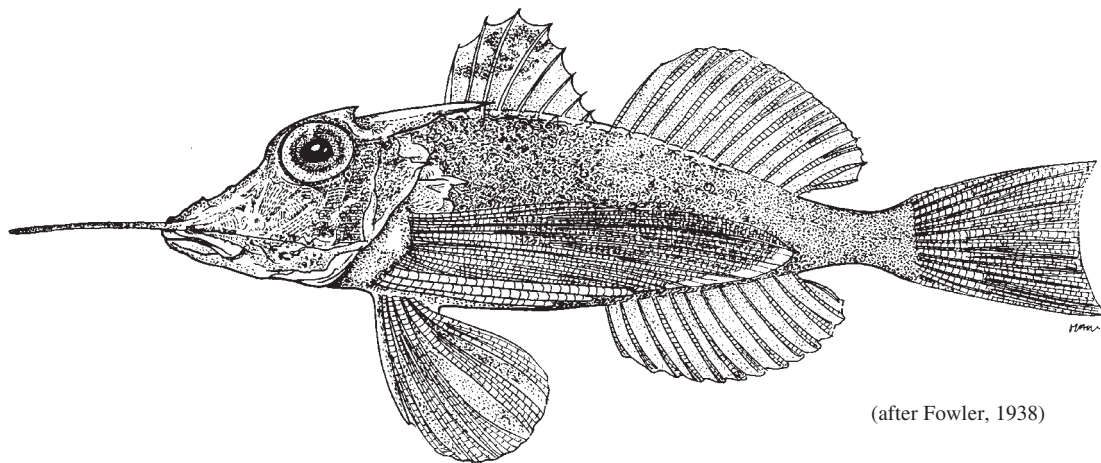
Remarks: A closely related species reported from the western Indian Ocean, *Pterygotrigla arabica* Boulenger, is distinguished from *P. hemisticta* by the white markings on the inner side of the pectoral fins, and other characters.



Pterygotrigla hoplites (Fowler, 1938)

Frequent synonyms / misidentifications: *Dixipichthys hoplites* Fowler, 1938 / None.

FAO names: En - Swordspine gunard.



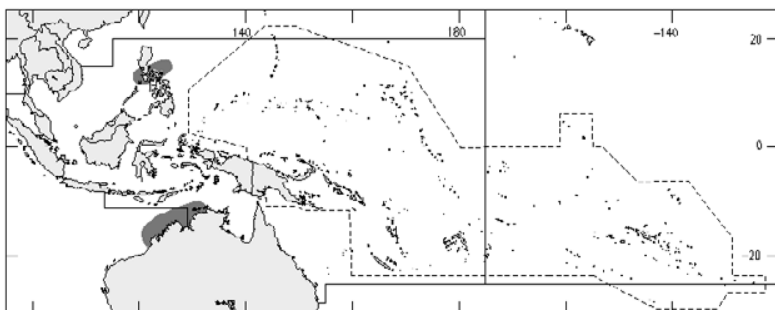
(after Fowler, 1938)

Diagnostic characters: Head large, triangular. **Nasal spine present**, opercular spine short, nuchal spine long, rostral spines very long, antrorse rostral spine absent, and cleithral spine long. Base of first dorsal fins with about 7 flat plates, **first plate not extending in advance of first dorsal-fin spine**. **Pectoral fins long, more than 50% of standard length**. Nape, breast, and belly scaly. Lateral-line scales small, more than 70 rows. **Colour:** preserved specimens uniformly tan; no spots on dorsum.

Size: Maximum standard length 10.7 cm.

Habitat, biology, and fisheries: A rare deep-water species. Incidentally caught by deep trawling or hook-and-line.

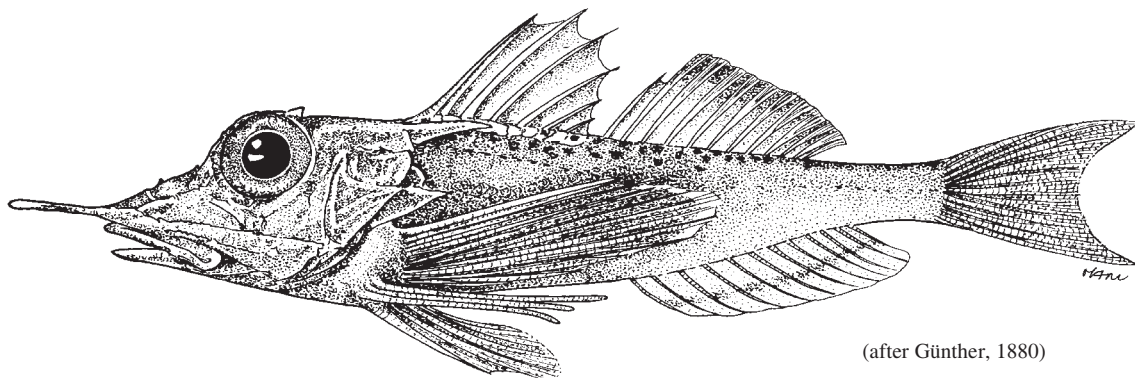
Distribution: Philippines and northwestern Australia.



Pterygotrigla leptacanthus (Günther, 1880)

Frequent synonyms / misidentifications: *Trigla leptacanthus* Günther, 1880; *Bovitrigla leptacanthus* (Günther, 1880) / None.

FAO names: En - Spotted bullheaded gurnard.



(after Günther, 1880)

Diagnostic characters: Head large, triangular. **Nasal spine present**, opercular spine short, nuchal spine long, rostral spines moderately long, antrorse rostral spine absent, and cleithral spine long. Base of first dorsal fin with about 10 flat plates, **first plate extends in advance of first dorsal-fin spine**. Pectoral fins moderate sized, 38 to 41% of standard length. Lateral-line scales small, more than 70 rows. **Colour:** preserved specimens uniformly tan with black spots on dorsum.

Size: Maximum standard length 12 cm.

Habitat, biology, and fisheries: A rare deep-water species. Incidentally caught by deep trawling or hook-and-line.

Distribution: Northwestern Australia, Arafura Sea.

