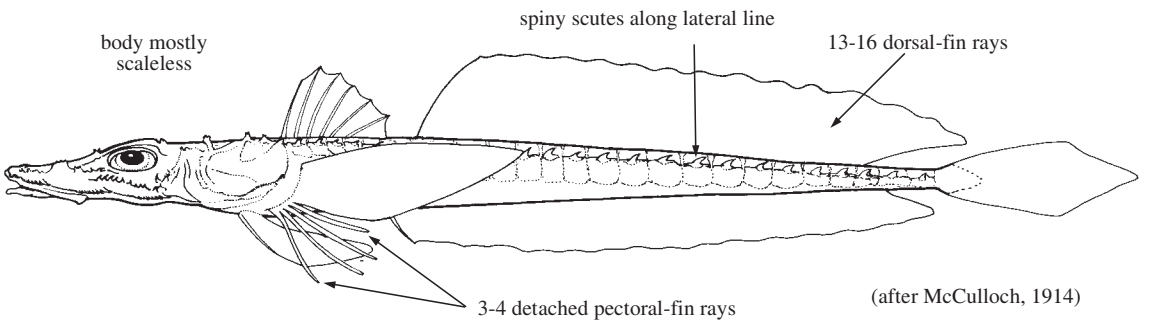
HOPLICHTHYIDAE

Ghost flatheads (spiny flatheads)

by M.A. McGrouther

Diagnostic characters: Flattened, small to medium-sized (to about 18 cm standard length) scorpaeniform fishes; body elongate; **mostly scaleless, with a row of spiny scutes along lateral line covering much of back and upper half of sides**. Head very wide and flat, much wider than deep, with variously developed ridges and spines. Eyes on dorsal surface, longer than wide (eyes of larvae lateral, moving dorsally with growth). Snout broad and greatly flattened. Mouth large. Teeth minute to villiform on jaws, vomer, palatines, and pharyngeals. First dorsal fin short-based, with V or VI spines; second dorsal fin long based, with 13 to 16 soft rays, some rays may be elongated in adult males; anal fin with I spine and 15 to 17 soft rays, about as long as second dorsal fin; caudal fin rounded to emarginate; **pectoral fins with 11 to 14 upper rays and 3 or 4 detached lower rays**; pelvic fins thoracic, with I spine and 5 soft rays. **Colour:** most species yellow, pinkish, or brown above and on sides, with varying spots and mottling, fading to pink, white, or silver below; pectoral fins yellowish brown to hyaline with various crossbars, spots, or mottling; first dorsal fin often dark posteriorly, or with wavy crosslines; caudal fin usually hyaline, although in some species with a dark distal margin or basal spots.



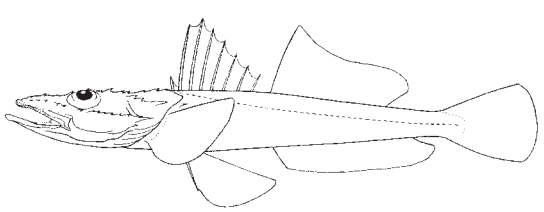
Habitat, biology, and fisheries: Occur on the continental shelf and slope at depths of 60 to 1 500 m. Larvae and juveniles collected in shallower water than adults. Feed on a range of crustaceans and fishes. Of no use in commercial fisheries. Flesh supposedly of good quality but even the largest fish have very little meat. *Hoplichthys haswelli* which occurs in southern Australian waters (outside the WCP area) grows to 43 cm.

Remarks: Currently, 11 species of hoplichthyids are recognized worldwide and 8 of these occur within the Western Central Pacific. The taxonomy of the family still requires some clarification (see footnote to species list below).

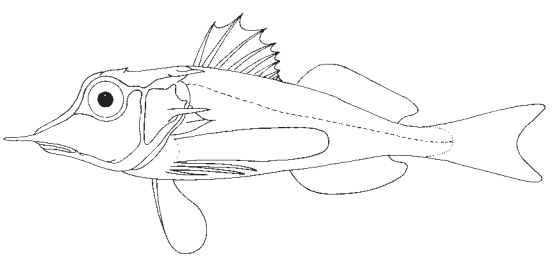
Similar families occurring in the area

Platycephalidae: superficially resemble hoplichthyids, but fully scaled on body, do not have detached pectoral-fin rays, and no spiny scutes along lateral line.

Triglidae: fully scaled on body; less spinose on sides of head; head and body not or less flattened.

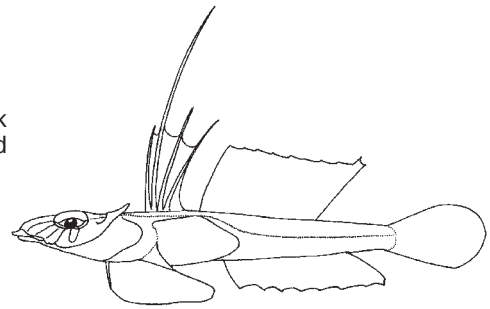


Platycephalidae



Triglidae

Callionymidae: also with strong preopercular spine, but lack lateral head spination, have no body scutes, and no detached pectoral-fin rays as found in hoplichthyids.



Callionymidae

Key to the species of Hoplichthyidae occurring in the area

1a. Lateral scutes each with 2 large spines of similar length (Fig. 1a) . . . . . ***Hoplichthys langsdorfii***

1b. Lateral scutes with 1 large spine and possibly several tiny spines below it (Fig. 1b) . . . . . → ***2***

2a. Dorsal surface of head 2/3 to 1 eye length behind eye with a strong elevated ridge, or cluster of 2 or more stout spines (Fig. 2); more than 1 strong spine usually present immediately behind eye . . . . . ***Hoplichthys ogilbyi***

2b. Not as above, dorsal surface of head behind each eye with small spines in rows, or with a single large spine, or without spines . . . . . → ***3***

3a. Interorbital width greater than or equal to 1/3 eye length . . . . . → ***4***

3b. Interorbital width much less than 1/3 eye length . . . . . → ***6***

4a. Interorbital width 1/3 to 1/2 eye length; pectoral-fin rays 4 to 6 of juveniles elongated, often crossed by 2 or 3 wavy bars . . . ***Hoplichthys filamentosus***

4b. Interorbital width greater than eye length; pectoral-fin rays 4 to 6 not much longer than other rays . . . . . → ***5***

5a. Dorsal profile of eyes partly covered by orbit when viewed from above (Fig. 3a); head length 5 times eye length . . . . . ***Hoplichthys fasciatus***
(only known from juvenile specimens, most likely a synonym of one of the other species)

5b. Dorsal profile of eyes not covered by orbit (Fig. 3b); head length 8 times eye length . . . . . ***Hoplichthys pectoralis***
(only known from juvenile specimens, most likely a synonym of one of the other species)

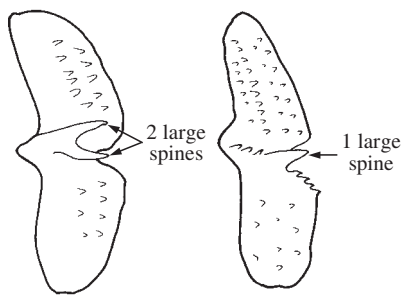


Fig. 1 lateral scutes
(along lateral line)

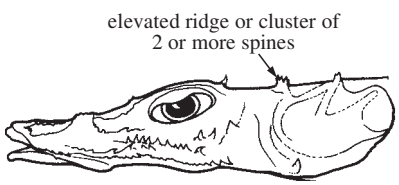


Fig. 2 ***Hoplichthys ogilbyi***

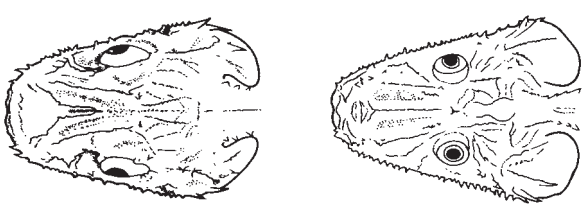
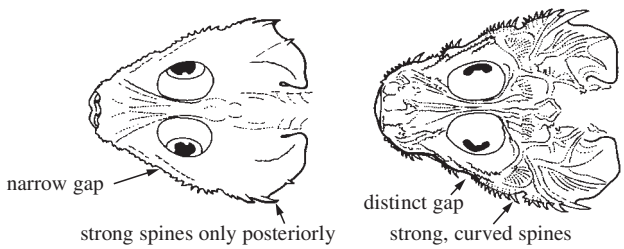


Fig. 3 dorsal view of head

6a. Lateral margin of head less spinose, weakly lobed, almost straight, with only a narrow gap between the spine rows below the eye (Fig. 4a) . . . . . ***Hoplichthys gilberti***

6b. Lateral margin of head strongly spinose, more strongly lobed, with a distinct gap between the spine rows below the eye (Fig. 4b) . . . . . → *7*



a) ***Hoplichthys gilberti*** **b)** ***Hoplichthys citrinus***

Fig. 4 dorsal view of head

7a. Free rays of pectoral fins equal in length to longest joined rays; total anal-fin elements (spines and soft rays) 16; fresh coloration unknown . . . . . ***Hoplichthys regani***

7b. Free rays of pectoral fins shorter than longest joined rays; total anal-fin elements 17; body bright lemon yellow when fresh . . . . . ***Hoplichthys citrinus***

List of species occurring in the area

Hoplichthys citrinus Gilbert, 1905
? *Hoplichthys fasciatus* Matsubara, 1937 [1/]
Hoplichthys filamentosus Matsubara and Ochiai, 1950
Hoplichthys gilberti Jordan and Richardson, 1908
Hoplichthys langsdorfii Cuvier and Valenciennes, 1829
Hoplichthys ogilbyi McCulloch, 1914
? *Hoplichthys pectoralis* (Fowler, 1943)[1/]
Hoplichthys regani Jordan, 1908

References

Matsubara, K. 1971. *Fish morphology and hierarchy*. Part II. Ishizaki - Shoten. Japan, pp. 791-1605 (relevant pages for Hoplichthyidae: 1123-1130).

Matsubara, K. 1971. *Fish morphology and hierarchy*. Part III (Plates). Ishizaki -Shoten. Japan, pls 1-135 (relevant plate for Hoplichthyidae pl. 125).

Matsubara, K. and A. Ochiai. 1950. Studies on Hoplichthyidae, a family of mail-cheeked fishes, found in Japan and its adjacent waters. II. *Japan. J. Ichthyol.*, 1(2):82-88.

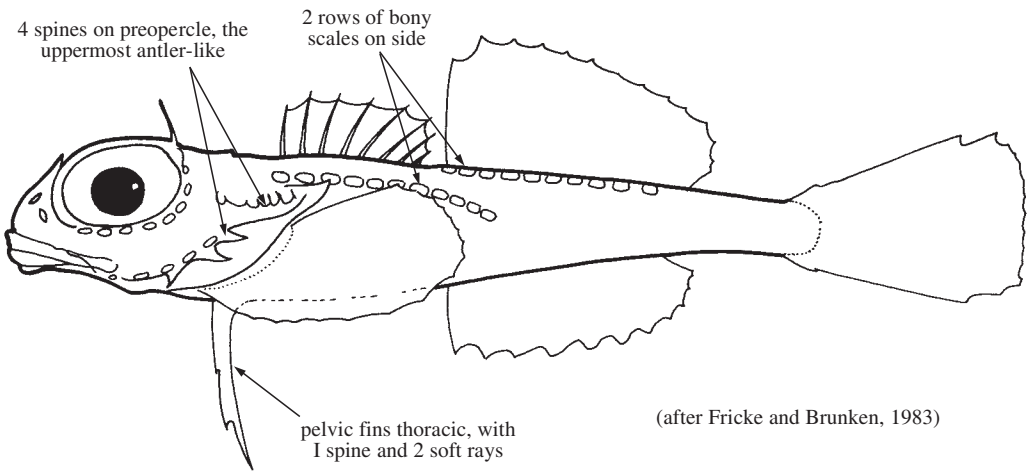
1/ Described from juveniles (about 7 cm) and show the juvenile character of a very wide interorbit. These species are quite likely conspecific with one of the other species in the area, but because of this uncertainty both have been included in the key above.

COTTIDAE

Sculpins

by J.S. Nelson and K.E. Carpenter

Diagnostic characters (for the 2 species occurring in the area): Small (to about 51 mm standard length) moderately elongate scorpaeniform fishes; body depth 15.8 to 20.7% of standard length. Head large, 38.5 to 41.2% of standard length. **Eye width much longer than snout length**, orbit length around 2 times snout length; snout length 7.25 to 8.3% of standard length. Long supraorbital cirrus present (possibly absent in *Antipodocottus mesembrinus*). **Preopercle with 4 posteriorly-directed spines, the uppermost antler-like**, with 3 to 5 secondary projections. Villiform teeth in jaws, vomer, and palatines. **Two dorsal fins**, the first with VIII spines, the second with 12 to 14 soft rays. Anal fin with 10 to 12 soft rays. Caudal fin slightly rounded. Pectoral fins with 17 to 20 soft rays. **Pelvic fins thoracic, with I spine and 2 soft rays**. **Two rows of modified bony scales on sides**, the uppermost directly beneath base of second dorsal fin, the second along the lateral line (careful examination required). **Colour:** live coloration unknown; in alcohol, body brownish or reddish brown, lighter ventrally, sides and head with irregularly spaced darker spots and blotches, sometimes a dark blotch at base of lower caudal-fin rays; dorsal fin with irregular dark markings, sometimes with distal end distinctly darker on spinous dorsal fin.



(after Fricke and Brunken, 1983)

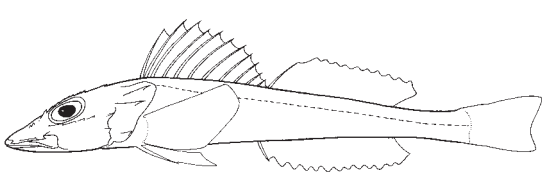
Habitat, biology, and fisheries: Deep water demersal, at depths between 150 and 765 m. Very little known about the biology of the species occurring in the area. No interest to fisheries. *Antipodocottus elegans* is known only from southernmost Queensland and Tasmania while *A. mesembrinus* is known only from off Indonesian New Guinea.

Remarks: Both the generic placement and specific status of the 2 species recorded from the area are questionable.

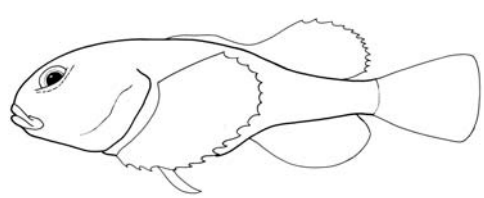
Similar families occurring in the area

Bembridae (compared to Cottidae in the area): head depressed (not depressed in Cottidae); snout length greater than or nearly equal to eye diameter (snout length much smaller than eye diameter in Cottidae).

Psychrolutidae (compared to Cottidae in the area): a single dorsal fin (2 dorsal fins in Cottidae); no preopercular spines (4 in Cottidae, the uppermost prominent and antler-like); no scales along lateral line (some scales in Cottidae).



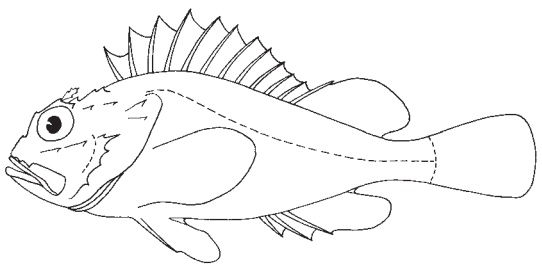
Bembridae



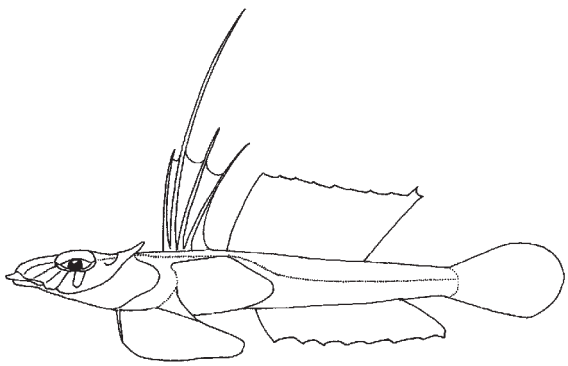
Psychrolutidae

Scorpaenidae (compared to Cottidae in the area): a single dorsal fin (2 dorsal fins in Cottidae).

Callionymidae (compared to Cottidae in the area): the cottids in the area superficially look like callionymids, however they can be distinguished by very restricted gill openings (broad gill openings in Cottidae); up to IV dorsal-fin spines (VIII in Cottidae); 1 stout preopercular spine (4 in Cottidae); pelvic fins subjugular (thoracic in Cottidae) with I spine and 5 soft rays (I spine and 2 soft rays in Cottidae); body scaleless (scales present in Cottidae).



Scorpaenidae



Callionymidae

List of species occurring in the area

Antipodocottus elegans Fricke and Brunken, 1984
Antipodocottus mesembrinus (Fricke and Brunken, 1983)

References

Fricke, R. and H. Brunken. 1984. A new cottid fish of the genus *Antipodocottus* (Teleostei: Scorpaeniformes) from eastern Australia, with a key to the species of the genera *Stlengis* and *Antipodocottus*. *J. Nat. Hist.*, 18:41-46.

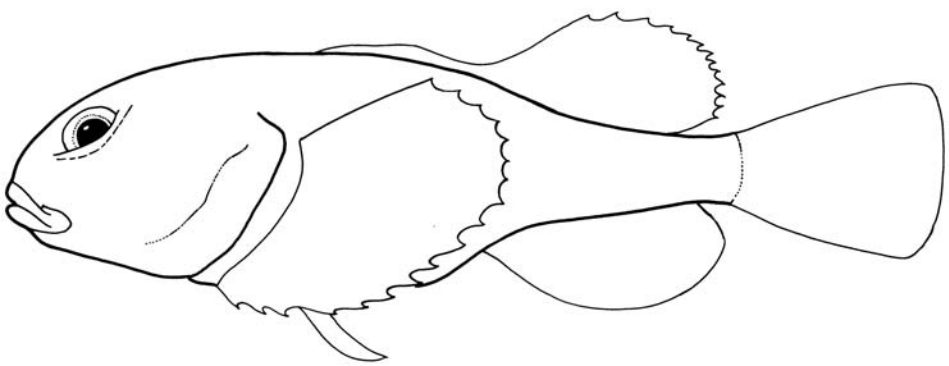
Nelson, J.S. 1990. Redescription of *Antipodocottus elegans* (Scorpaeniformes: Cottidae) from Australia, with comments on the genus. *Copeia,* 1990(3):840-846.

PSYCHROLUTIDAE

Fathead sculpins

by J.S. Nelson

Diagnostic characters: Small to moderate fishes (to about 65 cm standard length, commonly under 35 cm); **body** moderately elongate, **tadpole-shaped**, stout and robust in cross-section behind head, tapering and compressed posteriorly. Head very large, smooth, or with protruding spines or knobs, cirri sometimes present. Spines absent from preopercle in species in the area. **Interorbital space wide, greater than exposed eye diameter in species in the area**. Eye large. Mouth large, terminal, or nearly so. Teeth conical, generally reduced; premaxillae and dentary with several rows, prevomer with or without teeth; palatine without teeth. Branchiostegal rays 7. Gill rakers short spiny knobs. Dorsal fin continuous in species in the area. Dorsal fin with VI to XII slender weak spines and 12 to 21 soft rays; anal fin with 9 to 17 soft rays; caudal fin rounded to truncate; **pelvic fins (thoracic, closely spaced, small, and slender) with I spine and 3 soft rays**; pectoral fins with 15 to 26 (usually 19 to 26) rays. **Skin loose in most species, covering dorsal and anal fins in most**, making it difficult to count rays. **Body naked or variously with bony plates or prickles (cirri may be present or absent). Lateral line on trunk reduced, with 20 or fewer small pores. Bone covering cranial sensory canals in interorbital and suborbital areas reduced to well-developed but relatively narrow bony arches**. Postorbital bones 1 or 2. Vertebrae about 28 to 38. **Colour:** uniformly brown to grey or with irregular markings or spotted pattern of black, grey, brown, or white.

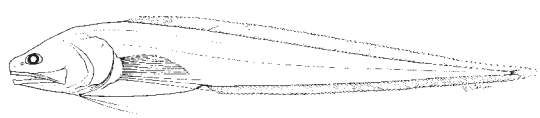


Habitat, biology, and fisheries: Mostly benthic, from inshore shallow water to depths of 2 800 m. Occurring primarily in cool waters of the North Pacific and North Atlantic and scattered parts of the southern hemisphere (e.g. off South America, South Africa, Australia, and New Zealand). Little is known of their biology; some have been found with gastropods in the stomach. Trawled incidentally, of no commercial value.

Remarks: Fathead sculpins are poorly represented in the area. The status of M. Weber's *Cottunculus gyrinoides* from the Flores Sea (south of Sulawesi) is uncertain. The related family Cottidae is also known in the area from 2 species of *Antipodocottus*.

Similar families occurring in the area

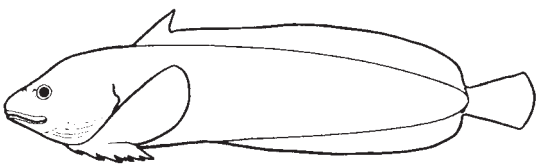
Aphyonidae, Batrachoididae, Bythitidae, and Ophidiidae: distinguished from Psychrolutidae in having pelvic fins in front of pectoral fins.



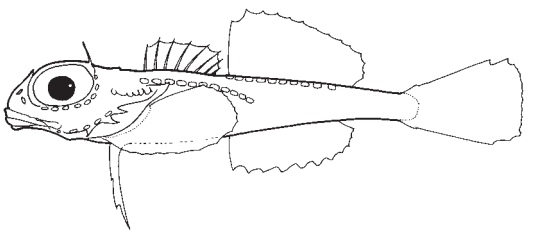
Ophidiidae

Liparidae (known only from nearby WCP area): distinguished from Psychrolutidae in having pelvic fins modified into a sucking disc or in lacking these fins.

Cottidae: the 2 species occurring within and adjacent to area, *Antipodocottus mesembrinus* from Indonesia and *A. elegans* from off eastern Australia, differ from Psychrolutidae in having dorsal fins distinct and separated, some scales along lateral line, and 4 preopercular spines, uppermost especially prominant and antler-like.



Liparidae



Cottidae

Key to the species of Psychrolutidae occurring in or near the area

1a. Vomerine teeth present . . . . . ***Ebinania* spp.**

1b. Vomerine teeth absent . . . . . → ***2***

2a. Pectoral-fin rays usually 24 or 25; body uniform light grey; peritoneum jet black . . . . . ***Psychrolutes marcidus***

2b. Pectoral-fin rays 23 or fewer; body variously brownish; peritoneum may be darkish but not jet black . . . . . → ***3***

3a. Cirri absent from head and body; total dorsal-fin rays 22 or 23 . . . . . ***Psychrolutes occidentalis***

3b. Cirri sparse but present; total dorsal-fin rays usually 24 to 26 . . . . . → ***4***

4a. Median chin pore single . . . . . ***Psychrolutes inermis***

4b. Median chin pore paired . . . . . ***Psychrolutes macrocephalus***

List of species occurring in the area

Note: the taxa listed are known or reported from the area or nearby; additional species occur in, for example, New Zealand.

Ebinania spp.

Psychrolutes inermis (Vaillant, 1888) or *P. macrocephalus* (Gilchrist, 1904)
Psychrolutes marcidus (McCulloch, 1926)
Psychrolutes occidentalis Fricke, 1990

References

Jackson, K.L. and J.S. Nelson. 1998. *Ambophthalmos*, a new genus for *"Neophrynichthys" angustus* and *"Neophrynichthys" magnicirrus*, and the systematic interrelationships of the fathead sculpins (Cottoidei, Psychrolutidae). *Can. J. Zool.*, 76:in press.

Nelson, J.S. 1995. *Psychrolutes microporos*, a new species of cottoid (Teleostei: Scorpaeniformes) from New Zealand and Japan with biogeographical comments. *Proc. Zool. Soc., Calcutta*, 48(2):67-76.

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