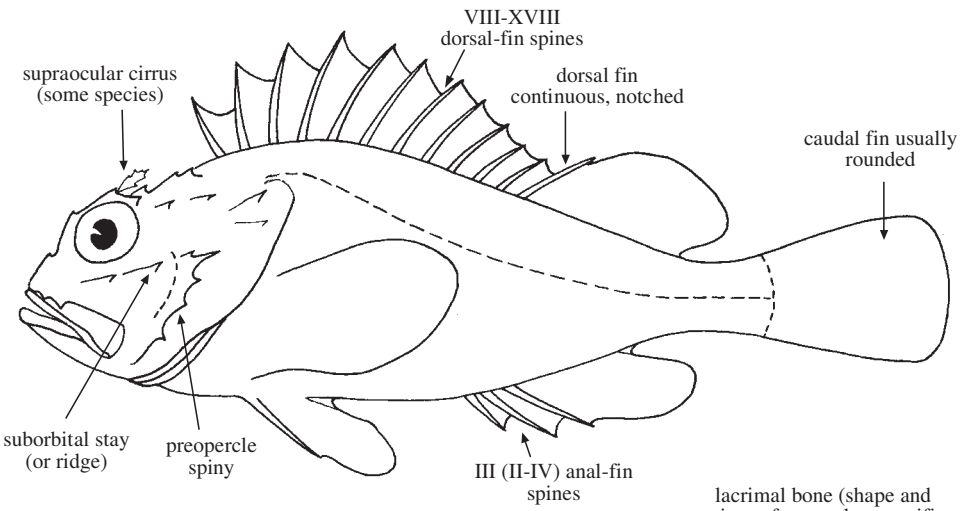
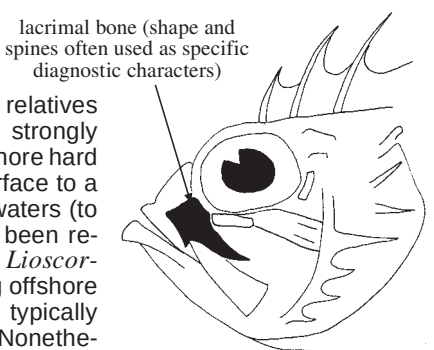
SCORPAENIDAE

Scorpionfishes (also, lionfishes, rockfishes, stingfishes, stonefishes, and waspfishes)

by S.G. Poss

Diagnostic characters: Body usually weakly, rather than strongly, compressed; body depth 21 to 50% standard length. **Head moderate to large, 37 to 50% standard length**, often notably depressed with cirri, particularly above eye. Eye small to relatively large, 4 to 14% of standard length. Snout short to long, often prominent, 6 to 20% of standard length. Mouth often large and upturned, upper jaw 9 to 23% standard length. Numerous small conical teeth present on upper and lower jaws, with those on vomer and palatine present or absent. Branchiostegal rays typically 7 (rarely 6). Gill rakers usually small or moderate, 1 to 9 in upper arch and 4 to 20 in lower arch. **All species with suborbital stay (or ridge), an extension of the third infraorbital bone (second suborbital) extending backward across the cheek and usually firmly bound to preopercle. Most species with numerous head spines**, with those on lacrimal bone (or first infraorbital bone), those above orbital margin and those behind occiput most prominent. **Dorsal fin with strong venomous spinous part bearing VIII to XVIII spines** connected to soft-rayed part posteriorly, with 3 ½ to 14 soft rays, the last typically split to its base and counted as 1 ½. **Anal fin with II to IV, but usually III strong, sharp spines**, the second usually longest, followed by 3 ½ to 15 soft rays, the last usually split to its base and counted as 1 ½. Caudal fin typically rounded or truncate, never forked, 15 to 40% standard length, usually about 27 to 35% standard length. Pectoral fins usually large, with 11 to 24 rays; with rays of larger individuals of most species branched. Pelvic fins with I strong spine and 5, or less often, 4 branched rays. Scales in most species relatively small and either ctenoid or pseudocycloid, entirely absent in others, or present only as deeply embedded scale rudiments. Lateral-line scales present, with 4 to 54 pored or tubed scales (lateral-line scales trough-like in the subfamily Setarchinae). When present, scales above lateral line 4 to 8; scales below lateral line 10 to 19. **All species possess striated swimbladder musculature that is extrinsic in nearly all species**, with musculature present even in those without swimbladders. Pyloric caecae 1 to 16. Vertebrae 24 to 29. **Colour:** most species strongly camouflaged and red, reddish brown, or brown in colour, and usually have barred or mottled colour patterns that are typically darker dorsally than ventrally.





detail of head

Habitat, biology, and fisheries: Scorpionfishes and their near relatives are typically found on or near the bottom, which they often strongly resemble. Most species in the area are found on relatively nearshore hard bottoms and reefs or associated with coral rubble, from the surface to a depth of 150 m. Some species in the area range, into deeper waters (to 800 m), although outside the area captures to 1 113 m have been reported. A few species, such as those of the genera *Setarches, Lioscorpius*, and *Ectreposebastes*, are pelagic or semipelagic occurring offshore in depths of 200 to 800 m. Many species are relatively small, typically under 20 cm standard length, and their biology poorly studied. Nonetheless, most are known to lead solitary lives, and evidently aggregate only for reproduction. The young of most species are planktonic, with many

settling out of the plankton relatively quickly. Most feed primarily on arthropods and many feed on small fishes as they attain larger sizes. Most species are extremely well camouflaged and excellent ambush predators. The vividly (aposematically) coloured lionfishes or turkeyfishes are notable exceptions, cornering their prey with their elongate pectoral fins. Most scorpionfishes are ovoviviparous, producing between a few hundred and a few thousand eggs, although some are viviparous. Nearly all possess well-developed venom glands and should be handled with extreme caution, lest painful and potentially fatal wounds be inflicted by their sharp fin and head spines. Although all are edible, most species in the Western Central Pacific are small and dangerous to handle and thus do not form the basis of large fisheries. However, a few species in the area are relatively large, occur in considerable number, and are marketed fresh. Numerous species outside the area for important fisheries.

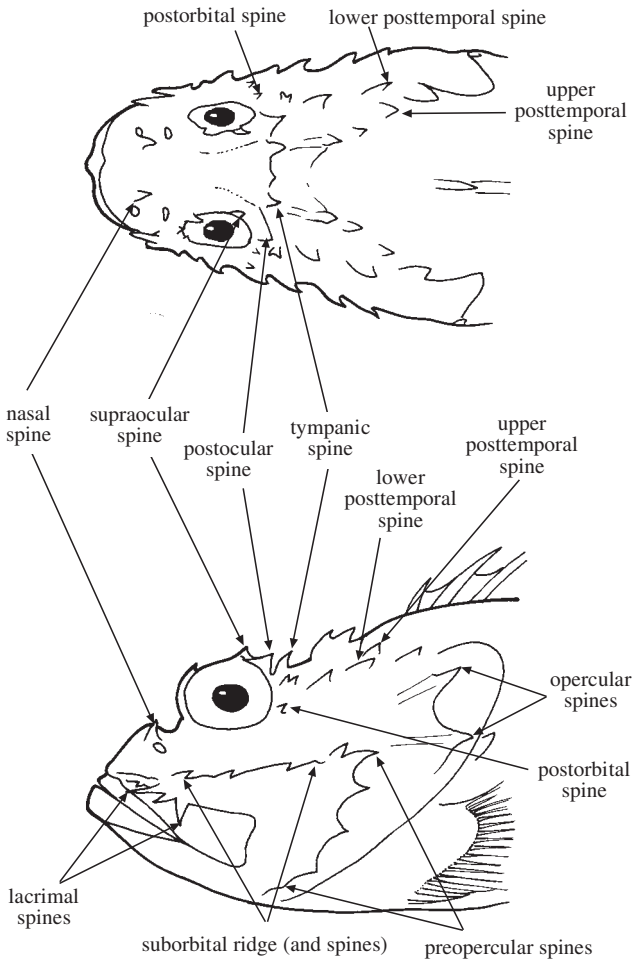


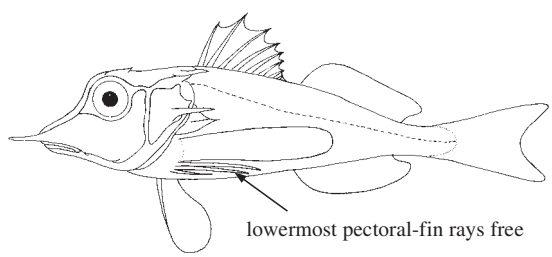
diagram of head spines used in the identification key
(after Eschmeyer, 1969)

Remarks: Scorpaenoid fishes form a large (approximately 500 species) and heterogenous assemblage of fishes. The limits of the Scorpaenidae, included subfamilies, and associated families are not well established nor is there agreement on what family or subfamily names should be used. Some phylogenetically derived taxa, such as the Synanceiinae and Tetraroginae, are often treated as distinct families by many authors, whereas such authors usually regard more phylogenetically distant relatives as belonging to the Scorpaenidae. Other derived taxa, such as Caracanthidae and Aploactinidae, are almost universally regarded as separate families, although they too are more closely related than are some genera invariably included in the Scorpaenidae. For purposes of this general treatment a broad definition of the Scorpaenidae is adopted. With a few commonly accepted exceptions, this avoids use of an unfamiliar and highly split classification.

Similar families occurring in the area

Fishes of several other bony-fish families are superficially similar to scorpaenids in general appearance. Like all near relatives (Triglidae, Platycephalidae, Caracanthidae, and Aploactinidae), scorpaenids possess a bony suborbital stay below and behind the eye that attaches to the preopercle. In addition, most scorpionfishes bear numerous head spines not seen in species otherwise of similar colour or body shape (see above diagram of head spines).

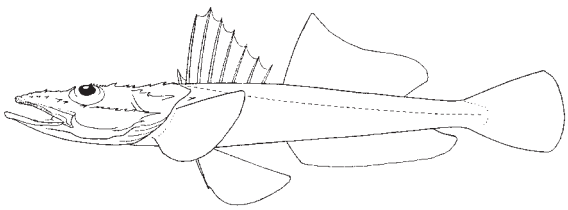
Triglidae: possess a very broad suborbital stay; all species have heavily armoured heads and free, highly mobile lowermost pectoral-fin rays (only few scorpaenids possess heavily armoured heads or free pectoral-fin rays, and none have these characteristics in combination as do sea robins, except for the Apistinae, which can be distinguished from triglids by their movable lacrimal bone).



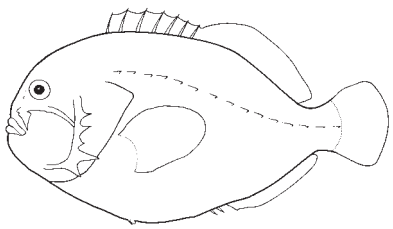
Triglidae

Platycephalidae: possess similar head spines, but are distinguished by their highly depressed head (head depth less than about 20% standard length), and by having the ventral margin of the lacrimal bone smooth (ventral margin of lacrimal often bearing numerous large spines in scorpaenids; see diagram of head spines on previous page).

Caracanthidae: also have a suborbital stay and similar head spines anterior and posterior to the eye, but are distinguished by their notably compressed heads and bodies with rounded profiles that are covered with numerous fleshy papillae-like projections not seen in scorpaenids (which usually have ctenoid or pseudocycloid scales; a few species lack scales).



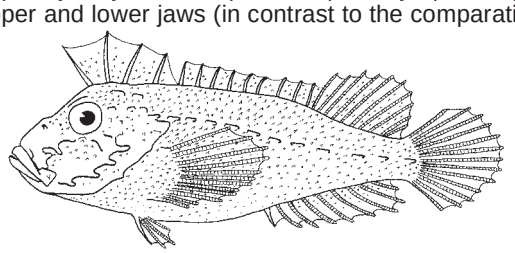
Platycephalidae



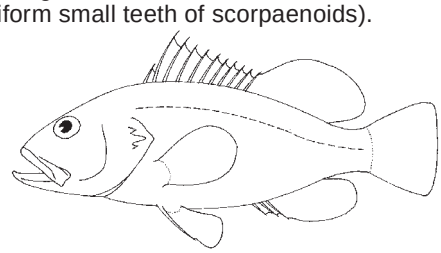
Caracanthidae

Aploactinidae: closely related to the subfamily Synanceiinae and also have a suborbital stay and head spines, but most aploactinids are distinguished by the possession of highly modified tack-like scales (but many are without scales); all aploactinids lack branched fin rays (as seen in nearly all scorpaenids, except subfamilies Synanceiinae and Minoinae), and most have comparatively blunt spines (instead of strongly pungent spines seen in scorpaenids).

Serranidae: similar to some scorpaenids in head and body shape, but often having concave, lunate, or forked caudal fins; no suborbital stay under the eye that attaches to preopercle; often 3 opercular spines (typically only 2 in scorpaenoids); many species possess large canine teeth common in anterior end of upper and lower jaws (in contrast to the comparatively uniform small teeth of scorpaenoids).

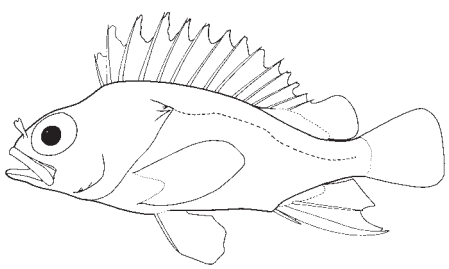


Aploactinidae



Serranidae

Centrogeniidae: the only member of this family, *Centrogenys vaigiensis* (false scorpionfish, sometimes placed in the Serranidae), sufficiently resembles scorpaenids in coloration and size and shape of its fins, perhaps for purposes of mimicry, that it was originally described in the genus *Scorpaena*. However, *C. vaigiensis* does not possess a suborbital stay that extends back toward the eye and firmly attaches to the preopercle, nor does it have venom glands associated with the fin spines.



Centrogeniidae

Identification note

Many scorpaenoid species, but not all, have the **last fin ray of the dorsal and anal fins** split to their base yet borne on a single pterygiophore, as revealed by radiography. Workers have differed in how such fin rays are counted, some counting this condition as 1 ray, others as 2. A convention has developed among scorpaenoid workers to count this last double ray as 1 ½. This method is used here as it has the advantage of permitting the split-rayed condition to be distinguished from the single-rayed condition, while eliminating the ambiguity inherent in counting the split ray as either 1 or 2 rays. Vertical scale row counts are taken above the lateral line from the uppermost posttemporal spine to the base of the caudal fin. **Gill raker counts** are presented as formulas, with the first range indicating the rakers in the upper arm of the first gill arch, the middle number indicating a gill raker at the angle between the upper and lower arms and the last range referring to the rakers on the lower arm (e.g. 3-5+1+7-11=12+16) with the range after the equal sign indicating the total number of gill rakers.

Key to the species of Scorpaenidae occurring in the area

Note: in the anticipation that they may be recorded in the future from the area, some species known from adjoining seas are included in the key, with their distribution indicated in parenthesis.

1a. Skin at gill openings broadly connected to isthmus . . . . . **(subfamily Syanceiinae)** → ***2***

1b. Skin at gill openings connected to each other or connected to isthmus only narrowly anteriorly, not broadly connected to isthmus (partially united in *Taenianotus triacanthus*) . . . . . → ***26***

2a. Pectoral fins with lowermost 1 to 3 rays not free from other rays . . . . . → ***3***

2b. Pectoral fins with lowermost 1 to 3 rays free, and independently mobile . . . . . → ***9***

3a. Mouth terminal, slightly oblique; eyes lateral on head . . . . . **(*Erosa*)** → ***4***

3b. Mouth strongly upturned; eyes on dorsal surface of head . . . . . → ***5***

4a. Pectoral-fin rays 14 to 16, usually 15; dorsal-fin spines XIII to XV, usually XV; dorsal-fin rays 5 ½ or 6 ½, usually 6 ½; anal-fin spines III; anal-fin rays 5 ½ or 6 ½ . . . . . ***Erosa erosa***

4b. Pectoral-fin rays 12 or 13, usually 12; dorsal-fin spines XII or XIII; dorsal-fin rays 8 ½ or 9 ½ . . . . . ***Erosa daruma***
(Western Australia; not yet recorded from the area)

5a. Dorsal-fin spines XVI or more . . . . . ***Leptosynanceia asteroblepa***

5b. Dorsal-fin spines XI to XIV . . . . . → ***6***

6a. Anal fin with II spines and 12 to 15 soft rays, the last split to base . . ***Trachicephalus uranoscopus***

6b. Anal fin with III spines and 4 ½, 5 to 6 ½, or 7 soft rays . . . . . → ***7***

7a. Pectoral-fin rays 10 to 15, usually 11 . . . . . ***Synanceia alula***

7b. Pectoral-fin rays 14 to 19 . . . . . → ***8***

8a. Orbital margin heavily ossified, forming a "crest" above eye; pectoral-fin rays 15 to 17 . . . . . ***Synanceia horrida***

8b. Orbital margin not heavily ossified, not forming a "crest" above eye; pectoral-fin rays 17 to 19 (usually 18 or 19) . . . . . ***Synanceia verrucosa***

9a. Only lowermost pectoral-fin ray free and relatively mobile . . . . . **(*Minous*)** → ***11***

9b. Lowermost 2 or 3 pectoral-fin rays free and relatively mobile . . . . . → ***10***

10a. Dorsal-fin spines XIII to XV; lowermost 3 pectoral-fin rays free; eyes small to moderate (about 7 to 11% head length), positioned laterally on head . . . . . ***Choridactylus multibarbus***

10b. Dorsal-fin spines XV to XVIII; lowermost 2 pectoral-fin rays free; eyes small (about 4 to 7% head length), positioned on top of head . . . . . **(*Inimicus*)** → ***17***

11a. First dorsal-fin spine equal to or longer than second dorsal-fin spine; first spine widely separated from base of second spine . . . . . → ***12***

11b. First dorsal-fin spine notably shorter than second dorsal-fin spine (first spine typically less than 1/2 length of second spine); first dorsal-fin spine close to base of second dorsal-fin spine . . . . . → ***14***

12a. Caudal fin without transverse dark bars; medial (axillary) surface of pectoral fin with dark brown stripes; posterior spine of lacrimal bone about twice length of anterior spine and not bayonet-shaped . . . . . ***Minous quincarinatus***

12b. Caudal fin with transverse dark bars; medial (axillary) surface of pectoral fin either uniformly coloured or spotted; posterior spine of lacrimal bone long and bayonet-shaped . . . . . → ***13***

13a. Soft portion of dorsal fin with wavy bands; dorsal-fin spines usually IX; caudal fin usually with 3 or 4 transverse wavy bands . . . . . ***Minous versicolor***

13b. Soft portion of dorsal fin black anteriorly; dorsal-fin spines usually X or more; caudal fin with 2 broad, dark vertical bars . . . . . ***Minous monodactylus***

14a. Dorsal-fin spines weak and hair-like . . . . . ***Minous pusillus***

14b. Dorsal-fin spines strong or thin, but not hair-like . . . . . → ***15***

15a. Posterior lacrimal spine about equal in length to anterior lacrimal spine; soft portion of dorsal fin with 8 to 11 rays, usually 10; anal-fin rays plus anal-fin spines together 9 to 11; caudal-fin rays usually with alternating dark and pale markings . . . . . ***Minous trachycephalus***

15b. Posterior lacrimal spine much longer than anterior lacrimal spine; soft portion of dorsal fin with 11 to 13 rays; anal-fin rays plus anal-fin spines together 11 to 13; caudal fin pale, without dark markings . . . . . → ***16***

16a. Medial (axillary) surface of pectoral-fin stripes radiating distally along course of fin rays . . . . . ***Minous pictus***

16b. Medial (axillary) surface of pectoral fin with irregular black spots on a pale background . . . . . ***Minous coccineus***

17a. Snout shorter than postorbital length (0.7 to 0.9 in postorbital length); fin membranes of dorsal-fin spines subsequent to third spine incised to about midlength of spines . . . . . → ***18***

17b. Snout about equal to, or usually, longer than postorbital length (0.9 to 1.7 in postorbital length); fin membranes of dorsal-fin spines subsequent to third spine incised for nearly entire length of spines . . . . . → ***20***

18a. Medial (axillary) surface of pectoral fins dusky or blackish, often with black spots or streaks, but without a transverse white band in middle of fin . . . . . ***Inimicus brachyrhynchus***

18b. Medial (axillary) surface of pectoral fins dusky, with black spots, and a transverse band in middle of fin . . . . . → ***19***

19a. Third pectoral-fin ray from bottom not free, except at its tip . . . . . ***Inimicus japonicus***

19b. Third pectoral-fin ray from bottom free for about 1/3 of its length . . . . . ***Inimicus joubini***

20a. Orbits extremely elevated and closely spaced at their bases, which are broadly joined; interorbit narrow, about equal to orbit diameter; uppermost 2 pectoral-fin rays filamentous in juveniles and adults . . . . . ***Inimicus filamentosus***

20b. Orbits slightly elevated and widely spaced at their bases, which are joined only by a low ridge; interorbit wide, usually 1.5 times orbit diameter; uppermost 2 pectoral-fin rays not filamentous in specimens longer than about 5 cm standard length . . . . . → ***21***

21a. Medial surface of pectoral fins nearly uniform grey, without markings, except with sometimes a few scattered dark spots . . . . . ***Inimicus cuvieri***

21b. Medial surface of pectoral fins not uniformly coloured in adults . . . . . → ***22***

22a. Medial surface of pectoral fins with a broad terminal dark band in adults . . . . . → ***23***

22b. Medial surface of pectoral fins without a broad terminal dark band in adults, or with a thin dusky band terminally in adults . . . . . → ***24***

23a. Medial surface of pectoral fins with broad dark transverse bar near proximal end of fin in adults, which may be streaked with white lines extending along fin rays and a white area separating it from terminal dark band . . . . . ***Inimicus didactylus***

23b. Medial surface of pectoral fins without a broad dark transverse bar near proximal end of fin in adults . . . . . → ***25***

24a. Medial surface of pectoral fins either with irregular dusky spots proximally or entirely pale . . . . . ***Inimicus gruzovi***

24b. Medial surface of pectoral fins with irregular dusky spots proximally and 2 large dark spots on an otherwise pale background . . . . . ***Inimicus smirnovi***

25a. Medial surface of pectoral fins with irregularly-sized pale spots on a dark grey background . . . . . ***Inimicus sinensis***

25b. Medial surface of pectoral fins with 2 dark regions separated by a pale area . ***Inimicus caledonicus***

26a. Lacrimal bone (infraorbital 1) highly mobile, hinged to lateral ethmoid dorsally and abutting but not firmly bound to first suborbital bone (infraorbital 2) posteriorly . . . . . → ***27***

26b. Lacrimal bone (infraorbital 1) relatively immobile; strongly bound to the lateral-ethmoid dorsally and to first suborbital bone (infraorbital 2) posteriorly . . . . . → ***51***

27a. Ventralmost 1 or 3 pectoral-fin rays detached or separated from rest of fin so that independent movement is possible; second suborbital bone (third infraorbital) very deep (about as deep as long) covering nearly entire cheek and very broadly connected to preopercle . . . . . **(Subfamily Apistinae)** → ***28***

27b. Ventralmost pectoral-fin rays not detached or separated from more dorsal-fin rays; second suborbital (third infraorbital) notably longer than deep, not covering entire cheek, and usually not forming wide connection to preopercle . . . **(Subfamily Tetraroginae)** → ***30***

28a. Ventralmost 3 pectoral-fin rays not detached or separate from more dorsal-fin rays; no barbels on lower jaw; no ocellus in dorsal fin . . . . . ***Cheroscorpaena tridactyla***

28b. Ventralmost pectoral-fin ray not detached or separate from more dorsal-fin rays; barbels on lower jaw; a pronounced ocellus at rear of spinous dorsal fin . . . . . → ***29***

29a. Orbit 8 to 10% head length, interorbit 13 to 17% of head length and 18 to 24% of body depth in specimens greater than about 4 cm standard length; head bones of larger specimens relatively smooth, not densely covered with numerous denticulations . ***Apistops caloundra***

29b. Orbit 3 to 6% head length, interorbit 6 to 10% of head length and 6 to 13% of body depth in specimens greater than about 4 cm standard length; head bones of larger specimens densely covered with numerous denticulations, often closely set and arranged in rows . . . . . ***Apistus carinatus***

30a. Numerous cycloid scales present on body . . . . . → ***31***

30b. Scales absent on body or few that are present form weakly developed spinous points . . . . → ***46***

31a. Dorsal-fin origin distinctly posterior to posterior margin of orbit . . . . . → ***32***

31b. Dorsal-fin origin distinctly anterior to posterior margin of orbit . . . . . → ***34***

32a. Occipital region large, relatively elongate . . . . . ***Notesthes robusta***

32b. Occipital region greatly foreshortened . . . . . **(*Centropogon*)** → ***33***

33a. A broad naked area below anterior part of spinous dorsal fin; jaw short, 10 to 15% standard length; body with strong dark saddles . . . . . ***Centropogon australis***

33b. No broad naked area below anterior part of spinous dorsal fin; jaw moderate, 15 to 19% standard length; interorbital ridges relatively weak; body marmorated . . . ***Centropogon marmoratus***

34b. Dorsal fin with anterior 3 dorsal-fin spines forming a nearly separate fin, with fin membrane deeply incised posterior to third spine . . . . . **(*Vespicula*)** → ***43***

34a. Dorsal fin continuous with anterior 3 dorsal-fin spines not forming a nearly separate fin . . . . → ***35***

35a. Pelvic fins with I spine and 4 soft rays . . . . . → ***36***

35b. Pelvic fins with I spine and 5 soft rays . . . . . → ***38***

36a. Pectoral fins with 13 to 15 rays, usually 14; body depth 39 to 46% standard length; upper jaw 17 to 19% standard length; scales in about 40 to 45 vertical rows; gill rakers 3-5+1+7-11=12-16 . . . . . ***Liocranium praepositum***

36b. Pectoral fins with 10 or 11 rays; body depth 31 to 38% standard length; upper jaw 12 to 15% standard length; scales in 44 to 66 vertical rows; gill rakers 2-3+1+4-7=7-11 . . . . . **(*Paracentropogon*)** → ***37***

37a. Lateral-line scales 19 to 24; dorsal-fin spines XII to XV (usually XIII or XIV, rarely XV); pectoral-fin rays 10 or 11 (rarely 11); total gill rakers on first gill arch (including rudiments) typically 7 to 10, rarely 11 . . . . . ***Paracentropogon longispinis***

37b. Lateral-line scales 16 to 18; dorsal-fin spines XV; pectoral-fin rays 11; total gill rakers on first gill arch 11 . . . . . ***Paracentropogon zonatus***

38a. Dorsal fin with XVII or XVIII spines; upper jaw small, about 12 to 14% standard length . . . . . **(*Ablabys*)** → ***39***

38b. Dorsal fin with XIV to XVI spines; upper jaw moderate or large, about 16 to 25% standard length . . . . . → ***41***

39a. Dorsal fin with XVII or XVIII spines (usually XVII) and 6 ½ or (usually) 7 ½ soft rays; anal fin with III spines and 4 ½ or (usually) 5 ½ soft rays . . . . . ***Ablabys taenianotus***

39b. Dorsal fin XV or XVI spines and 8 ½ to 10 ½ soft rays; anal fin with III spines and 7 or 8 ½ soft rays . . . . . ***Ablabys macracanthus***

40a. Gill rakers elongate, rakers 4-6+1+12-14=18-21; body depth 34 to 42% standard length; scales in 64 to 68 vertical rows . . . . . ***Cottapistus cottoides***

40b. Gill rakers stout, rakers 2-5+1+6-12=9-17; body depth 29 to 36% standard length; scales in 74 to 95 vertical rows . . . . . → ***41***

41a. Palatine teeth absent; body depth 34 to 42% standard length; upper jaw 14 to 17% standard length . . . . . ***Snyderina yamanokami***
(based on a single unverified record from Indonesia)

41b. Palatine teeth present; body depth 29 to 33% standard length; upper jaw 17 to 19% standard length . . . . . **(*Neocentropogon*)** → ***42***

42a. Body with a large blotch behind head above pectoral fins, but no other distinct dark markings elsewhere; scales in about 85 to 95 vertical rows on body . . . . ***Neocentropogon affinis***

42b. Body with a blotch behind head above pectoral fins, but with 2 dark blotches on dorsal fin and numerous spots over body; scales in about 74 to 85 vertical rows . . . . . ***Neocentropogon trimaculatus***

43a. Dorsal fin with XIII to XVI spines and 3 ½ to 5 ½ soft rays; anal fin with III spines and 3 ½ or 4 ½ soft rays; orbit 6 to 9% standard length . . . . . ***Vespicula trachinoides***

43b. Dorsal fin with XIII or XIV spines and 6 ½ or 7 ½ soft rays; anal fin with III spines and 4 ½ or (usually) 5 ½ soft rays; orbit 9 to 12% standard length . . . . . → ***44***

44a. Pectoral-fin rays 11; orbit 9 to 10% standard length; body notably compressed . . . . . ***Vespicula depressifrons***

44b. Pectoral-fin rays 12; orbit 11 to 13% standard length; body compressed but not greatly so . . . . → ***45***

45a. Dorsal fin with XIII or XIV spines and 6 ½ soft rays; body depth about 31 to 37% standard length; body nearly uniform brown . . . . . ***Vespicula zollingeri***

45b. Dorsal fin with XIII spines and 7 ½ soft rays; body depth about 37% standard length; body with spotted or reticulate pattern . . . . . ***Vespicula cypho***

46a. Body entirely without scales, except for lateral line . . . . . → ***47***

46b. Body with a few scattered tack-like or rudimentary scales (most evident above lateral line behind head, but must be closely examined), as well as on lateral-line scales . . . . . → ***50***

47a. Body robust, not strongly compressed; head profile rounded; pectoral-fin rays 14 to 16 (rarely 13); dorsal fin with XII to XIV spines and 5 to 9 segmented rays . . . . . ***Richardsonichthys leucogaster***

47b. Body notably compressed; head profile angular; pectoral-fin rays 11 to 13 (usually 12); dorsal fin with XIV to XVII spines and 7 to 9 segmented rays . . . . . **(*Ocosia*)** → ***48***

48a. Second and third dorsal-fin spines notably elongate relative to succeeding spines; no small spine on lower margin of second infraorbital bone; no small spine on lateral face of lacrimal bone; body with distinct brown spots . . . . . ***Ocosia zaspilota***

48b. Second dorsal-fin spine notably elongate relative to succeeding spines; a small spine on lower margin of second infraorbital bone; a small spine usually present on lateral face of lacrimal bone; small flecks of brown on sides, but no distinct spots . . . . . → ***49***

49a. Ratio of length of second dorsal-fin spine to length of third spine 1.6 to 1.7; pectoral-fin rays 12 or 13 (usually 12); gill rakers 2-5+1+8-15=12-21 . . . . . ***Ocosia apia***

49b. Ratio of length of second dorsal-fin spine to length of third spine about 1.15, with both notably longer than succeeding spines; gill rakers about 4+1+9=15 . . . . . ***Ocosia spinosa***
(Taiwan Province of China; not yet recorded from the area)

50a. Anal fin with III spines and 4 ½ or 5 ½ soft rays; gill rakers 2-3+1+5-7=8-10 . . . ***Tetraroge barbata***

50b. Anal fin with III spines and 6 ½ or 7 ½ soft rays; gill rakers 3-4+1+6-7=10-11 . . . . ***Tetraroge niger***

51a. Pectoral fins strongly notched or notably bilobate with upper rays longest . . . . . → ***52***

51b. Pectoral fins rounded or elongate, but not strongly notched or bilobate (somewhat bilobate in some species of *Neosebastes*) . . . . . → ***53***

52a. Pectoral-fin rays 22 or 23; dorsal-fin spine X extremely short, with membrane between it and spines IX and XI absent or nearly so . . . . . ***Plectrogenium nanum***

52b. Pectoral-fin rays 20 to 22; dorsal-fin spine X short, but not extremely so, with membrane between it and spines IX and XI normally developed as between other spines . . . . ***Trachyscorpia capensis***
(New Zealand; not yet recorded from the area)

53a. Opercle usually with a single weak ridge that typically ends in a small spine; lacrimal and suborbital bones (infraorbital bones 1 to 3) relatively broad, flat, and thin; postorbital always absent; dorsal-fin membranes incised nearly entire length of all spines; dorsal-fin spines greatly elongate in most species . . . . . **(subfamily Pteroinae)** → ***54***

53b. Opercle with 2 distinct ridges that diverge at an acute angle, both usually strongly developed and bearing spines; lacrimal and suborbital bones (infraorbital bones 1 to 3) relatively narrow and usually somewhat convex laterally and usually strongly ossified; lacrimal bone with strong spines along ventral margin; dorsal-fin spines short, usually less than 1/2 body depth; dorsal-fin membranes not incised nearly entire length of all spines; dorsal-fin spines not greatly elongate in most species . . . . . → ***67***

54a. Pectoral-fin rays unbranched in juveniles and adults . . . . . **(*Pterois*)** → ***61***

54b. Pectoral-fin rays branched in juveniles and adults . . . . . → ***55***

55a. Dorsal-fin spines relatively short, less than 1/2 body depth and nearly equal to length of dorsal-fin rays; mandible scaled, with serrated ridges . . . . . ***Brachypterois serrulatus***

55b. Dorsal-fin spines long, usually longer than body depth and much longer than dorsal-fin rays; mandible without serrate ridges or scales . . . . . → ***56***

56a. Anal fin with II spines (III spines in juveniles) and 7 ½ or 8 ½ soft rays; lateral surface of lacrimal bone with numerous ventrally directed spines; caudal fin with outer rays elongate and becoming filamentous in larger individuals . . . . . ***Parapterois heterurus***

56b. Anal fin with III spines and 5 ½ to 8 ½ soft rays; lateral surface of lacrimal bone without ventrally directed spines; caudal fin with outer rays never elongate . . . . . → ***57***

57a. Preopercle with IV spines, with third from dorsalmost notably enlarged and often with multiple points; males bearing a thin bony crest above orbit; pectoral-fin rays 15 to 18 . . . . . ***Ebosia bleekeri***
(Taiwan Province of China; not yet recorded from the area)

57b. Preopercle with III spines, none notably enlarged; males without a bony crest above orbit; pectoral-fin rays 17 to 21 . . . . . → ***58***

58a. Two (rarely 1 or 3) large ocelli on soft part of dorsal fin; 2 large cirri on snout; pectoral-fin rays 20 or 21 . . . . . ***Dendrochirus biocellatus***

58b. No ocelli on soft part of dorsal fin; nasal without cirrus; pectoral-fin rays 17 or 18 . . . . . → ***59***

59a. Body with broad red vertical bars on a pale background; vertical scale rows about 34; snout 8 to 10% standard length . . . . . ***Dendrochirus bellus***

59b. Body with red or reddish brown saddles or with broad red vertical bars that alternate with thinner red or reddish brown bars; vertical scale rows 45 to 54; snout 11 to 15% standard length . . . . . → ***60***

60a. Dorsal fin with XII or XIII spines and 9 ½ or 10 ½ soft rays (usually 9 ½); anal fin with III spines and 5 ½ soft rays; supraocular cirrus absent or shorter than orbit diameter . . . . . ***Dendrochirus brachypterus***

60b. Dorsal fin with XIII spines and 10 ½ or 11 ½ soft rays (usually 10 ½); anal fin with III spines and 6 ½ or 7 ½ soft rays; supraoccular cirrus usually well developed and typically longer than orbit diameter . . . . . ***Dendrochirus zebra***

61a. Vertical scale rows more than 65 (65 to 80 in *Pterois russellii*) . . . . . → ***62***

61b. Vertical scale rows less than 60 (50 to 60 in *Pterois lunulata*) . . . . . → ***64***

62a. Ventral surface of mandible with numerous longitudinal dark stripes; pectoral-fin rays 14; caudal fin and soft parts of dorsal and anal fins spotted . . . . . → ***63***

62b. Ventral surface of mandible pallid, without longitudinal dark stripes; pectoral-fin rays 13; caudal fin and soft parts of dorsal and anal fins without spots . . . . . ***Pterois russellii***

63a. Dorsal-fin rays 9 ½ to 11 ½ (almost always 10 ½); anal-fin rays 5 ½ or 6 ½ (almost always 6 ½) . . . . . ***Pterois miles***

63b. Dorsal-fin rays 10 ½ to 12 ½ (almost always 11 ½); anal-fin rays 5 ½ to 7 ½ (almost always 7 ½) . . . . . ***Pterois volitans***

64a. Pectoral-fin rays 12 to 14 (usually 13); anal fin with III spines and 7 ½ or 8 ½ soft rays; no spots on soft-rayed part of dorsal, caudal, and anal fins; vertical scale rows 50 to 60; scales on flank mostly cycloid . . . . . ***Pterois lunulata***

64b. Pectoral-fin rays 16 to 20; anal fin with III spines and 5 ½ or 6 ½ soft rays; spots on soft-rayed part of dorsal, caudal, and anal fins; vertical scale rows less than 60; scales on flank mostly ctenoid . . . . . → ***65***

65a. Dorsal fin with XIII spines and 10 ½ soft rays; pectoral-fin rays 18 or 19; supraocular cirrus usually poorly developed or absent . . . . . ***Pterois mombasae***

65b. Dorsal fin with XII spines and 10 ½ to 12 ½ soft rays; pectoral-fin rays 16 to 18 (usually 16 or 17); supraocular cirrus well developed . . . . . → ***66***

66a. About 5 broad dark bars on body, bordered by distinct white lines; broad horizontal stripe on caudal peduncle; supraocular cirrus not banded . . . . . ***Pterois radiata***

66b. Numerous dark bars on body; thin diagonal bars on caudal peduncle; supraocular cirrus with alternating light and dark bands . . . . . ***Pterois antennata***

67a. Lateral-line scales weakly ossified and barely roofing an otherwise open trough; bones of cranium relatively weakly ossified . . . . . **(subfamily Setarchinae)** → ***68***

67b. Lateral-line scales forming relatively complete tubes, that are sometimes buried; bones of cranium strongly or moderately ossified . . . . . → ***71***

68a. Anal fin with II spines; greatest body depth less than 28% of standard length; 2 or 3 spines immediately anterior to last dorsal-fin spine extremely small, sometimes covered by scales . . . . . ***Lioscorpius longiceps***

68b. Anal fin with III spines; greatest body depth greater than 30% of standard length; 2 or 3 spines immediately anterior to last dorsal-fin spine small, but at least 1/5 length of last spine . . . . . → ***69***

69a. Anteriormost lacrimal spine much shorter than posterior 2; anal fin with usually 6 ½ soft rays; eye relatively small with orbit diameter roughly 1/2 of interorbital width . . . . . ***Ectreposebastes imus***

69b. Anteriormost lacrimal spine about as long as posterior 2; anal fin with usually 5 ½ soft rays; eye relatively large with orbit diameter roughly equal to interorbital width . . (***Setarches***) → ***70***

70a. Second preopercular spine nearly equal to or longer than uppermost (first) or third; interorbital width 7 to 9% standard length . . . . . ***Setarches guentheri***

70b. Second preopercular spine reduced or absent, much shorter than uppermost (first) or third; interorbital width 9 to 12% standard length . . . . . ***Setarches longimanus***

71a. Lateral line normal, continuing onto or near base of caudal fin, with 20 to 54 scales . . . . . → ***72***

71b. Lateral line incomplete, continuing for short distance onto flank only, with 4 to 8 scales . . . . . ***Phenacoscorpius megalops***

72a. Posterior lacrimal spine hooked forward (not pronounced in small juveniles) . . . . . (***Parascorpaena***) → ***73***

72b. Posterior lacrimal spine absent or not hooked forward . . . . . → ***76***

73a. Suborbital ridge with 3 spines or spinous points, first ventral to eye, second and third posterior to eye and close together; pectoral-fin rays usually 15 or 16 . . . . . → ***74***

73b. Suborbital ridge with 2 spines or spinous points behind eye (no spinous point ventral to eye); pectoral-fin rays usually 17 or 18 . . . . . → ***75***

74a. Spinous dorsal fin of males with a distinct black blotch, mostly between spines VIII to XI (females with smaller or no spot); supraocular cirrus usually small or absent; reddish in life, not strongly mottled with dark brown . . . . . ***Parascorpaena mcadamsi***

74b. Spinous dorsal fin without black blotch in either sex; supraocular cirrus, when present, relatively large; mottled with dark brown; with 2 pale areas on caudal peduncle . . . . . ***Parascorpaena mossambica***

75a. Interorbital ridges well developed from middle of eye posteriorly, joining to form a broad loop at rear of interorbit and enclosing a depression; depression at occiput fairly well marked; tympanic spines usually closer together than are postocular spines . . . ***Parascorpaena aurita***

75b. Interorbital ridges weakly or moderately developed, not joining to enclose a depression; depression at occiput shallow or of moderate depth; tympanic spines usually further apart than are postocular spines . . . . . ***Parascorpaena picta***

76a. Scales on flank ctenoid, particularly above lateral line; head and body sometimes slightly compressed but not markedly so . . . . . → ***84***

76b. Scales on flank cycloid or each reduced to form small spiny point and widely scattered on body; head and body strongly compressed, at times extremely so . . . . . → ***77***

77a. Scales reduced to small widely scattered points; body extremely compressed; dorsal fin without or with only weak notch anterior to last dorsal-fin spine . . . . . ***Taenianotus triacanthus***

77b. Scales cycloid; body notably compressed but not extremely so; dorsal fin with relatively pronounced notch immediately anterior to last dorsal-fin spine . . . . . → ***78***

78a. Body not notably elevated, with body depth less than about 36% standard length . . . . . (***Pteroidichthys***) → ***83***

78b. Body notably elevated, with body depth 38 to 54% standard length . . . . . → ***79***

78a. Vertical scale rows 30 to 45 . . . . . ***Rhinopias filamentosa***

79b. Vertical scale rows 65 to 80 . . . . . → ***80***

80a. Pectoral fins with 15 or 16 rays; an ocellus or black spot on soft part of dorsal fin . . . . . → ***81***

80b. Pectoral fins with 17 or 18 rays; no ocellus or black spot on soft part of dorsal fin . . . . . → ***82***

81a. Head, body, and fins with round and oblong spots or blotches, with spots typically with pale centres and dark margins . . . . . ***Rhinopias frondosa***

81b. Head, body, and fins with dark reticulations or intricate markings on a pale background . . . . . ***Rhinopias aphanes***

82a. Third dorsal-fin spine about 16% standard length; mandibular cirri absent . . . ***Rhinopias argoliba***

82b. Third dorsal-fin spine about 24 to 36% standard length; mandibular cirri present . . ***Rhinopias xenops***

83a. Anal fin with II spines and 6 ½ soft rays . . . . . ***Pteroidichthys amboinensis***

83b. Anal fin with III spines and 5 ½ soft rays . . . . . ***Pteroidichthys noronhai***

84a. Third infraorbital bone (suborbital 2) inclined ventrally at an angle of about 30° to 45° and only narrowly connected to preopercle; dorsal-fin rays usually 11 ½, or more; ventral margin of lacrimal bone typically without spines or with weak spines . . . ***Sebastiscus tertius***

84b. Third infraorbital bone (suborbital 2) extends nearly straight posteriorly and relatively broadly connected to preopercle; ventral margin of lacrimal bone usually with numerous spines . . . . . → ***85***

85a. Dorsal-fin spines XIII . . . . . → ***86***

85b. Dorsal-fin spines XII . . . . . → ***100***

86a. Teeth on palatines present . . . . . → ***87***

86b. Teeth on palatines absent . . . . . → ***89***

87a. Lengths of longest dorsal-fin spines (third or fourth) much shorter than body depth . . . . . ***Thysanichthys crossotus***
(presence in the area uncertain; reported from northeastern Taiwan Province of China)

87b. Lengths of longest dorsal-fin spines (third or fourth) about equal to body depth . . . . . → ***88***

88a. Mandibular foramina each leading to a single large opening . . . . . ***Neosebastes incispinnis***

88b. Mandibular foramina each leading to numerous tiny perforations in membrane covering each formen . . . . . ***Neosebastes entaxis***
(Taiwan Province of China, Western Australia; not yet recorded from the area)

89a. Anal fin with II spines and 6 ½ or 7 ½ soft rays (occasionally with III spines and 5 ½ rays); first anal-fin spine rudimentary, about 20% length of second spine . . ***Hoplosebastes armatus***
(Japan, Hong Kong, Taiwan Province of China; not yet recorded from the area)

89b. Anal fin with III spines and 5 ½ soft rays; first anal-fin spine about 50% length of second spine . . . . . (***Scorpaenodes***) → ***90***

90a. Vertical scale row counts 70 to 75 . . . . . ***Scorpaenodes muciparus***

90b. Vertical scale row counts 30 to 60 . . . . . → ***91***

91a. Pectoral-fin rays 14 to 16, middle rays abruptly longer than those immediately above; nasal spine absent . . . . . → ***92***

91b. Pectoral-fin rays 17 to 20, middle rays not abruptly longer than those immediately above, fin wedge-shaped; nasal spine present, although sometimes reduced . . . . . → ***93***

92a. Dorsal-fin soft rays 9 ½; pectoral-fin rays usually 16; vertical scale rows more than 37 . . . . . ***Scorpaenodes albaiensis***

92b. Dorsal-fin soft rays 8 ½; pectoral-fin rays 15 to 16 (usually 15); vertical scale rows less than 32 . . . . . ***Scorpaenodes minor***

93a. A pronounced dark spot on subopercle; coronal and interorbital spines almost always present . . . . . ***Scorpaenodes littoralis***

93b. No pronounced dark spot on subopercle; coronal and interorbital spines always or often absent . . . . . → ***94***

94a. Vertical scale rows 29 to 35; dorsal-fin rays usually 8 ½ . . . . . → ***95***

94b. Vertical scale rows 38 to 50; dorsal-fin rays usually 9 ½ . . . . . → ***96***

95a. Pectoral-fin rays 17 or 18; usually 4 spines along suborbital ridge, a fifth spine on second infraorbital bone, below that in main line of suborbital ridge . . . . . ***Scorpaenodes hirsutus***

95b. Pectoral-fin rays 18 to 20, usually 18 or 19; usually 3 spines along suborbital ridge, without small spine on lateral face of lacrimal bone and without small second spine on second infraorbital bone ventral to those along main suborbital ridge . . . . ***Scorpaenodes kelloggi***

96a. Five to 15 spines on suborbital ridge; numerous cirri on head and body . ***Scorpaenodes parvipinnis***

96b. Usually 3 spines on suborbital ridge; few or no cirri on head and body . . . . . → ***97***

97a. A dark spot at rear of spinous portion of dorsal fin; a dark triangular mark at base of pectoral fins . . . . . ***Scorpaenodes varipinnis***

97b. No dark spot at rear of spinous portion of dorsal fin; no dark triangular mark at base of pectoral fins . . . . . → ***98***

98a. No large dark spot over opercle . . . . . ***Scorpaenodes smithi***

98b. A large dark spot (sometimes diffuse) over opercle . . . . . → ***99***

99a. Dark spot on opercle usually pronounced; fourth dorsal-fin spine relatively short, about 3 to 16% standard length; spine at posteroventral margin of lacrimal bone relatively weak, usually with a cirrus; body moderately blotched, particularly on dorsal and caudal fin . . . . . ***Scorpaenodes guamensis***

99b. Dark spot on opercle usually diffuse; fourth dorsal-fin spine relatively long, about 13 to 20% standard length; spine at posteroventral margin of lacrimal bone relatively strong, usually without a cirrus; body moderately speckled . . . . . ***Scorpaenodes scaber***

100a. Palatine teeth absent on roof of mouth . . . . . → ***101***

100b. Palatine teeth present on roof of mouth . . . . . → ***114***

101a. Black pigment between dorsal-fin spines I to III (or II and III); fourth dorsal-fin spine notably elongate relative to other spines in specimens larger than about 6 cm . ***Iracundus signifer***

101b. No black pigment between dorsal-fin spines I to III; fourth dorsal-fin spines not notably elongate relative to other spines . . . . . → ***102***

102a. Suborbital ridge without spines or with a single spine at end of ridge, near preopercle . . . . . ***Scorpaenopsis fowleri***

102b. Suborbital ridge with 3 to 5 spines . . . . . → ***103***

103a. Second dorsal-fin spine 7 to 10% standard length; first dorsal-fin spine 4 to 6% standard length; head profile notably blunt and with orbit 7 to 10% standard length . . ***Scorpaenopsis brevifrons***

103b. Second dorsal-fin spine 11 to 18% standard length; first dorsal-fin spine 6 to 9% standard length; head profile relatively pointed or with orbit 12 to 15% standard length . . . . → ***104***

104a. Upper opercular spine usually ending in 3 or more points; about 30 to 35 vertical scale rows; orbit large, 12 to 15% standard length . . . . . → ***105***

104b. Upper opercular spine ending in 1 or 2 points; more than 35 vertical scale rows; orbit moderate 7 to 11% standard length . . . . . → ***106***

105a. Predorsal scales 4; predorsal length 39 to 43% standard length; third dorsal-fin spine 12 to 16% standard length . . . . . ***Scorpaenopsis iop***
(Japan; not yet recorded from the area)

105b. Predorsal scales 5 or 6; predorsal length 46 or 47% standard length; third dorsal-fin spine 17 to 21% standard length . . . . . ***Scorpaenopsis cotticeps***

106a. Body immediately behind head strongly elevated, giving dorsal profile of back a strongly humped appearance; mouth superior and strongly upturned; interorbit 10 to 12% standard length . . . . . → ***107***

106b. Body immediately behind head elevated, but not strongly so; mouth terminal or superior but not strongly upturned; interorbit 6 to 8% standard length . . . . . → ***110***

107a. Supraorbital spine ending in multiple spinous points . . . . . ***Scorpaenopsis neglecta***

107b. Supraorbital spine ending in a single spinous point . . . . . → ***108***

108a. Medial surface of pectoral fins with a dark subterminal band along entire margin of fin . . . . . ***Scorpaenopsis macrochir***

108b. Medial surface of pectoral fins with a dark subterminal band incomplete or absent entirely . . . . . → ***109***

109a. Ratio of orbit diameter to snout length 0.39 to 0.53; pectoral-fin rays 17 to 19, but usually 18; black subterminal band on medial (axial) surface of pectoral fins present along upper 1/2 or less of fin margin (absent in Hawaiian populations); pigment over proximal 1/2 of upper rays not distinct from that on axial, if present . . . . ***Scorpaenopsis diabolus***

109b. Ratio of orbit diameter to snout length 0.62 to 0.92; pectoral-fin rays 16 to 18, but usually 17; a black subterminal band on medial (axial) surface of pectoral fins extending slightly more than 1/2 of fin margin; a distinct large spot over proximal 1/3 of upper rays . . . . . ***Scorpaenopsis gibbosa***
(Indian Ocean; not yet recorded from the area)

110a. Pectoral-fin rays 19 or 20; vertical scale rows 60 to 68 . . . . . ***Scorpaenopsis oxycephala***

110b. Pectoral-fin rays 15 to 19; vertical scale rows 35 to 61 (*Scorpaenopsis cirrhosa* occasionally with more than 60 and rarely 19 pectoral-fin rays) . . . . . → ***111***

111a. Pectoral-fin rays 16 or 17 (usually 17) . . . . . → ***112***

111b. Pectoral-fin rays 17 to 19 (usually 18 or 19) . . . . . → ***113***

112a. Vertical scale rows about 35 . . . . . ***Scorpaenopsis furneauxi***

112b. Vertical scale rows 44 to 53 . . . . . ***Scorpaenopsis venosa***

113a. Vertical scale rows 42 to 52; occipital pit relatively deep; snout relatively pointed . . . . . ***Scorpaenopsis papuensis***

113b. Vertical scale rows 55 to 61; occipital pit relatively shallow; snout relatively rounded . . . . . ***Scorpaenopsis cirrhosa***

114a. Occiput depressed, with at least a shallow pit, a deep pit in some species, never flat or convex; scales on pectoral-fin base reduced or absent; scales on breast cycloid, often notably reduced, or absent . . . . . **(*Scorpaena*)** → ***115***

114b. Occiput inclined, but flat or slightly convex, never concave; scales on breast ctenoid or cycloid, small, but never absent . . . . . → ***119***

115a. Scales on pectoral-fin base . . . . . → ***116***

115b. Scales absent on pectoral-fin base . . . . . → ***118***

116a. Coronal spines present . . . . . ***Scorpaena papillosus***
(New Zealand; not yet recorded from the area)

116b. Coronal spines absent . . . . . → ***117***

117a. Pectoral-fin rays 16; vertical scale rows about 30; lateral-line scales about 33 . . . . . ***Scorpaena gibbifrons***

117b. Pectoral-fin rays 17 or 18; vertical scale rows 64 to 67; lateral-line scales 24 to 26 . . . . . ***Scorpaena cookii***

118a. Pectoral-fin rays 17; vertical scale rows 48 to 63 . . . . . ***Scorpaena cardinalis***

118b. Pectoral-fin rays 19; vertical scale rows about 43 . . . . . ***Scorpaena hemilepidota***

119a. All pectoral-fin rays simple; no slit behind last hemibranch . . . . . ***Pontinus rhodochrous***

119b. At least some rays branched (need to observe carefully); a slit behind last hemibranch (except *N. bauchotae*, which does not occur in fishing area) . . . . . → ***120***

120a. Dorsal fin-rays 8 ½ to 10 ½, the last split to base; occiput convex . . . . . **(*Sebastapistes*)** → ***121***

120b. Dorsal fin-rays 9 ½ to 11 ½, the last split to base; occiput flat or nearly so . . . . . → ***126***

121a. Coronal spines present; pronounced dark blotch at rear of spinous portion of dorsal fin . . . . . ***Sebastapistes mauritiana***

121b. Coronal spines absent; no dark blotch at rear of spinous portion of dorsal fin . . . . . → ***122***

122a. Lacrimal bone with 2 spines; a ridge anterior to lower opercular spine . . . . ***Sebastapistes strongia***

122b. Lacrimal bone with 3 to 5 spines; no ridge anterior to lower opercular spine . . . . . → ***123***

123a. Body and fins covered with numerous conspicuous small dark spots . . . . . → ***124***

123b. Body and fins without numerous dark spots; spots, when present, large and pale . . . . . → ***125***

124a. Lacrimal bone with 4 spines; vertical scale rows 50 to 55 . . . . . ***Sebastapistes coniorta***

124b. Lacrimal bone with 5 spines; vertical scale rows 44 to 49 . . . . . ***Sebastapistes tinkhami***

125a. Cycloid or emarginate scales on flank; lacrimal bone with 2 spines . . . . ***Sebastapistes galactacma***

125b. Ctenoid scales on flank; lacrimal bone with usually 5 spines . . . . . ***Sebastapistes cyanostigma***

126a. Vertebrae 25; posterior lacrimal spine relatively weak, pointing directly ventrally; caudal peduncle at base of caudal fin probably with scattered large melanophores . . ***Idiastion pacificum***
(Kyushu-Palau Ridge; not yet recorded from the area)

126b. Vertebrae 24; posterior lacrimal spine relatively strong, pointing posteroventrally; caudal peduncle at base of caudal fin without scattered large melanophores . . . . . **(*Neomerinthe*)** → ***127***

127a. Pectoral-fin rays usually 18; 3 spines on suborbital ridge; no spine on lateral face of lacrimal bone; 5 preopercular spines, with third from dorsalmost longest . . . ***Neomerinthe rotunda***

127b. Pectoral-fin rays usually 19; 4 spines on suborbital ridge; anteriormost on lateral face of lacrimal bone; 4 preopercular spines . . . . . → ***128***

128a. Fourth dorsal-fin spine longest; tip of lower jaw protruding just beyond tip of upper jaw . . . . . ***Neomerinthe megalepis***

128b. Third dorsal-fin spine longest; jaws subequal . . . . . → ***129***

129a. Suborbital spine ventral to midorbit in line with ridges of succeeding spines . . . . . ***Neomerinthe amplisquamiceps***

129b. Suborbital spine ventral to midorbit slightly below ridges of succeeding spines . . . . . ***Neomerinthe procurva***

List of species occurring in the area

The symbol ◄ is given when species accounts are included. A question mark indicates that presence in the area is uncertain.

Subfamily APISTINAE

◄ *Apistops caloundra* de Vis, 1885

◄ *Apistus carinatus* (Bloch and Schneider, 1801)

Cheroscorpaena tridactyla Mees, 1964

Subfamily PLECTROGENINAE

◄ *Plectrogenium nanum* Gilbert, 1905

Subfamily PTEROINAE

◄ *Brachypterois serrulatus* (Richardson, 1846)

◄ *Dendrochirus bellus* (Jordan and Hubbs, 1925)
◄ *Dendrochirus biocellatus* (Fowler, 1938)
◄ *Dendrochirus brachypterus* (Cuvier, 1829)
◄ *Dendrochirus zebra* (Quoy and Gaimard, 1824)

? *Ebosia bleekeri* (Döderlein, 1884)

Parapterois heterurus (Bleeker, 1856)

Pterois antennata (Bloch, 1787)
Pterois lunulata Temminck and Schlegel, 1842
Pterois miles (Bennett, 1828)
Pterois mombasae (Smith, 1957)
Pterois radiata Cuvier, 1829
Pterois russellii Bennett 1831
Pterois volitans (Linnaeus, 1758)

Subfamily SCORPAENINAE

? *Idiastion pacificum* Ishida and Amaoka, 1992

Iracundus signifer Jordan and Evermann, 1903

Neomerinthe amplisquamiceps (Fowler, 1938)
Neomerinthe megalepis (Fowler, 1938)
Neomerinthe procurva Chen, 1981
Neomerinthe rotunda Chen, 1981

Parascorpaena aurita (Rüppell, 1838)
Parascorpaena mcadamsi (Fowler, 1938)
Parascorpaena mossambica (Peters, 1855)
Parascorpaena picta (Kuhl and Van Hasselt in Cuvier 1829)

Phenacoscorpius megalops Fowler, 1938

Pontinus rhodochrous (Günther, 1871)

Pteroidichthys amboinensis Bleeker, 1856
Pteroidichthys noronhai (Fowler, 1938)

Rhinopias aphanes Eschmeyer, 1973
Rhinopias argoliba Eschmeyer, Hirosaki, and Abe, 1973
Rhinopias filamentosa (Fowler, 1938)
Rhinopias frondosa (Günther, 1891)
Rhinopias xenops (Gilbert, 1905)

Scorpaena cardinalis Richardson, 1842
? *Scorpaena cookii* Günther, 1873
Scorpaena gibbifrons Fowler, 1938
Scorpaena hemilepidota Fowler, 1938

Scorpaenodes albaiensis (Evermann and Seale. 1907)
Scorpaenodes hirsutus (Smith, 1957)
Scorpaenodes guamensis (Quoy and Gaimard, 1824)
Scorpaenodes kelloggi (Jenkins, 1903)
Scorpaenodes littoralis (Tanaka, 1917)
Scorpaenodes minor (Smith, 1958)
Scorpaenodes muciparus (Alcock, 1889)
Scorpaenodes parvipinnis (Garrett, 1864)
Scorpaenodes scaber (Ramsey and Ogilby, 1885)
Scorpaenodes smithi Eschmeyer and Rama Rao, 1972
Scorpaenodes varipinnis Smith, 1957

Scorpaenopsella armata Fowler, 1938[1/]

Scorpaenopsis brevifrons Eschmeyer and Randall, 1975
Scorpaenopsis cirrhosa (Thunberg, 1793)
Scorpaenopsis cotticeps Fowler, 1938
Scorpaenopsis diabolus (Cuvier, 1829)
Scorpaenopsis fowleri (Pietchmann, 1934)

1/ Known from a single specimen taken at Sombero Island, between Balayan Bay and Verde Island Passage in the Philippines. Not included in the identification key.

Scorpaenopsis furneauxi Whitley, 1959
? *Scorpaenopsis gibbosa* (Bloch and Schneider, 1801)
Scorpaenopsis macrochir Ogilby, 1910
Scorpaenopsis neglecta (Heckel, 1840)
Scorpaenopsis oxycephala Bleeker, 1849
Scorpaenopsis papuensis (Cuvier, 1829)
Scorpaenopsis venosa (Cuvier, 1829)

Sebastapistes coniorta Jenkins, 1903
Sebastapistes cyanostigma (Bleeker, 1856)
Sebastapistes galactacma Jenkins, 1903
Sebastapistes mauritiana (Cuvier, 1829)
Sebastapistes strongia (Cuvier, 1829)
Sebastapistes tinkhami (Fowler, 1946)

Taenianotus triacanthus Lacepède, 1802

Subfamily NEOSEBASTINAE
Neosebastes incispinnis Ogilby, 1910

Subfamily SEBASTINAE
? *Sebastes inermis* Cuvier, 1829[2/]
? *Sebastes joyneri* Günther, 1878 [2/]
? *Sebastes pachycephalus* Temminck and Schlegel, 1843 [2/]
? *Sebastiscus albofasciatus* Lacepéde, 1801 [2/]
? *Sebastiscus marmoratus* Cuvier, 1829 [2/]
Sebastiscus tertius Barsukov and Chen, 1978

Subfamily SETARCHINAE
Ectreposebastes imus Garman, 1899

Lioscorpius longiceps Günther, 1880

Setarches guentheri Johnson, 1862
Setarches longimanus (Alcock, 1894)

Subfamily SYNANCEIINAE
Choridactylus multibarbus Richardson, 1848

Erosa erosa Langsdorf, 1829
? *Erosa daruma* (Whitley, 1932)

Inimicus brachyrhynchus (Bleeker, 1874)
Inimicus caledonicus (Sauvage, 1875)
Inimicus cuvieri (Grey, 1835)
Inimicus didactylus (Pallas, 1769)
Inimicus filamentosus (Cuvier, 1829)
Inimicus gruzovi Mandritsa, 1991
Inimicus japonicus (Cuvier, 1829)
Inimicus joubini (Chevy, 1927)
Inimicus sinensis (Valenciennes, 1833)
Inimicus smirnovi Mandritsa, 1990

Leptosynanceia asteroblepa (Richardson, 1848)

Minous coccineus Alcock, 1890
Minous monodactylus (Bloch and Schneider, 1801)
Minous pictus Günther, 1880
Minous pusillus Temminck and Schlegel, 1843
Minous quincarinatus (Fowler, 1943)
Minous trachycephalus (Bleeker, 1854)
Minous versicolor Ogilby, 1910

2/ Reported from the Mariana Islands, but based on records that are unconfirmed and likely erroneous. Not included in the identification key.

Synanceia alula Eschmeyer and Rama Rao, 1973
Synanceia horrida (Linnaeus, 1766)
Synanceia verrucosa Bloch and Schneider, 1801

Trachicephalus uranoscopus (Bloch and Schneider, 1801)

Subfamily TETRAROGINAE

Ablabys macracanthus Bleeker, 1857
Ablabys taenianotus (Cuvier, 1829)

Centropogon australis (White, 1790)
Centropogon marmoratus Günther, 1862

Cottapistus cottoides (Linnaeus, 1758)

Liocranium praepositum Ogilby, 1904

Neocentropogon affinis (Lloyd, 1909)
Neocentropogon trimaculatus Chan, 1965

Notesthes robusta (Günther, 1860)

Ocosia apia Poss and Eschmeyer, 1975
? *Ocosia spinosa* Chen, 1981
Ocosia zaspilota Poss and Eschmeyer, 1975

Paracentropogon longispinis (Cuvier, 1829)
Paracentropogon vespa Ogilby, 1910[3/]
Paracentropogon zonatus (Weber, 1913)[4/]

Richardsonichthys leucogaster (Richardson, 1848)

? *Snyderina yamanokami* Jordan and Starks, 1901[5/]

Tetraroge barbata (Cuvier, 1829)
Tetraroge niger (Cuvier, 1829)

Vespicula cypho (Fowler, 1938)
Vespicula depressifrons Richardson, 1848
Vespicula trachinoides (Cuvier, 1829)
Vespicula zollingeri (Bleeker, 1848)

References

Chen, L.C. 1981. Scorpaenid fishes of Taiwan. *Quart. Journ. Taiwan Mus.*, 34(1,2):60 p.

Eschmeyer, W.N. 1986. Scorpaenidae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, MacMillan South Africa, pp. 463-478.

Matsubara, K. 1943. Studies on the scorpaenoid fishes of Japan (II). *Trans. Sigenkagaku Kenkyusyo, Tokyo*, 2:171-486.

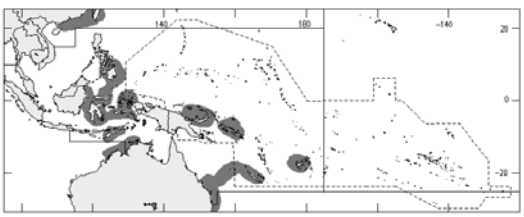
Weber, M. and L.F. de Beaufort (eds). 1962. *The fishes of the Indo-Australian Archipelago. XI. Scleroparei, Hypostomides, Pediculati, Plectognathi, Opisthomi, Discocephali, Xenopterygii.* Leiden, E.J. Brill, 481 p.

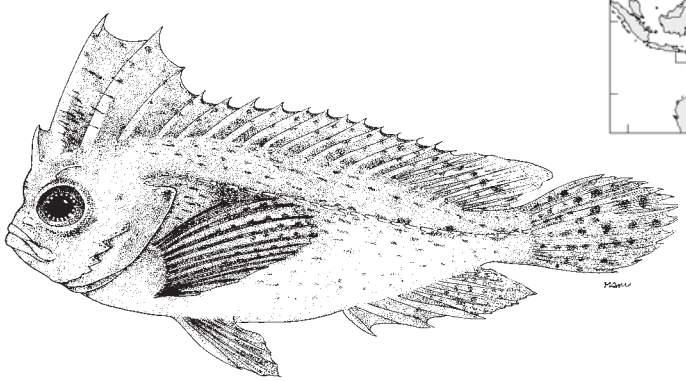
3/ Not included in the identification key. The differences between this species and *Paracentropogon longispinnis* are uncertain.
4/ Known only from 2 syntypes from the Sulu or Postillon Island, Philippines.
5/ Based on a single record from Indonesia that may not be this species.

Ablabys taenianotus (Cuvier, 1829)

En - Cockatoo waspfish.

Maximum standard length 10.7 cm. Among seaweeds in rocky intertidal or littoral habitats to depths of nearly 80 m. Rocks back and forth in response to surge and can be easily caught with small hand nets. Of no importance to fisheries, but of interest to the aquarium trade because of its intriguing appearance. Widely distributed in the western Pacific from Japan in the north, to Australia and Fiji in the south. Found along the Asian mainland, the Philippines, throughout the Indonesian Archipelago, and westward to the Solomons and Fiji, but does not reach more oceanic islands of the area. Outside the area, known from India, the Andaman Islands, Taiwan Province of China, Japan, and Western Australia. Originally described from a specimen said to be taken at Mauritius, but this needs further confirmation.

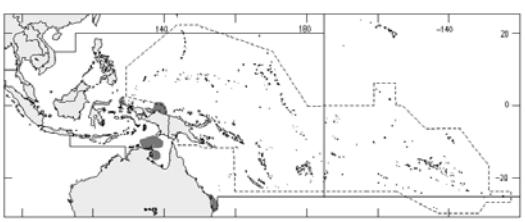


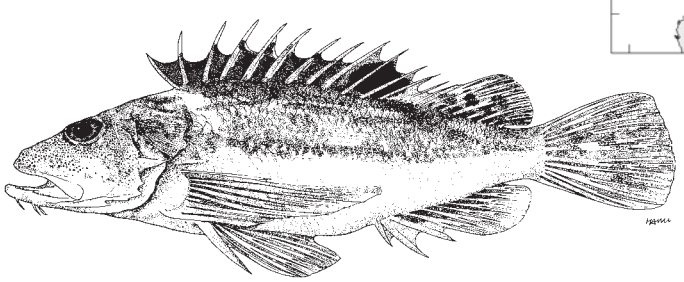


Apistops caloundra (de Vis, 1885)

En - Shortspined waspfish.

Maximum standard length 8.8 cm. Taken in muddy and silty areas and near river mouths. Known to partially bury itself in the soft substrate. Caught in shrimp trawls, but of no commercial importance. Care should be exercised when removing this species from nets. Known from the Gulf of Carpenteria, near Groote Eylandt eastward to Caloundra, Queensland and taken from Jayapura, Irian Jaya.



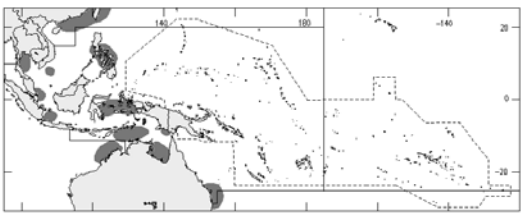


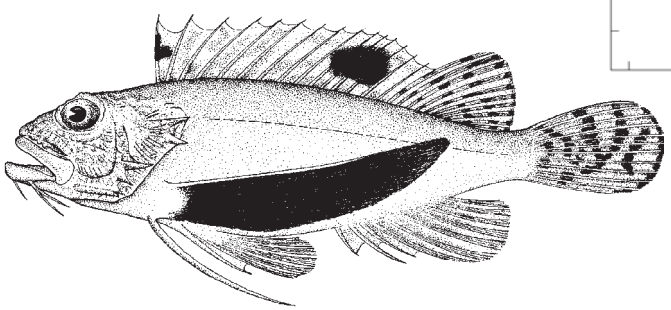
(after Sainsbury, Kailola, and Leyland, 1985)

Apistus carinatus (Bloch and Schneider, 1801)

En - Ocellated waspfish; **Fr** - Rascasse ocellée; **Sp** - Rascacio ocelado.

Maximum standard length 12.5 cm. Taken over fine sand in depths of 21 to 60 m, particularly in bays. Quite common in trawls and utilized as a food fish in local markets, despite its venomous nature. Extreme caution should be exercised in handling this species, as wounds from its fin spines can be painful. A widespread species, occurring from the mouth of the Umblanga River in South Africa and the Eilat and Massawa in the Red Sea in the west, to Japan, the Philippines, and Australia in the east. In the area, reported from the Sunda-Mollucas Archipelago, the Malay Archipelago, Indonesia, the Philippines (Cavite and Luzon), New Guinea (Merauke), Western Australia (Kimberly Region), Timor and Arafura seas, and Gulf of Carpentaria, to just south of the area at Ballina, New South Wales; also known from China and Taiwan Province of China.

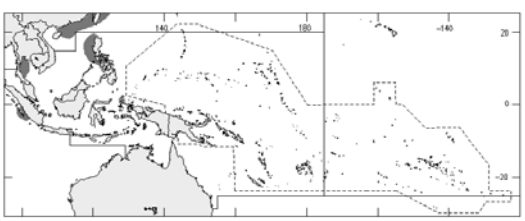


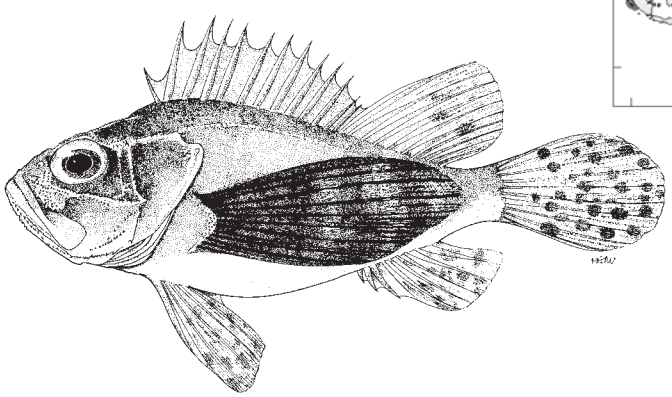


Brachypterois serrulatus (Richardson, 1846)

En - Sawcheek scorpionfish.

Maximum standard length about 11.5 cm. A little-known species, occasionally found in trawls and collected to a depth of 82 m. Of no interest to fisheries, because of its small size and venomous nature. In the north of the area, known from the western coast of Luzon and Thailand; outside the area, reported from Japan, Taiwan Province of China, southern China, Western Australia, India, and the Red Sea.

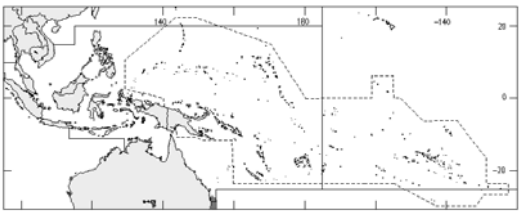


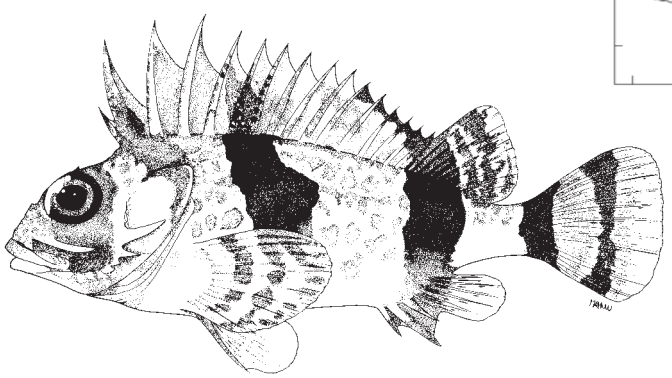


Centropogon australis (White, 1790)

En - Fortesque.

Maximum standard length at least 8.1 cm. Extremely common in estuaries, particularly in the reproductive season in the austral Spring. Although of no commercial importance, commonly entrapped in fishing gear, such as trawls, and can be dangerous to fishermen who attempt to remove them. Just enters the south of the area, reaching Dunwich, Moreton Bay, in southern Queensland; found south of the area along the Australian coast to southern New South Wales; reports of this species in Melanesia are erroneous.

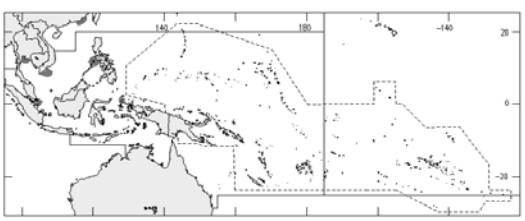


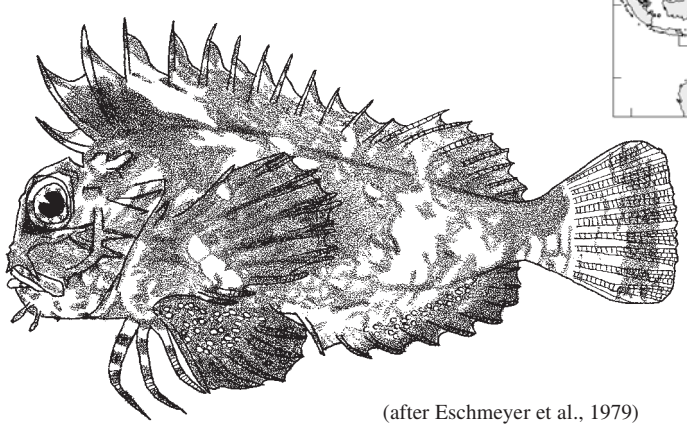


Choridactylus multibarbus Richardson, 1848

En - Threefinger scorpionfish.

Maximum standard length at least 10.3 cm. A highly venomous species, occasionally taken in coastal waters and tidal inlets. Although consumed only in subsistence fisheries and of little commercial value, it represents a danger to fishermen in areas where it occurs. Widely distributed, known from the Red Sea, eastward through the Persian Gulf, Pakistan, and India to the Gulf of Thailand, China, and the Philippines.



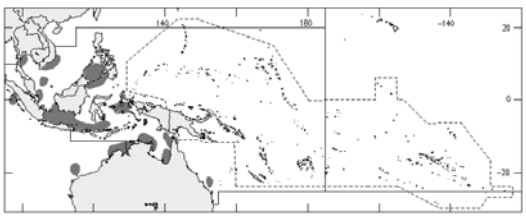


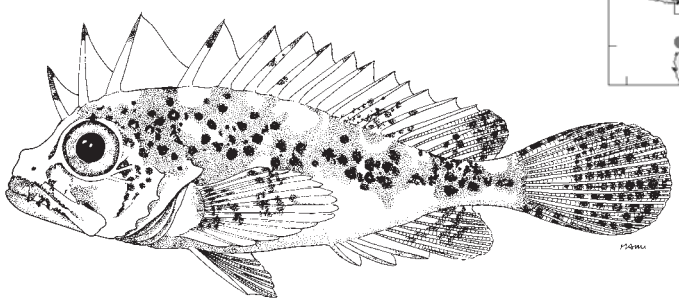
(after Eschmeyer et al., 1979)

Cottapistus cottoides (Linnaeus, 1758)

En - Yellow waspfish.

Maximum standard length at least 9.2 cm. Over moderately soft bottoms, from less than a metre to a depth of 24 m. This species can be common in shrimp trawls. Care must be taken when removing it from nets as it is highly venomous. Commonly taken in China, Viet Nam, Thailand, Singapore, Java, Flores, Kei Islands, Borneo, the Dampier Archipelago, New Guinea, northwestern Australia, the Gulf of Carpentaria, and the east coast of Queensland south to Bowen; not yet reported from the Philippines, except at Jolo.



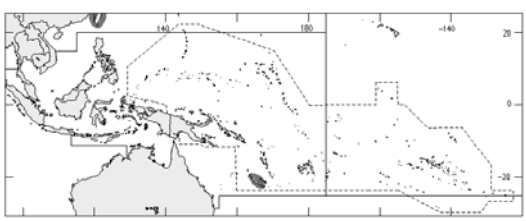


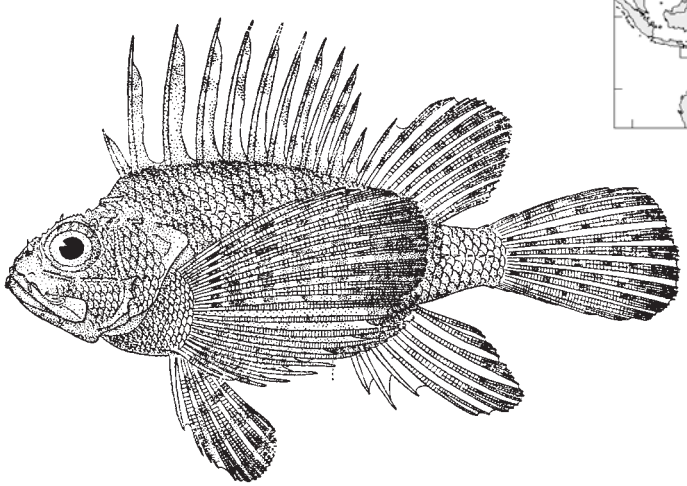
(after Weber and de Beaufort, 1962)

Dendrochirus bellus (Jordan and Hubbs, 1925)

En - Butterfly scorpionfish.

Maximum standard length 15 cm. A rare food fish; when taken, it is caught on sandy-mud or gravel bottoms at depths of 15 to 200 m. Common in the rocky littoral and sublittoral zones of northern Taiwan Province of China. Also reported from New Caledonia, but better known from Taiwanese and Japanese waters; likely has a broader distribution than presently reported.

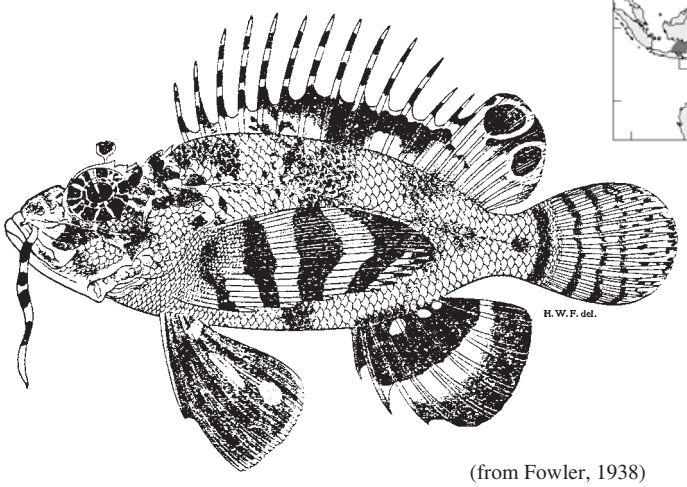


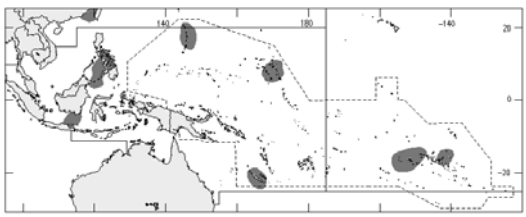


Dendrochirus biocellatus (Fowler, 1938)

En - Twinspot lionfish.

Maximum standard length 12 cm. A little-known species, without importance to fisheries. Found in rocky littoral and sublittoral areas, which may account for its infrequent capture. Although only occasionally collected, it has a broad distribution, from South Africa and Mauritius in the west to the Tuamotu Archipelago in the east; reported from Jolo and the Sulu Islands, near the southern Philippines, New Caledonia, and as rare in Taiwan Province of China and the Ryukyu Islands.



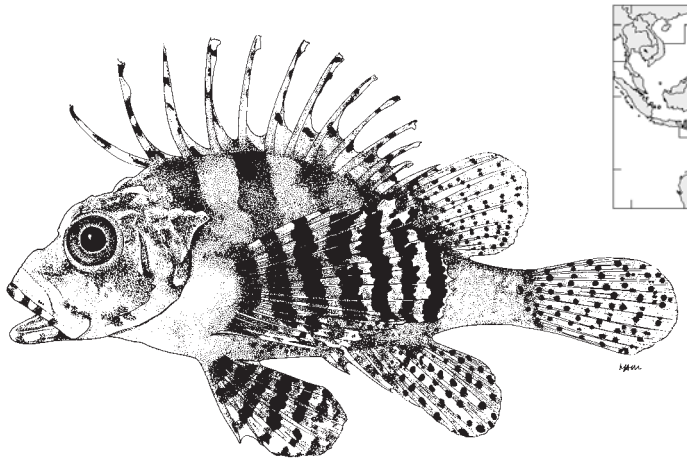


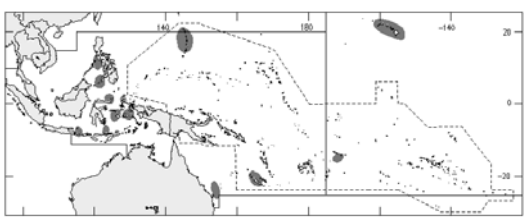
(from Fowler, 1938)

Dendrochirus brachypterus (Cuvier, 1829)

En - Dwarf lionfish.

Maximum standard length at least 15 cm; possibly to 25 cm. Commonly caught at depths of 32 to 80 m. Crepuscular or nocturnal in habit, remaining inactive by day. Highly venomous, but frequently used as food in subsistence fisheries. A common and widespread species, ranging from the Red Sea and South Africa to the Philippines, Samoa, and Hawaii. In the south of the area, likely abundant throughout all of Indonesia, but becoming less common on the Great Barrier Reef and on the eastern Australian coast.



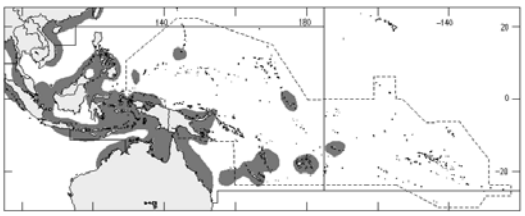


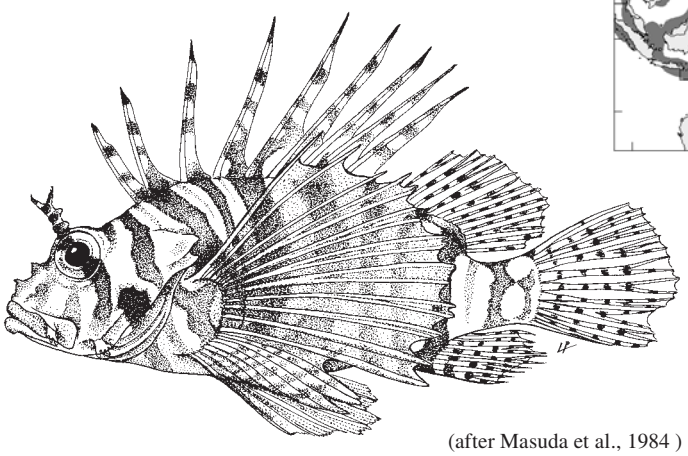
(after Smith and Heemstra, 1986)

Dendrochirus zebra (Cuvier, 1829)

En - Zebra lionfish.

Maximum standard length about 20 cm. Common in lagoons and outer reef slopes among corals, as well as rocky littoral and sublittoral areas to depths of about 73 m. Very common in the area, and ranging widely beyond it; known from South Africa, Madagascar, the Red Sea, India, and Sri Lanka in the west, to the Philippines, Palau, Guam, Apia, Fiji, and Samoa in the east; commonly reported in Australia and southern Japan.



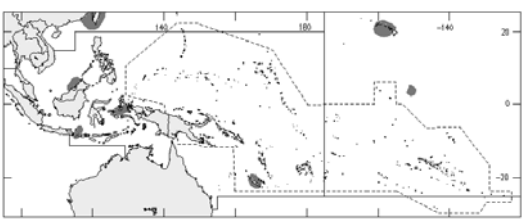


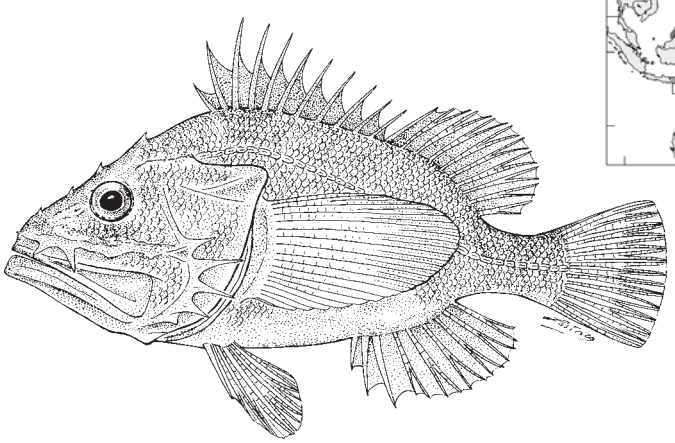
(after Masuda et al., 1984)

Ectreposebastes imus Garman, 1899

En - Black scorpionfish.

Maximum standard length 17 cm. Occurs at considerable depths; taken in trawls and midwater nets from 150 to 800 m. Although catchable by commercial gear, this small species is not sufficiently abundant to have potential for fisheries. Within the area, reported only from off Bali, Indonesia, and off New Caledonia; also known from Taiwan Province of China, Hawaii, and nearly circumglobal in tropical and subtropical waters of the Atlantic and Pacific Oceans; additional records in the area can be expected.

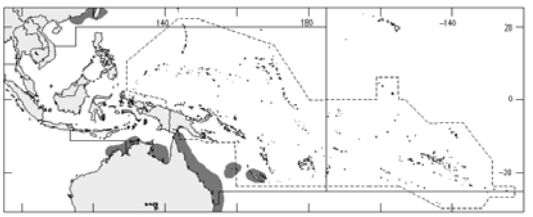


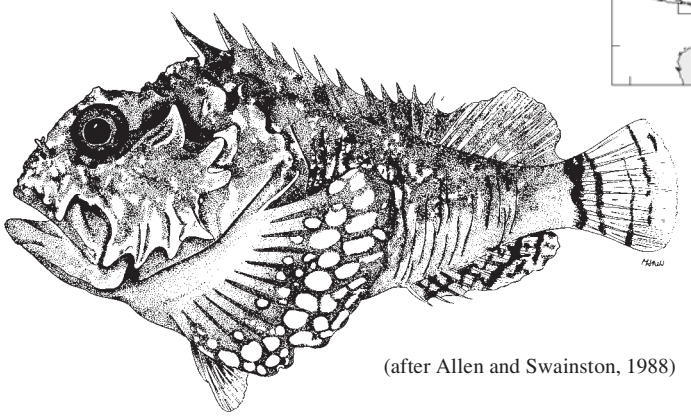


Erosa erosa (Langsdorf, 1829)

En - Daruma stinger.

Maximum standard length 14 cm. A common food fish in Japan, but seldom eaten elsewhere, either because it is infrequently encountered, or perhaps due to its grotesque appearance. Occurs in depths of 60 to 85 m at Chesterfield Bank, but more frequently seen in shallow waters of southern Japan, Taiwan Province of China, and Australia. Common in Australia, where it is taken as far south as New South Wales; also reported from New Caledonia and Chesterfield Bank, but records from the Indonesian Archipelago do not exist.



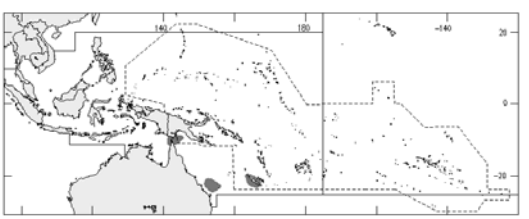


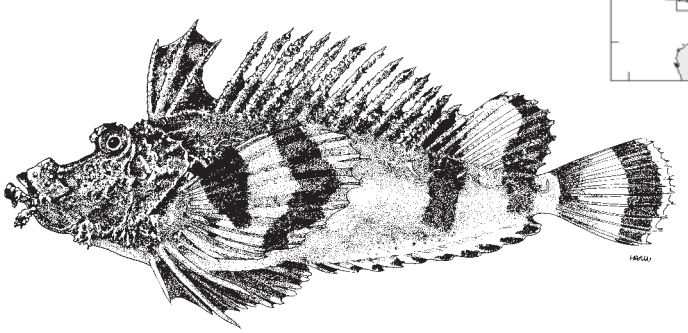
(after Allen and Swainston, 1988)

Inimicus caledonicus (Sauvage, 1875)

En - Caledonian stinger.

Maximum standard length 17 cm. This species can be found on sandy bottoms in depths of 15 to 60 m. In the area, reported from New Caledonia and Queensland. Known to range westward to the Nicobar and Andaman Islands.





(after Day, 1875)