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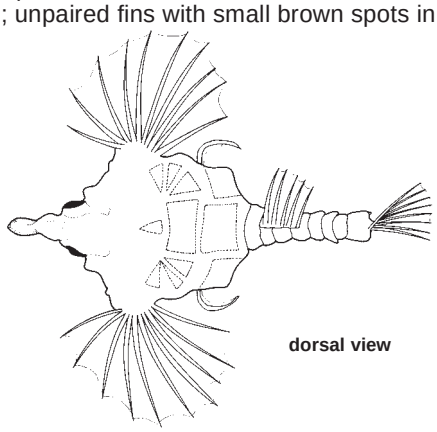
Order GASTEROSTEIFORMES

PEGASIDAE

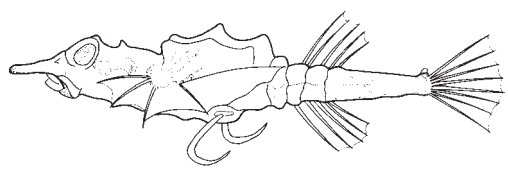
Seamoths (seadragons)

by T.W. Pietsch and W.A. Palsson

Diagnostic characters: Small fishes (to 18 cm total length); body depressed, **completely encased in fused dermal plates**; tail encircled by 8 to 14 laterally articulating, or fused, bony rings. Nasal bones elongate, fused, forming a rostrum; mouth inferior. **Gill opening restricted to a small hole on dorsolateral surface behind head**. **Spinous dorsal fin absent**; soft dorsal and anal fins each with 5 rays, placed posteriorly on body. Caudal fin with 8 unbranched rays. **Pectoral fins large, wing-like**, inserted horizontally, composed of 9 to 19 unbranched, soft or spinous-soft rays; pectoral-fin rays interconnected by broad, transparent membranes. **Pelvic fins thoracic, tentacle-like**, with I spine and 2 or 3 unbranched soft rays. **Colour:** in life highly variable, apparently capable of rapid colour change to match substrata; head and body light to dark brown, olive-brown, reddish brown, or almost black, with dorsal and lateral surfaces usually darker than ventral surface; dorsal and lateral body surface often with fine, dark brown reticulations or mottled lines, sometimes with irregular white or yellow blotches; tail rings often encircled with dark brown bands; pectoral fins with broad white outer margin and small brown spots forming irregular, longitudinal bands; unpaired fins with small brown spots in irregular rows.



dorsal view

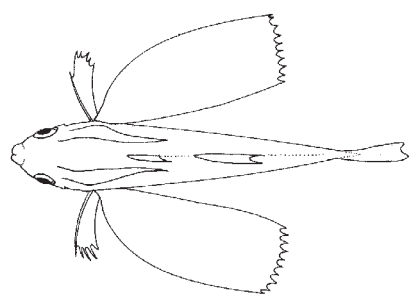


lateral view

Habitat, biology, and fisheries: Benthic, found on sand, gravel, shell-rubble, or muddy bottoms. Collected incidentally by seine, trawl, dredge, or shrimp nets; postlarvae have been taken at surface lights at night. They apparently "walk" over the bottom with the aid of the tentacular pelvic fins. In Hong Kong and other southeast Asian localities, specimens are dried and sold for medicinal purposes; the dried bodies are subsequently boiled in water and the resulting broth is sipped as a cure for various throat irritations; dried specimens have also been collected and maintained as curiosities in Chinese insect boxes. Otherwise these fishes are of no commercial value.

Similar families occurring in the area

Dactylopteridae: head large, snout blunt, body covered with scute-like scales, not encased in fused bony plates; tail not encased in bony rings. Spinous dorsal fin well developed; pectoral fins extremely large, with 28 to 37 rays; pelvic fins with I spine and 4 soft rays.



Dactylopteridae

List of species occurring in the area

Eurypegasus draconis (Linnaeus, 1766)

Pegasus laternarius Cuvier, 1816

Pegasus volitans Linnaeus, 1758

References

Orr, J.W. and T.W. Pietsch. 1994. Pipefishes and their allies. In *Encyclopedia of fishes*, edited by J. R. Paxton and W.N. Eschmeyer. Sydney, University of New South Wales Press, pp. 168-172.

Palsson, W.A. and T.W. Pietsch. 1989. Revision of the acanthopterygian fish family Pegasidae (order Gasterosteiformes). *Indo-Pac. Fishes*, (18):38 p.

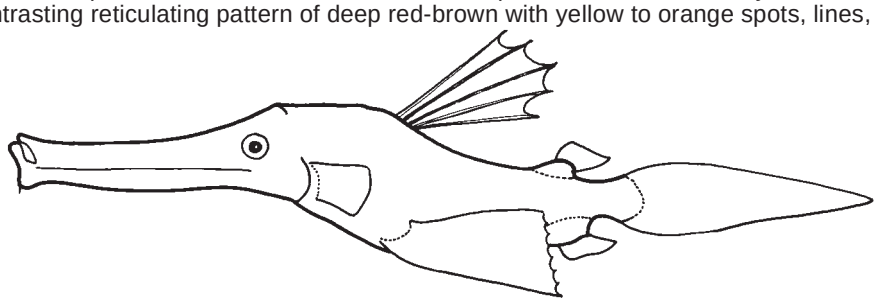
Pietsch, T.W. 1978. Evolutionary relationships of the sea moths (Teleostei: Pegasidae) with a classification of gasterosteiform families. *Copeia*, 1978:517-529.

SOLENOSTOMIDAE

Ghost pipefishes

by R.A. Fritzsche and K.G. Thiesfeld

Diagnostic characters: Small fishes (12 to 16 cm total length); **body elongate, laterally compressed**, depth greatest between origin of spinous dorsal and pelvic fins, **strongly constricted between pelvic-fin insertion and origin of soft dorsal and anal fins. Head elongate**, approximately 44% of standard length; **snout elongate, tubular,** with nasal lamellae (number of lamellae sexually dimorphic); mouth small, vertically oriented, toothless, **with single mandibular barbel**. Two dorsal fins, the first with V weak spines and the second with 17 to 22 unbranched soft rays; **spinous and soft dorsal fins widely separated, each on a raised base**; anal fin rounded, situated opposite soft dorsal fin and on a raised base, composed of 17 to 22 unbranched soft rays; caudal fin truncate, rounded, or lanceolate; pectoral fins small, rounded; pelvic fins large, situated opposite spinous dorsal fin. Lateral line absent. **Body covered with stellate plates that bear spines, variously with cutaneous papillae**. **Colour:** overall colour highly variable, ranging between light and dark phases: light colour phase with light background often overlain with spots and/or reticulations; dark colour phase with overall dusky to black coloration or strongly contrasting reticulating pattern of deep red-brown with yellow to orange spots, lines, or blotches.

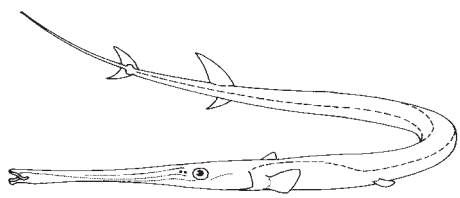


Similar familes occurring in the area

Aulostomidae: larger; distinct separate spines anterior to soft dorsal fin; lateral line present; never cutaneous papillae.

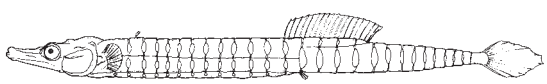
Syngnathidae: body encased in bony rings; no spines in fins; pelvic fins absent; anal fin reduced or absent; male with specialized ventral brooding surface or pouch.

Fistulariidae: body depressed rather than compressed; spinous dorsal fin absent; a distinct caudal-fin filament present.



Fistulariidae

Aulostomidae



Syngnathidae

Habitat, biology, and fisheries: Ghost pipefishes are found over sand or mud bottoms, in seagrass beds, marine algae, or in association with reef invertebrates. They feed on small benthic and pelagic invertebrates, mainly crustaceans. Reproduction involves the brooding of eggs in a ventral brood pouch formed by the pelvic fins of the female. Ghost pipefish are not utilized as food. Sought by aquarium hobbyists. Taken in bottom trawls and by hand. Occur throughout the Indo-West Pacific.

List of species occurring in the area

Solenostomus armatus Weber, 1913
Solenostomus cyanopterus Bleeker, 1854
Solenostomus paradoxus (Pallas, 1770)

Reference

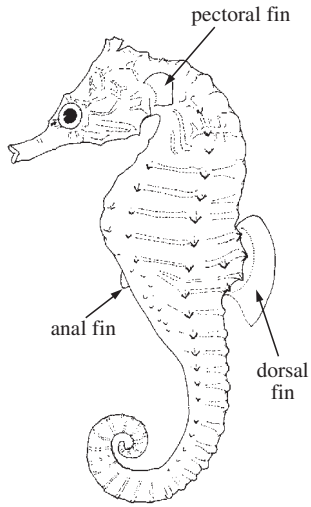
Orr, J.W. and R.A. Fritzsche. 1993. Revision of the ghost pipefishes, family Solenostomidae (Teleostei: Syngnathoidei). *Copeia*, 1993(1):168-182.

SYNGNATHIDAE

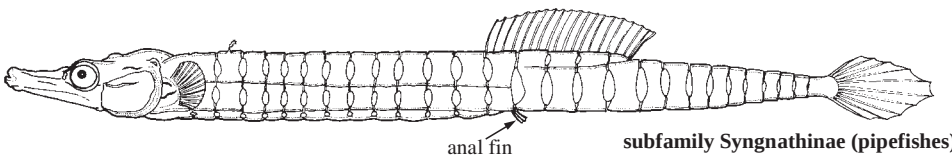
Pipefishes and seahorses

by T. Paulus

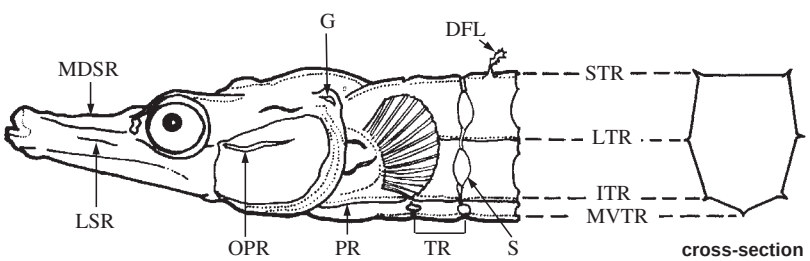
Diagnostic characters: Usually small fishes (4 to 55 cm total length). **Body typically slender and elongate, without scales, encased in a series of bony rings**; with or without a prehensile tail. Head either more or less along same axis as rest of body (subfamily Syngnathinae), or clearly bent in ventral direction from main axis of body (subfamily Hippocampinae). **Snout generally long and tubular**; mouth small, toothless, located at tip of snout. **Branchiostegal rays 1 to 3**; gill opening reduced to a pore in the opercular membrane. **Spinous dorsal and pelvic fins absent**; other fins variously present or absent; a single dorsal fin, usually with 15 to 60 soft rays; anal fin small, with 2 to 6 soft rays; caudal fin, if present, with 8 to 10 rays; pectoral fins usually with 10 to 23 rays. Some species develop dermal appendages along body, head, and snout. **No lateral line**. **Colour:** variable with the species, generally adapted to the preferred habitat; species living on seagrass, sand, and coral rubble usually have grey, green, brown, or black ground colour with various patterns; coral-reef species sometimes colourful with white, yellow, orange, blue, red, and black stripes and bands; fins usually transparent; caudal fin sometimes with colourful patterns.



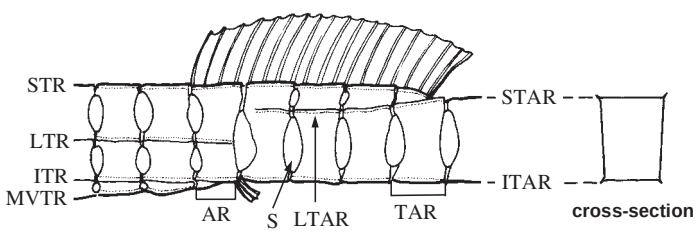
subfamily Hippocampinae (seahorses)



subfamily Syngnathinae (pipefishes)



lateral view of head (after Dawson, 1985)



posterior part of body (after Dawson, 1985)

morphological features used in the identification key
(adapted from Dawson, 1985)

AR - anal ring; DFL - dermal flap; G - gill opening; ITAR - inferior tail ridge; ITR - inferior trunk ridge; LSR - lateral snout ridge; LTAR - lateral tail ridge; LTR - lateral trunk ridge; MDSR - median dorsal snout ridge; MVTR - median ventral trunk ridge; OPR - opercular ridge; PR - pectoral ring (1st trunk ring); S - scutellum; STAR - superior tail ridge; STR - superior trunk ridge; TAR - tail ring; TR - trunk ring.

Habitat, biology, and fisheries: Syngnathidae usually live in coastal marine waters; some are found in estuarine waters, and only a few in fresh water. The marine species live in a wide variety of habitats, such as on sand and rubble substrate, seagrass beds, in caves and crevices of coral reefs and on steep drop-offs of the reef. Juveniles often with a planktonic stage. Some species are associated with floating objects such as *Sargassum* seaweeds. Generally found in shallow waters at depths of 1 to more than 100 m, planktonic juveniles are sometimes caught in trawls from greater depths in the open sea. The majority of the known species feed on minute benthic and planktonic fauna, preferably microcrustaceans. Perhaps the most peculiar behaviour displayed by the seahorses and pipefishes is their habit of male egg incubation. The female deposits the eggs on the ventral surface of the male body, where they are fertilized. The eggs are kept in a pouch or on a specially vascularized surface of the trunk or tail. The brood is carried by the male until the young hatch. Most of the relatively small species are of no or minor commercial importance. However, some colourful species regularly appear in the aquarium trade, e.g. *Corythoichthys* spp., *Doryrhamphus* spp., *Halicampus* spp., and *Hippocampus* spp. In addition, seahorses and pipefishes are sold primarily for use on Asian markets as medicine and aphrodisiacs, but also as curios and food.

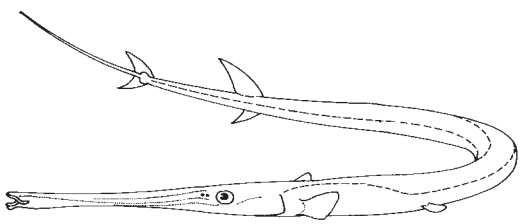
Similar families occurring in the area

The body encased in bony rings, typical body shape, and the lack of pelvic and second dorsal fins easily distinguishes the seahorses and pipefishes from other families. Members of the Aulostomidae, Fistulariidae, and Solenostomidae may superficially resemble syngnathids.

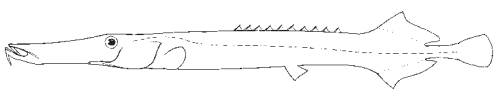
Aulostomidae: larger, reaching a maximum length of 80 cm; body compressed, elongate, and scaly; series of 8 to 12 isolated dorsal-fin spines, followed by a normal dorsal fin; well-developed lateral line; caudal fin well developed and rounded.

Fistulariidae: generally larger, with maximum length of 1.8 m, but usually less than 1 m; body depressed, elongate, and naked, or with minute prickles and linear row of scutes; caudal fin forked, with elongate filament produced by the median 2 caudal-fin rays.

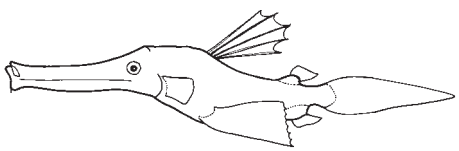
Solenostomidae: body short, compressed, with large stellate bony plates; 2 separate dorsal fins, the first with 5 long feeble spines; pelvic fins relatively large; females with brood pouch formed by the pelvic fins; maximum length 16 cm.



Fistulariidae



Aulostomidae



Solenostomidae

Identification note

The identification of seahorses and pipefishes is based on specific morphological features such as the typical bony ridges on the head, trunk, and tail (see figure on previous page) as well as the number of trunk and tail rings. An additional important morphological character is the position and type of the male brood area. A revision of the subfamily Hippocampinae is urgently needed.

Key to the genera and subgenera of Syngnathidae occurring in the area

(Key adapted from Dawson, 1985; figures after Dawson, 1985)

1a. Distal part of tail clearly prehensile and tapered . . . . . → ***2***

1b. Distal part of tail not prehensile or tapered, its tip with a distinct caudal fin . . . . . → ***8***

2a. Head clearly bent in ventral direction from longitudinal axis of body, usually more than 70° . . . . . ***Hippocampus***

2b. Head essentially in line with longitudinal axis of body or bent very little in ventral direction . . . . . → ***3***

3a. Principal body ridges with enlarged spines; snout long, head 1.6 to 1.7 times as long as snout . . . . . ***Haliichthys***
3b. Principal body ridges without enlarged spines . . . . . → ***4***

4a. With bony platelets on sclera of eye (Fig. 1) . . . . . → ***5***
4b. Without bony platelets on sclera of eye . . . . . → ***6***

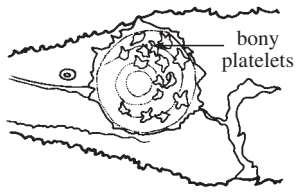


Fig. 1 lateral view of head

5a. Superior trunk and tail ridge continuous (Fig. 2a) . . . . . ***Solegnathus (Runcinatus)***
5b. Superior trunk and tail ridge discontinuous (Fig. 2b) . . . . . ***Solegnathus (Solegnathus)***

6a. Lateral trunk ridge bent dorsally, ending just below superior ridge near rear of dorsal-fin base (Fig. 2c) . . . . . ***Syngnathoides***
6b. Lateral trunk ridge not bent dorsally . . . . . → ***7***

7a. Superior trunk and tail ridge continuous (Fig. 2d) . . . . . ***Acentronura (Acentronura)***
7b. Superior trunk and tail ridge discontinuous (Fig. 2e) . . . . . ***Acentronura (Idiotropiscis)***

8a. Superior trunk and tail ridges continuous (Fig. 2d) . . . . . → ***9***
8b. Superior trunk and tail ridges discontinuous (Fig. 2e) . . . . . → ***19***

9a. Inferior trunk and tail ridges continuous, lateral trunk ridge not confluent with inferior tail ridge . . . . . → ***10***
9b. Inferior trunk and tail ridges discontinuous, lateral trunk ridge confluent with inferior tail ridge . . . . . → ***16***

10a. Anal fin present . . . . . → ***11***
10b. Anal fin absent . . . . . → ***14***

11a. Lateral trunk ridge deflected ventrally near rear anal ring, dorsal-fin origin on tail (Fig. 2f) . . . . . ***Ichthyocampus***
11b. Lateral trunk ridge not deflected ventrally, dorsal-fin origin on trunk . . . . . → ***12***

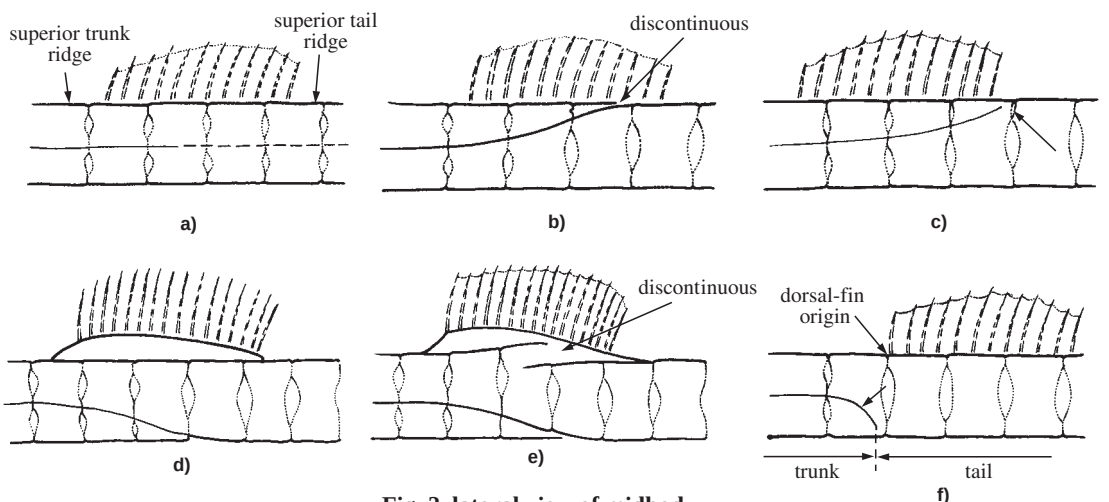


Fig. 2 lateral view of midbody

12a. Principal tail ridges produced laterally, the posterior angles of tail rings usually hook-like (Fig.3) . . . . . ***Phoxocampus***

12b. Principal tail ridges essentially straight, the posterior angles of tail rings not produced and hook-like . . . . . → ***13***

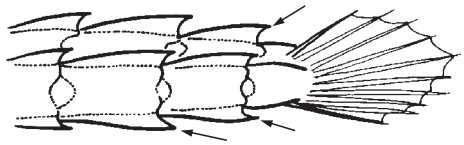


Fig. 3 end of tail

13a. Median dorsal snout ridge low, essentially entire and concave in lateral profile; snout 2.5 to 6.5 times as long as deep; total number of rings 46 to 59, dorsal-fin rays 18 to 28, pectoral-fin rays 10 to 17 . . . . . ***Festucalex***

13b. Median dorsal snout ridge elevated or with semi-isolated dorsal projections; snout 1.3 to 2.3 times as long as deep; total number of rings 39 to 52, dorsal-fin rays 16 to 19, pectoral-fin rays 7 to 11 . . . . . ***Campichthys***

14a. Mouth inferior, not on projecting snout; dorsal fin absent in subadults and adults (Fig. 4a) . . . . . ***Bulbonaricus***

14b. Mouth terminal on projecting snout; dorsal fin present (Fig. 4b) . . . . . → ***15***

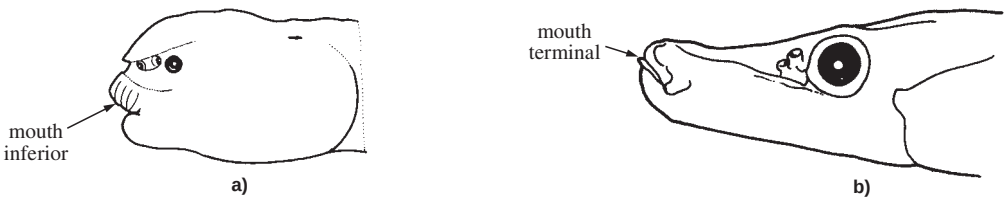


Fig. 4 lateral view of head

15a. Pectoral fins present . . . . . ***Nannocampus (Mannarichthys)***

15b. Pectoral fins absent . . . . . ***Nannocampus (Nannocampus)***

16a. Pectoral fins present . . . . . →***17***

16b. Pectoral fins and dorsal fin absent in subadults and adults . . . . . →***18***

17a. Dorsal-fin origin on trunk; caudal-fin rays typically 10; anal fin present; total number of rings 31 to 44, pectoral-fin rays 18 to 23; anal fin present . . . . . ***Choeroichthys***

17b. Dorsal-fin origin on tail, usually between first and sixth tail ring; total number of rings 57 to 73, pectoral-fin rays 9 to 13; anal fin absent . . . . . ***Siokunichthys***

18a. Trunk rings 10 to 12; brood pouch without bilateral folds, a closed sac-like structure opening through an anteromesial pore (Fig. 5a) . . . . . ***Apterygocampus***

18b. Trunk rings 17 to 19; brood pouch with bilateral membranous folds and semi-pouch closure (Fig. 5b) . . . . . ***Penetopteryx***

19a. Inferior trunk and tail ridges continuous, lateral trunk ridge not confluent with lateral and superior tail ridge . . . . . → ***20***

19b. Inferior trunk and tail ridges discontinuous, the lateral trunk ridge confluent with the inferior tail ridge (Fig. 6) . . . . . → ***25***

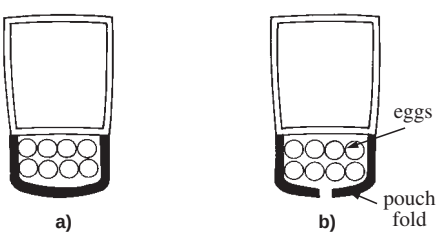


Fig. 5 cross-section of body and brood pouch

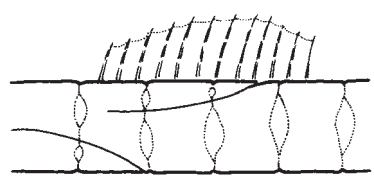


Fig. 6 lateral view of midbody

20a. Snout with dorsolateral spines and spinules, adults with bony platelets in gill membranes (Fig. 7) . . . . . ***Bhanotia***

20b. Snout without dorsolateral spines and spinules, without bony platelets in gill membranes . . . . . → ***21***

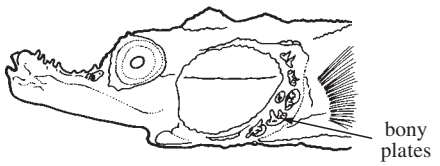


Fig. 7 lateral view of head

21a. Caudal-fin rays typically 9; trunk rings 15 to 26; male brood area under trunk . . . . . ***Doryichthys***

21b. Caudal-fin rays typically 10 . . . . . → ***22***

22a. With lateral snout ridge and/or dermal flaps . . . . . ***Cosmocampus***

22b. Without lateral snout ridge or dermal flaps . . . . . → ***23***

23a. Anal-fin rays 4; pouch plates absent, semi-pouch closure (Fig. 8a) . . . . . ***Corythoichthys***

23b. Anal-fin rays 2 or 3; pouch plates present, everted pouch closure (Fig. 8b) . . . . . → ***24***

24a. Lateral trunk ridge deflected ventrally at anal ring (Fig. 9a). . . . . ***Hippichthys (Hippichthys)***

24b. Lateral trunk ridge not deflected at anal ring (Fig. 9b) . . . . . ***Hippichthys (Parasyngnathus)***

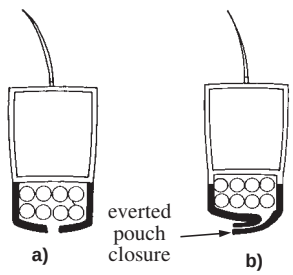


Fig. 8 cross-section of body and brood pouch

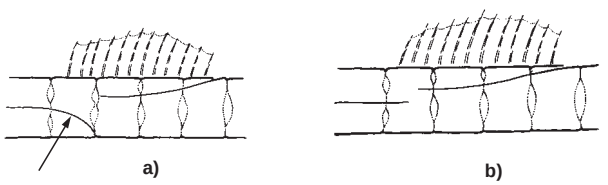


Fig. 9 lateral view of midbody

25a. Caudal-fin rays typically 8 or 9 . . . . . → ***26***

25b. Caudal-fin rays typically 10 . . . . . → ***33***

26a. Caudal-fin rays typically 8 . . . . . → ***27***

26b. Caudal-fin rays typically 9 . . . . . → ***28***

27a. Median dorsal snout ridge with 1 to 3 semi-isolated dorsal projections; pectoral-fin rays 8 to 13; anal-fin rays 2 or 3 . . . . . ***Minyichthys***

27b. Median dorsal snout ridge entire; pectoral-fin rays 14 to 16; anal-fin rays 4 . . . . . ***Filicampus***

28a. Caudal fin often stubby (Fig. 10); trunk rings 21 to 24, the first clearly longer than second; male brood area under tail . . . . . ***Trachyrhamphus***

28b. Caudal fin well developed; trunk rings 15 to 21, the first not much longer than second; male brood area under trunk . . . . →***29***

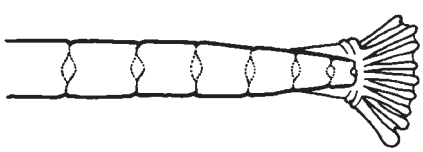


Fig. 10 end of tail

29a. Opercular ridge distinct, typically complete; pectoral-fin base with 1 or 2 distinct ridges; lateral and inferior trunk ridges distinct . . . . . → ***30***

29b. Opercular ridge vestigial or obsolete; pectoral-fin base without distinct ridges in subadults and adults; lateral and inferior trunk ridges indistinct . . . . . ***Microphis (Coelonotus)***

30a. Without supplemental ridges below longitudinal opercular ridge (Fig. 11a) . . . . . → ***31***

30b. With 1 or more supplemental ridges below longitudinal opercular ridge (Fig. 11b) . . . . . → ***32***

31a. Dorsal-fin rays 57 to 74; subdorsal trunk rings 5.5 to 12; usually with some keeled scutella in subadults-adults (Fig. 12a) . . . . . ***Microphis (Belonichthys)***

31b. Dorsal-fin rays 28 to 56; subdorsal trunk rings 0.25 to 3.5; scutella without longitudinal keels (Fig.12b) . . . . . ***Microphis (Microphis)***

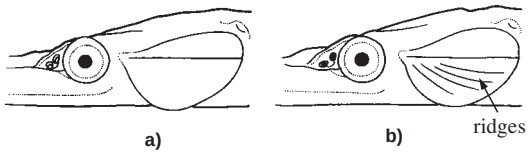


Fig. 11 lateral view of head

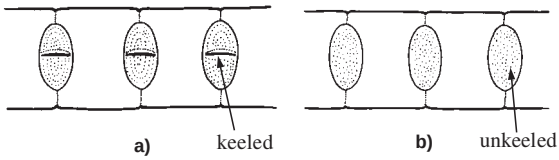


Fig. 12 detail of body (lateral view)

32a. Snout relatively long and slender, on average 4.3 to 10.6 times as long as deep; scutella without keels . . . . . ***Microphis (Oostethus)***

32b. Snout relatively short and deep, its depth averages 3.5 to 4.1 in snout length; usually with some keeled scutella . . . . . ***Microphis (Lophocampus)***

33a. First trunk ring much longer than second (Fig. 13a); pectoral fins typically emarginate; caudal fin large; dermal flaps absent; male brood area under trunk . . . . . → ***34***

33b. First trunk ring not much longer than second (Fig. 13b); pectoral fins rounded; caudal fin not large; dermal flaps usually present; male brood area under tail . . . . . → ***35***

34a. Snout with 1 to 5 rows of dorsolateral spinules; without banded colour pattern; membranous pouch folds present in brooding males (Fig. 14a) . . . . . ***Doryrhamphus (Doryrhamphus)***

34b. Snout without rows of dorsolateral spinules; mostly with banded colour pattern; membranous pouch folds absent in brooding males (Fig.14b) . . . . . ***Doryrhamphus (Dunckerocampus)***

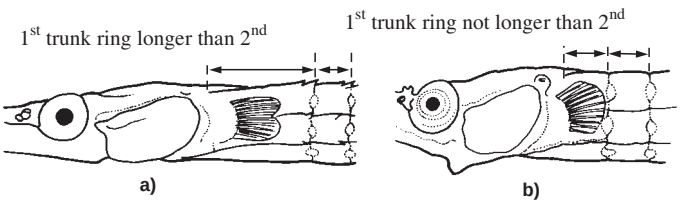


Fig. 13 head and anterior part of trunk (lateral view)

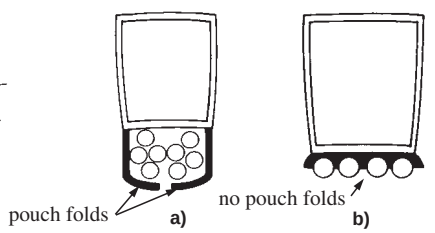


Fig. 14 cross-section of body and brood pouch

35a. Median dorsal snout ridge low, entire, essentially concave in lateral profile; lateral snout ridge absent; without dermal flaps on eye . . . . . ***Micrognathus***

35b. Median dorsal snout ridge not essentially concave in lateral profile, often elevated or spiny; lateral snout ridge or spine usually present; usually with dermal flaps on eye . . . . . ***Halicampus***

List of species occurring in the area

Note: species that occur in brackish or fresh water are marked in the following list by an asterisk (*). A plus mark (+) indicates commercial species (i.e. used in the aquarium trade, as curios, medicine, or food).

The symbol ◄ is given when species accounts are included.

Subfamily HIPPOCAMPINAE

Hippocampus angustus Günther, 1870

◄ *Hippocampus histrix* Kaup, 1856 +

◄ *Hippocampus kuda* Bleeker, 1852 +

Hippocampus planifrons Peters, 1877

◄ *Hippocampus whitei* Bleeker, 1855 +

Subfamily SYNGNATHINAE

Acentronura (Acentronura) gracilissima (Temminck and Schlegel, 1850)
Acentronura (Acentronura) tentaculata Günther, 1870
Acentronura (Idiotropiscis) larsonae Dawson, 1984

Apterygocampus epinnulatus Weber, 1913

Bhanotia fasciolata (Duméril, 1870)
Bhanotia nuda Dawson, 1978

Bulbonaricus brauni (Dawson and Allen, 1978)
Bulbonaricus davaoensis (Herald, 1953)

Campichthys tricarinatus Dawson, 1977
Campichthys tryoni (Ogilby, 1890)

Choeroichthys brachysoma (Bleeker, 1855)
Choeroichthys cinctus Dawson, 1976
Choeroichthys sculpatus (Günther, 1870)
Choeroichthys suillus Whitley, 1951

Corythoichthys amplexus Dawson and Randall, 1975 +
Corythoichthys flavofasciatus (Rüppell, 1838) +
Corythoichthys haematopterus (Bleeker, 1851) +
Corythoichthys intestinalis (Ramsay, 1881) +
Corythoichthys nigripectus Herald, 1953 +
Corythoichthys ocellatus Herald, 1953
Corythoichthys paxtoni Dawson, 1977
Corythoichthys polynotatus Dawson, 1977
Corythoichthys schultzi Herald, 1953 +

Cosmocampus banneri (Herald and Randall, 1972)
Cosmocampus darrosanus (Dawson and Randall, 1975)
Cosmocampus howensis (Whitley, 1948)
Cosmocampus investigatoris (Hora, 1925)
Cosmocampus maxweberi (Whitley, 1933)

Doryichthys boaja (Bleeker, 1851) *
Doryichthys deokhatoides (Bleeker, 1853) *
Doryichthys heterosoma (Bleeker, 1851) *
Doryichthys martensii (Peters, 1869) *

Doryrhamphus (Doryrhamphus) excisus excisus Kaup, 1856 +
Doryrhamphus (Doryrhamphus) janssi (Herald and Randall, 1972) +
Doryrhamphus (Doryrhamphus) negrosensis malus (Whitley, 1954)
Doryrhamphus (Doryrhamphus) negrosensis negrosensis Herre, 1934
Doryrhamphus (Dunckerocampus) chapmani (Herald, 1953)
Doryrhamphus (Dunckerocampus) dactyliophorus (Bleeker, 1853) +
Doryrhamphus (Dunckerocampus) pessuliferus (Fowler, 1938) +

Festucalex cinctus (Ramsay, 1882)
Festucalex erythraeus (Gilbert, 1905)
Festucalex gibbsi Dawson, 1977
Festucalex prolixus Dawson, 1984
Festucalex wassi Dawson, 1977

Filicampus tigris (Castelnau, 1879)

Halicampus boothae (Whitley, 1964)
Halicampus brocki (Herald, 1953) +
Halicampus dunckeri (Chaubanaud, 1929) +
Halicampus grayi Kaup, 1856 +
Halicampus macrorhynchus Bamber, 1915 +
Halicampus marquesensis Dawson, 1984
Halicampus mataafae (Jordan and Seale, 1906)
Halicampus nitidus (Günther, 1873) +

Haliichthys taeniophorus Gray, 1859

Hippichthys (Hippychthys) cyanospilus (Bleeker, 1854)
Hippichthys (Hippychthys) heptogonus Bleeker, 1849
Hippichthys (Hippychthys) spezifer (Rüppell, 1838)
Hippichthys (Parasyngnathus) parvicarinatus (Dawson, 1978) *
Hippichthys (Parasyngnathus) penicillus (Cantor, 1849) *

Ichthyocampus carce (Hamilton Buchanan, 1822) *

Micrognathus andersonii (Bleeker, 1858)
Micrognathus brevirostris pygmaeus Fritzsche, 1981
Micrognathus micronopterus (Fowler, 1936)
Micrognathus natans Dawson, 1982

Microphis (Belonichthys) mento (Bleeker, 1856)
Microphis (Belonichthys) spinachioides (Duncker, 1915)
Microphis (Coelonotus) angulus (Peters, 1855) *
Microphis (Coelonotus) leiaspis (Bleeker, 1853) *
Microphis (Lophocampus) brevidorsalis (de Beaufort, 1913) *
Microphis (Lophocampus) caudocarinatus (Weber, 1908) *
Microphis (Lophocampus) ocellatus (Duncker, 1910) *
Microphis (Lophocampus) retzii (Bleeker, 1856) *
Microphis (Microphis) cruentus Dawson and Fourmanoir, 1981 *
Microphis (Oestethus) brachyurus brachyurus Bleeker, 1853
Microphis (Oestethus) jagorii Peters, 1869 *
Microphis (Oestethus) manadensis (Bleeker, 1856) *
Microphis (Oestethus) pleurostictus (Peters, 1869 *

Minyichthys brachyrhinus (Herald, 1953)
Minyichthys myersi (Herald and Randall, 1972)

Nannocampus (Mannarichthys) pictus (Duncker, 1915)
Nannocampus (Mannarichthys) weberi Duncker, 1915

Penetopteryx taeniocephalus Lunel, 1881

Phoxocampus blecheri (Kaup, 1856)
Phoxocampus diacanthus (Schultz, 1943)
Phoxocampus tetrophthalmus (Bleeker, 1858)

Siokunichthys breviceps Smith, 1963 +
Siokunichthys herri Herald, 1953
Siokunichthys nigrolineatus Dawson, 1983 +
Siokunichthys southwelli (Duncker, 1910)

Solegnathus (Runcinatus) dunckeri Whitley, 1927
Solegnathus (Solegnathus) hardwickii (Gray, 1830)
Solegnathus (Solegnathus) lettiensis Bleeker, 1860
Solegnathus (Solegnathus) spinosissimus Günther, 1870

Syngnathoides biaculeatus (Bloch, 1785) +

Trachyrhamphus bicoarctatus (Bleeker, 1857) +
Trachyrhamphus longirostris Kaup, 1856 +

References

Dawson, C.E. 1985. *Indo-Pacific pipefishes (Red Sea to the Americas)*. Ocean Springs, Mississippi, Gulf coast Res. Lab., 230 p.

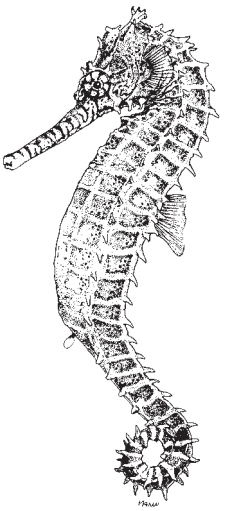
Dawson, C.E. and Vari, R.P. 1982. Fishes of the western north Atlantic, Part 8: order Gasterosteiformes. *Mem. Sears. Found. Mar. Res.*, 1(8):189 p.

Fritzsche, R.A. 1980. Revision of eastern Pacific Syngnathidae (Pisces: Syngnathiformes) including both recent and fossil forms. *Proc. Calif. Acad. Sci.*, 42:181-227.

Herald, E.S. 1959. From pipefish to seahorse. - a study of phylogenetic relationship. *Proc. Calif. Acad. Sci., 4. Ser.*, 29(13):465-473.

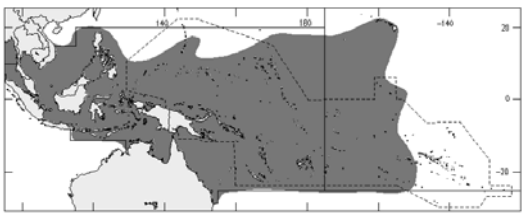
Vincent, A.C.J. 1996. *The international trade in seahorses (species in danger)*. TRAFFIC International report.

Hippocampus histrix Kaup, 1856



En - Thorny seahorse.

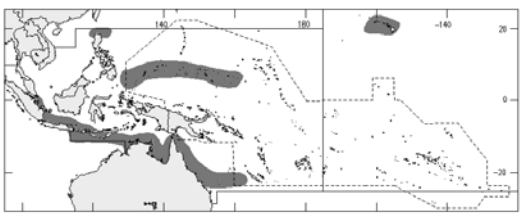
Maximum total length 15 cm (stretched). Colour varying. In coastal areas among clumps of algae or in seagrass beds. Feeds primarly on crustacean zooplankton. Sometimes sold as medicine and aphrodisiac, but also as aquarium fish, curios, and food. Widespread in the western Indian Ocean, including the Red Sea, and the western and eastern Central Pacific.



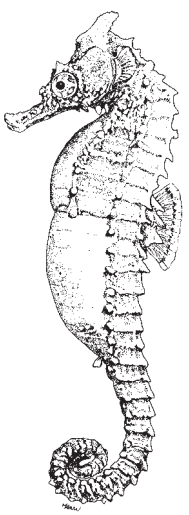
Hippocampus kuda Bleeker**,** 1852

En - Yellow seahorse.

Maximum total length 30 cm (stretched). Colour ranges from dirty yellow over reddish brown to black, and may be blotched or banded. In coastal areas on seagrass, also in sandy and coral areas, to a depth of about 30 m. Often sold as curios and aphrodisiacs on Asian markets. Feeds on zooplankton. Widespread in the Indian Ocean and the western and eastern Central Pacific.

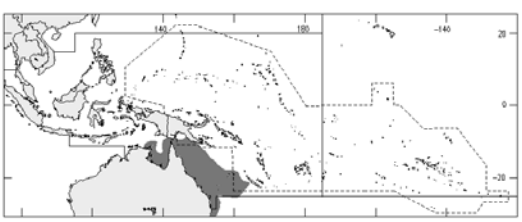


Hippocampus whitei Bleeker, 1855



En - White's seahorse.

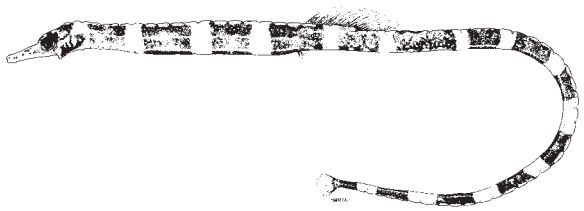
Maximum total length 15 cm (stretched). Colour varying from grey to brown and black, sometimes with saddle-like markings. Along coastal areas among seaweeds. Feeds on microcrustaceans. Regularly imported by the aquarium trade and sold as curios and medicine. Common along the coasts of Australia, Madagascar, Mozambique, and South Africa.

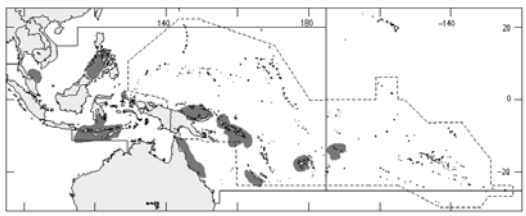


Corythoichthys amplexus Dawson and Randall, 1975

En - Brownbanded pipefish.

Maximum total length about 10 cm. Body with broad dark bands crossing side and dorsum. Occurs on shallow reefs and deep walls in depths to about 30 m. Feeds on microcrustaceans by sucking in through the tube snout. Sometimes imported by the aquarium trade. Widespread in the eastern Indian Ocean and Pacific.

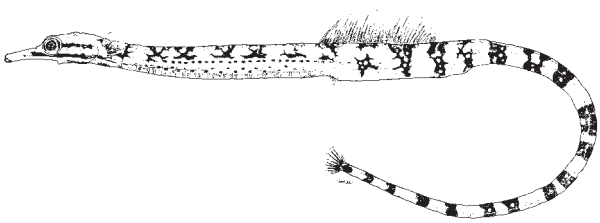


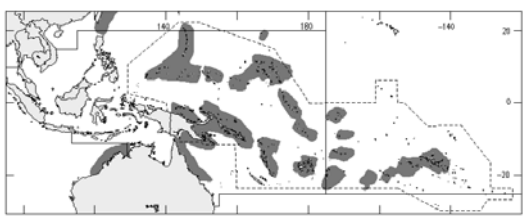


Corythoichthys flavofasciatus (Rüppell, 1838)

En - Network pipefish.

Maximum total length about 14 cm. Body with about 13 to 25 reticulate bands crossing side and dorsum; males during courtship with intensive dark blue or black blotch on the ventral of the anal ring. Occurs in small schools along the coastline on sand and seagrass beds near coral reefs. Feeds on live zooplankton. Couples seem to be monogamous. Rarely in the aquarium trade. Widespread in the Indian Ocean, including the Red Sea and the Persian Gulf, the northwestern and western Central Pacific, except the Philippines and Indonesia.

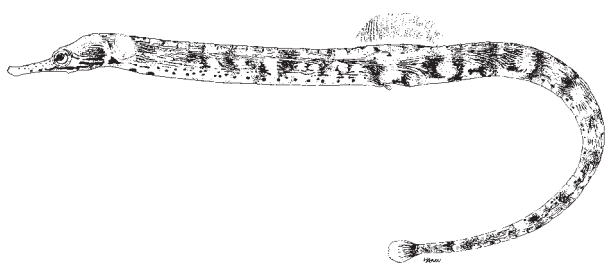


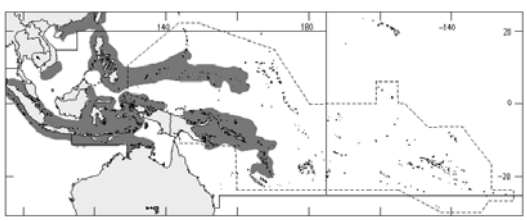


Corythoichthys haematopterus (Bleeker, 1851)

En - Reeftop pipefish.

Maximum total length about 20 cm. Feeds on zooplankton. Occurs in groups or schools along the coastline in depths to 20 m, but mostly from 0 to 3 m. Sold regularly in the aquarium trade in Europe and America. Widespread in the Indian Ocean from the African coast to the western Central and northeastern Pacific.

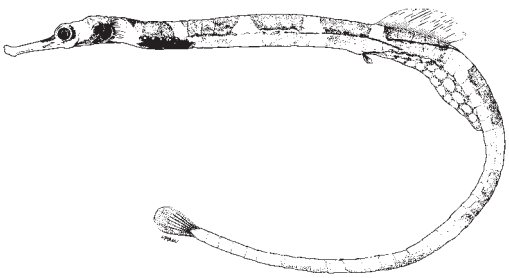


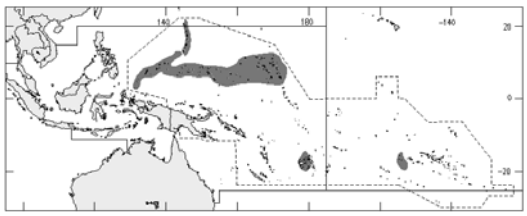


Corythoichthys nigripectus Herald, 1953

En - Blackbreasted pipefish.

Maximum total length about 11 cm. Coloration variable without distinct bars or stripes, opercle mostly orange-red, breast dark brown to black. Not a common species, occurs alone or in pairs in lagoons and seaweed reefs in caves and crevices in depths from 4 to about 30 m. Feeds on zooplankton. Very rarely in the aquarium trade. Found in the northern Red Sea, throughout Micronesia, and the Society and Caroline islands.

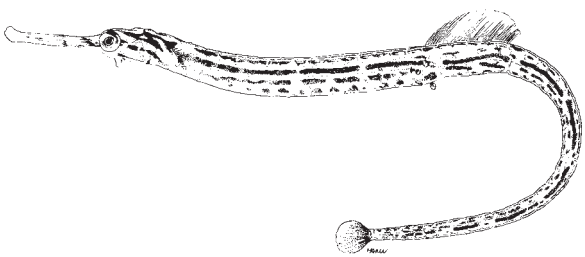


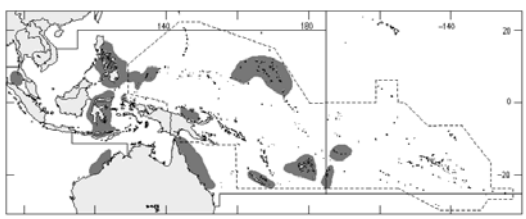


Corythoichthys schultzi Herald, 1953

En - Schultz' pipefish.

Maximum total length about 17 cm. Coloration varying in geographic regions; usually with dark stripes and spots on the side of the snout, trunk with 10 to 15 bars. A very common species in large groups on reef crests, sandy areas with coral patches and rubble flats near seagrass beds down to a depth of about 30 m. Feeds on small crustaceans, sucked in from the sandy substratum or from between the branches of soft corals. Very rarely in the aquarium trade. Widespread throughout the Indo-Pacific including the Red Sea and the northwestern and western Central Pacific.

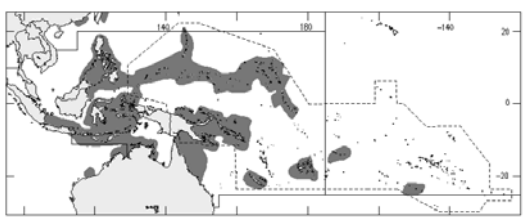




Doryrhamphus (Doryrhamphus) dactyliophorus (Bleeker, 1853)

En - Banded pipefish.

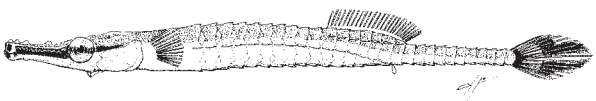
Maximum total length about 18 cm. Specimens regularly banded with white and red or black bands along trunk and tail. Occurs in pairs or large groups in protected coastal reefs and lagoons, mostly in caves. Feeds mostly on planktonic amphipods. Very common in the aquarium trade, exported from Indonesia and the Philippines in large numbers. Widespread in the Indo-Pacific including the Red Sea, western and eastern Central Pacific, and northwestern Pacific, from South Africa to Japan and Australia.

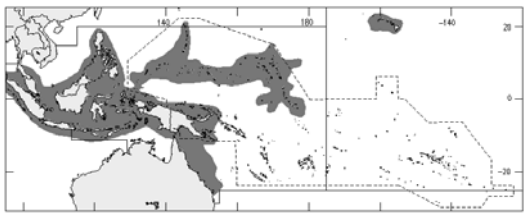


Doryrhamphus (Doryrhamphus) excisus excisus Kaup, 1856

En - Bluestripe pipefish.

Maximum total length about 7 cm. A colourful species with a blue longitudinal stripe along the trunk and tail; yellowish dorsally and ventrally; fan-like tail fin. Several subspecies are reported from different geographic regions. Lives secretive in crevices and caves along the coastline in depths of usually more than 35 m. Sometimes hides between the spines of sea urchins. Feeds on floating planktonic organisms. Hovers in pairs over the substratum. Regularly seen in large numbers in the aquarium trade, and used as curios and medicine in Asia. Widespread in the Indian Ocean, including the Red Sea, and throughout the Pacific.

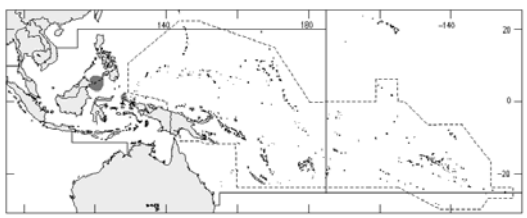




Doryrhamphus (Doryrhamphus) pessuliferus (Fowler, 1938)

En - Yellowbar pipefish.

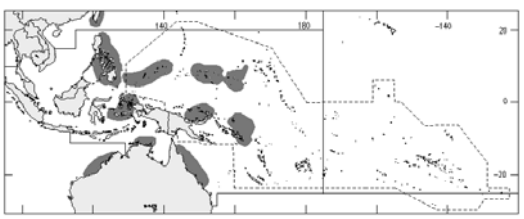
Maximum total length about 14 cm. Similar to *Doryrhamphus (Doryrhamphus) multiannulatus*, but differs in coloration and tail and trunk rings. Snout bright yellow, trunk and tail regularly with red and yellow bands; red tail fin with yellow dot in centre. Occurs secretively in caves and crevices along coral reefs in depths of 30 m and more. No data on food preferences available. Frequently imported to Europe by the aquarium trade. A single reliable record from the Sulu Archipelago in the western Central Pacific.



Halicampus dunckeri (Chaubanaud, 1929)

En - Duncker's pipefish.

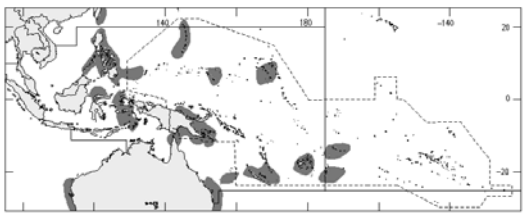
Maximum total length about 12 cm. Colour variable from pale to brown and black with black, brown, and white bands. Different morphological types have been reported from various geographical regions. Occurs on sand and rubble along the coastline of coral reefs in a depth of more than 20 m. Feeds on small planktonic organisms. Sometimes used as curios and sold in the aquarium trade. Widespread in the western and eastern Indian Ocean, including the Red Sea, northwestern and western Central Pacific.



Syngnathoides biaculeatus (Bloch, 1785)

En - Alligator pipefish.

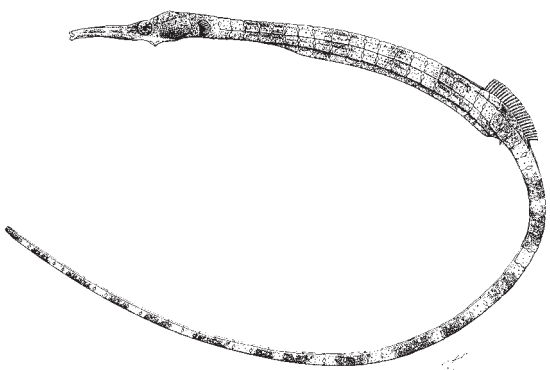
Maximum total length about 30 cm. Colour varying from green and brown with irregular white markings. Tail fin absent in adults, tail prehensile like a seahorse; dermal flaps over much of trunk and tail. Occurs in shallow waters in seagrass beds or close to floating weeds. Juveniles are found in offshore samples. Feeds on small planktonic organisms. Regularly enters the aquarium trade and primarily used as curios and medicine. Widespread in the Indian Ocean including the Red Sea, South Africa, and Mozambique, as well as the northwestern, eastern, and western Central Pacific.

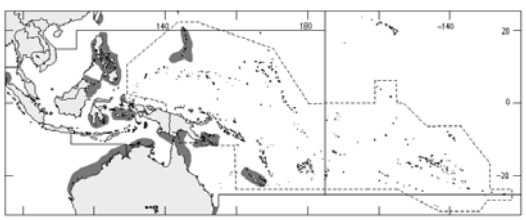


Trachyrhamphus bicoarctatus (Bleeker, 1857)

En - Double-ended pipefish.

Maximum total length about 42 cm. Colour varying from near white, green, grey, or brown to black; body plain, spotted, or mottled, adapted to the substratum. Tip of snout often pale. Planktonic juveniles have elongate appendages on the dorsum of trunk and tail. Adults loose their tail fin, which cannot be regenerated. Occurs on sand and rubble along coastlines in depths from 1 to more than 45 m, where it imitates drifting seagrass. Feeds on crustaceans, such as Gammarida, Mysidacea, Amphipoda, and Caprellidae. Sometimes sold for use as medicine, curios, and in the aquarium trade. Widespread in the western and eastern Indian Ocean, including the Red Sea, the Persian Gulf, and South Africa; also in the northwestern, eastern, and western Central Pacific to China, Japan, and southern Australia.





AULOSTOMIDAE

Trumpetfishes

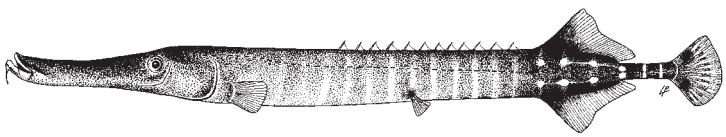
by R.A. Fritzsche and K.G. Thiesfeld

A single species occurring in the area.

Aulostomus chinensis (Linnaeus, 1766)

Frequent synonyms / misidentifications: *Aulostomus valentini* (Bleeker, 1853) / None.

FAO names: En - Chinese trumpetfish; **Fr** - Trompette chinoise; **Sp** - Trompetero chino.

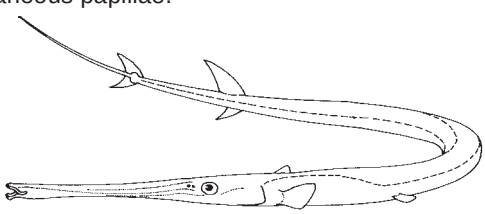


Diagnostic characters: Body elongate and compressed. Mouth located at tip of elongate snout; single barbel on chin. First dorsal fin with VIII to XII isolated spines; second dorsal fin and anal fin opposite to each other and similarly shaped; **second dorsal fin with 24 to 27, and anal fin with 26 to 29 segmented soft rays**; pelvic fins small, abdominal, with 6 soft rays. Lateral line continuous. Body covered with small ctenoid (rough) scales, except for the head and anterior part of the back, which are scaleless. Vertebrae 62 to 64, the first 4 elongate and fused. **Colour:** overall colour variable; body most commonly brownish with irregular light vertical bar, or with several white horizontal stripes, or uniform yellow colour; a black maxillary stripe usually present, but may be reduced; dorsal and anal fins light, but with a dark basal bar; caudal fin usually with 2 round black spots; a black spot at base of each pelvic fin.

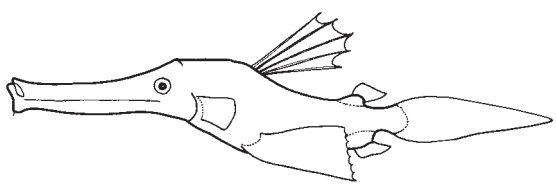
Similar families occurring in the area

Fistulariidae: a distinct caudal-fin filament present; body depressed rather than compressed; no spines before soft dorsal fin.

Solenostomidae: smaller; dorsal-fin spines not isolated; no lateral line; body variously covered with cutaneous papillae.



Fistulariidae

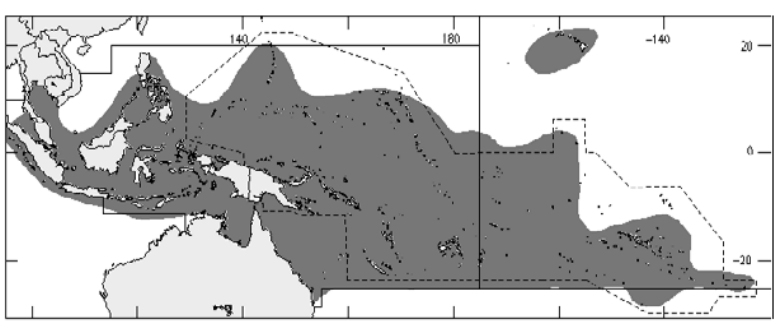


Solenostomidae

Size: Maximum total length 80 cm; commonly to 40 cm.

Habitat, biology, and fisheries: Occurs in shallow, clear water, most frequently observed hanging vertically in the water with the head down and associated with gorgonians. Also will conceal itself by hiding among schools of other fish. Capable of colour changes depending on surroundings. Feeds on small fishes and crustaceans. Taken occasionally as bycatch in artisanal fisheries. Of no commercial importance. Occasionally consumed by the local population.

Distribution: Tropical Indo-Pacific, just reaching offshore islands of eastern Pacific, including southern Japan, Hawaii, and Lord Howe and Easter islands.



Reference

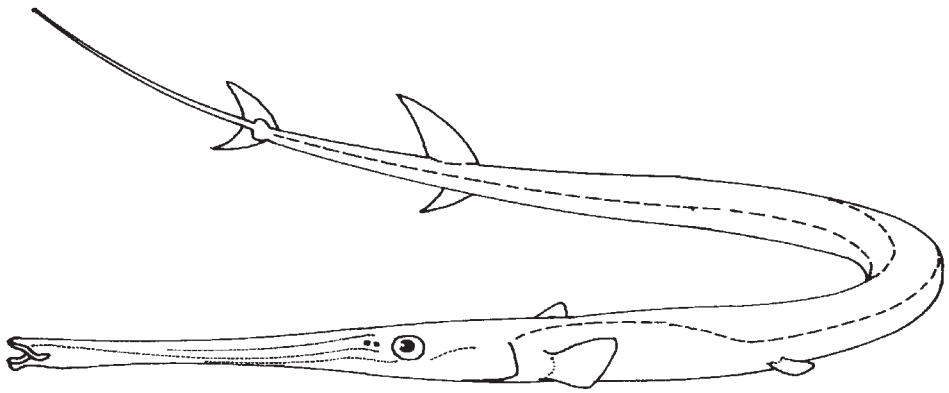
Wheeler, A.C. 1955. A preliminary revision of the fishes of the genus *Aulostomus*. *Ann. Mag. Nat. Hist., Ser.*, 12(8):613-623.

FISTULARIIDAE

Cornetfishes (flute mouths)

by R.A. Fritzsche and K.G. Thiesfeld

Diagnostic characters: Large fishes (to about 2 m total length); **body elongate and depressed**. Mouth small, at end of **a long tubular snout, hexagonal in cross-section**; teeth in jaws small. **Dorsal and anal fins short based and opposite, with 14 to 17 segmented soft rays**; pectoral fins with 13 to 17 soft rays; pelvic fins small and abdominal, with 6 soft rays. Lateral line arched, running anteriorly along back, then bending downward on side and continuing posteriorly onto **an elongate filament produced by the middle 2 caudal-fin rays**; lateral line composed of tube-shaped ossifications that gradually take the form of long bony shields sometimes bearing sharp spines. Body of juveniles covered with rows of small spinules (retained in adults of only 1 of the Indo-Pacific species, *Fistularia petimba*); a row of elongate bony plates may be present along dorsal and ventral midlines of body just anterior to dorsal and/or anal fin. Total number of vertebrae 76 to 85, with the first 4 elongate and fused. **Colour:** variable with the species; either red to orange-brown above and silvery below, or brownish olive above, lighter below, with a series of blue spots on back and snout.



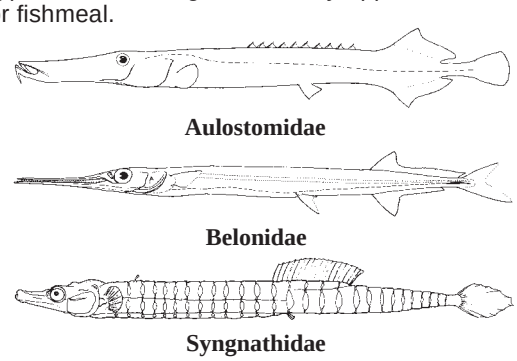
Habitat, biology, and fisheries: *Fistularia petimba* is typically found in coastal areas over soft bottoms, usually at depths greater than 10 m. *F. commersonii* is most often seen in seagrass beds and coral reefs. Cornetfishes feed on small fishes and crustaceans. Although not important in commercial fisheries of the area, they are frequently taken in trawls and by various types of artisanal gear and may appear in local fish markets. Although edible, they are most often used for fishmeal.

Similar families occurring in the area

Aulostomidae: no caudal-fin filament present; barbel present on lower jaw; body compressed rather than depressed; distinct separate spines anterior to soft dorsal fin.

Syngnathidae: smaller; body covered with armor; anal fin reduced or absent; no caudal-fin filament present.

Belonidae: no caudal-fin filament present; mouth large, both jaws produced into slender beak, lower jaw longer, with single series of distinct canines.



Key to the species of Fistulariidae occurring in the area

1a. A row of elongate bony plates embedded in skin along midline of back anterior to dorsal fin (Fig. 1); posterior lateral-line ossifications ending in a sharp spine; immaculate red or brown above . . . . . ***Fistularia petimba***

1b. No elongate bony plates along midline of back; posterior lateral-line ossifications without a spine; rows of blue spots on back, sides and snout . . . . ***Fistularia commersonii***

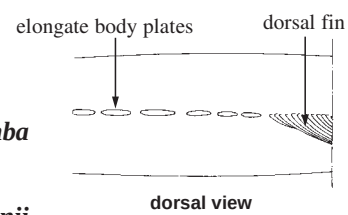


Fig. 1 ***Fistularia petimba***

List of species occurring in the area

The symbol ◄ is given when species accounts are included.

◄ *Fistularia commersonii* Rüppell, 1835
◄ *Fistularia petimba* Lacepède, 1803

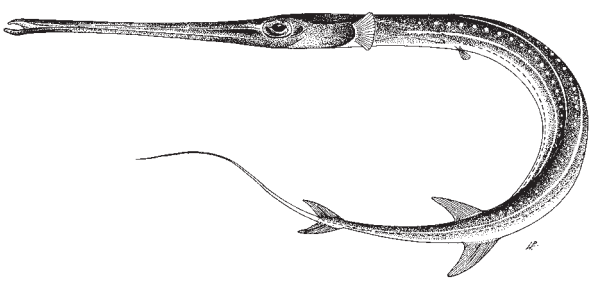
Reference

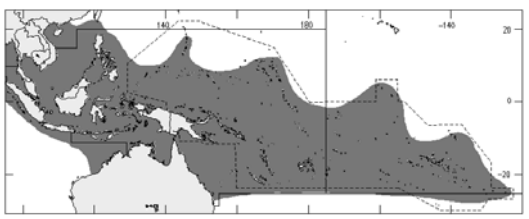
Fritzsche, R.A. 1976. A review of the cornetfishes, genus *Fistularia* (Fistulariidae), with a discussion of intrageneric relationships and zoogeography. *Bull. Mar. Sci.*, 26(2):196-204.

Fistularia commersonii Rüppell, 1835

En - Bluespotted cornetfish; **Fr** - Cornette à taches bleues; **Sp** - Corneta pintada.

Maximum total length about 1.6 m; commonly to 1 m. Brownish to olive above, becoming lighter to silvery below; a pair of blue stripes or a row of blue spots along back; dorsal and anal fins with an orange cast becoming transparent at base; caudal-fin filament white. Juveniles may have dark barred pattern with a dusky caudal-fin filament. Most common in seagrass beds and coral reefs in shallow water. Feeds on small fishes and crustaceans. No special fishery, but taken frequently in trawls and artisanal fisheries. Caught with bottom trawls, gill nets, and line gear. Utilized fresh, dried salted, or smoked; also reduced to fishmeal. Indo-Pacific: Red Sea to Panama, north to southern Japan and Hawaii, south to Lord Howe and Easter islands, throughout Micronesia.

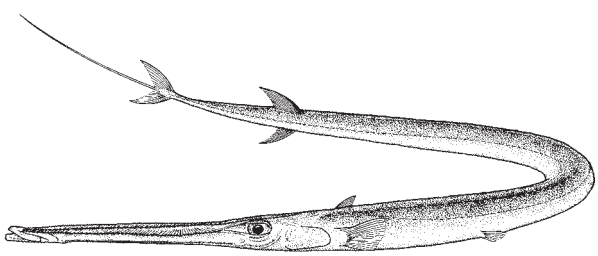


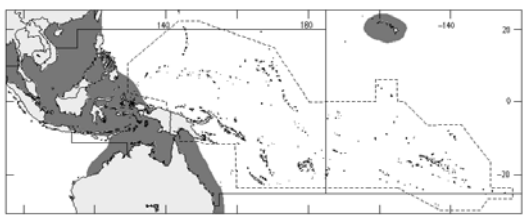


Fistularia petimba Lacepède, 1803

En - Red cornetfish; **Fr** - Cornette rouge; **Sp** - Corneta colorada.

Maximum total length about 2 m; commonly to 1 m. Colour in life red to orange-brown above, silvery below; vertical fins also have an orange cast. Found in coastal areas over soft bottoms, usually at depths greater than 10 m. Feeds on small fishes and crustaceans. No special fishery, but caught frequently in bottom trawls and in artisanal fisheries. Caught with bottom trawls, gill nets, and line gear. Utilized fresh, dried salted, or smoked; also reduced to fishmeal. Atlantic, Indian, and western Pacific oceans, including Hawaii.





MACRORHAMPHOSIDAE

Snipefishes

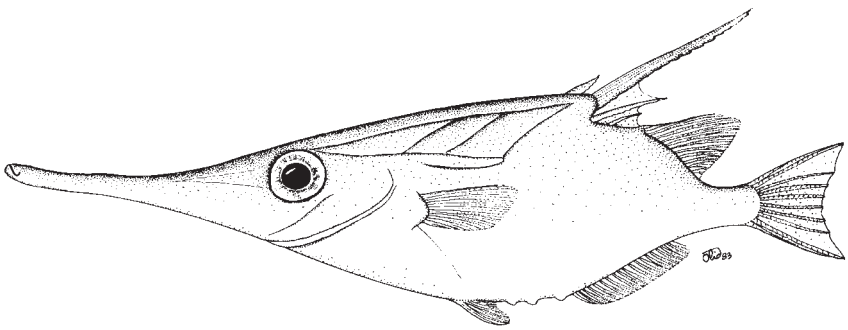
by R.A. Fritzsche and K.G. Thiesfeld

A single species occurring in the area.

Macrorhamphosus scolopax (Linnaeus, 1758)

Frequent synoyms / misidentifications: *Macrorhamphosus gracilis* (Lowe, 1839); *M. velitaris* (Pallas, 1776) / None.

FAO names: En - Longspine snipefish; **Fr** - Bécasse de mer; **Sp** - Trompetero.



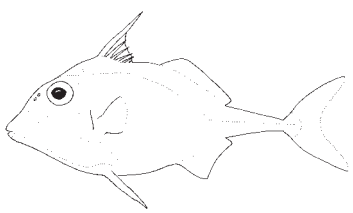
Diagnostic characters: Body compressed, deep, widest point at or posterior to midbody at origin of first dorsal fin, narrowing at caudal peduncle. **Head elongate; snout long, tubular**; mouth small, toothless, located at tip of snout; eyes lateral, large, contained about 4.5 times in snout length. First dorsal fin originating at or behind midbody; **second spine greatly enlarged, posterior edge serrated**, other spines stout but short; pelvic fins small, originating at or behind midbody. Lateral line absent. **Body covered with small but distinct scales, 2 series of bony plates embedded in the skin on the back between head and dorsal fin, each series consisting of 3 well-developed plates and a fourth much smaller plate**. There are 2 forms, slender and deep bodied, often treated as distinct species. **Colour:** orange, pink, or red on back; paler and silvery on sides.

Similar families occurring in the area

Centriscidae: body blade-like and enclosed in transparent, bony casing with sharp ventral edge; first dorsal-fin spine greatly enlarged, first dorsal-fin spine at hindmost point of body.

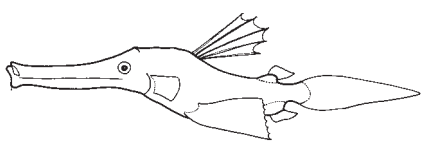
Centriscidae

Triacanthidae: mouth much wider than snout; gill opening small, less than or equal to width of pectoral-fin base; first dorsal-fin origin anterior to midbody, dorsal-fin spines not enlarged.



Triacanthidae

Solenostomidae: body strongly constricted between pelvic-fin insertion and origin of soft dorsal and anal fins, covered with stellate plates bearing spines; mouth with singular mandibular barbel; spinous and soft dorsal fin widely separated and on a raised base; pelvic fins large.

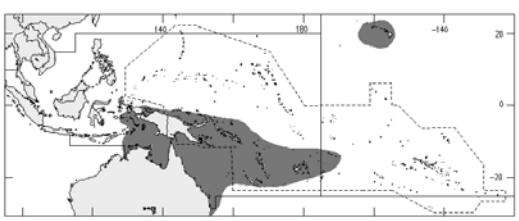


Solenostomidae

Size: Maximum total length 20 cm.

Habitat, biology, and fisheries: Snipefishes are benthic or benthopelagic fishes commonly found in schools over mud or sand bottoms in deep water to 600 m. Juveniles are epipelagic in oceanic waters. They feed on zooplankton and benthic invertebrates, mainly crustaceans. Not a commercially important species. Not considered a food fish. Caught in abundance by bottom trawl.

Distribution: Ranges across tropical and temperate Atlantic, Pacific, and Indian oceans, probably worldwide.



Reference

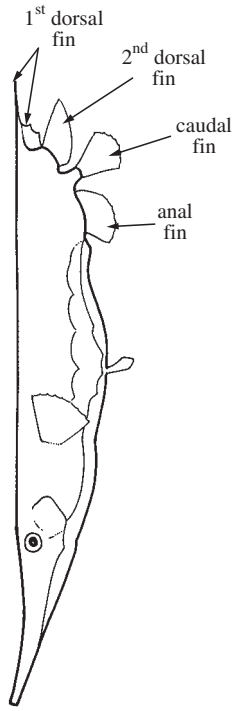
Heemstra, P.C. 1986. Family Macrorhamphosidae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, pp. 459-461.

CENTRISCIDAE

Shrimpfishes (razorfishes)

by R.A. Fritzsche and K.G. Thiesfeld

Diagnostic characters: Small fishes (14 to 30 cm total length); **body elongate, strongly compressed, and blade-like**. Head elongate; **snout long, slender, and tubular**; mouth small, toothless, located at tip of snout. Two short-based dorsal fins; **first dorsal-fin spine greatly enlarged, originating at hindmost end of body; all other spinous and soft portions of dorsal fins on ventral surface of body; caudal fin** small, on ventral surface, **nearly at right angle to body axis**; pelvic fins small, with 4 short soft rays, originating at or behind midbody. Lateral line absent. Body enclosed in a flattened, transparent, bony casing with sharp ventral edge. **Colour:** variable with the species; either silvery or yellowish brown to pale green on back, silvery on sides; dusky to conspicuous lateral streak running length of body and through eye.



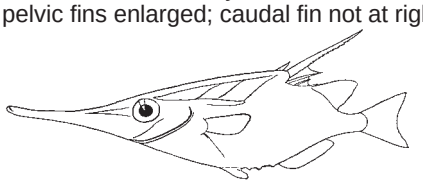
natural orientation in life

Habitat, biology, and fisheries: Razorfishes are found on muddy bottoms near mangroves to inshore coral reefs, frequently seeking refuge among coral branches or the spines of long-spined sea urchins. They swim in small groups, each fish in a vertical position, with its snout pointing downwards. They feed on small benthic invertebrates, mainly crustaceans. Razorfishes are not utilized as food, have no commercial importance, but are sought by aquarium hobbyists. Taken in bottom trawls and by hand.

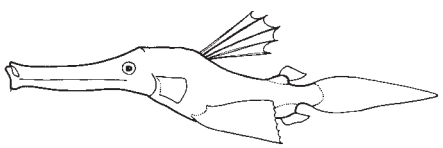
Similar families occurring in the area

Macrorhamphosidae: body not blade-like, lacking bony casing, with small but distinct scales; first dorsal fin originating near midbody; second dorsal-fin spine greatly enlarged, serrated on posterior edge; caudal fin not at right angle to body axis on ventral surface.

Solenostomidae: body not blade-like, covered with stellate plates that bear spines; pelvic fins enlarged; caudal fin not at right angle to body axis on ventral surface.



Macroramphosidae



Solenostomidae

Key to the species of Centriscidae occurring in the area

1a. First dorsal-fin spine hinged at its base, slightly movable, with a movable spinous ray at its end; interorbital space striated, convex, without a longitudinal groove . . . . . ***Aeoliscus strigatus***

1b. First dorsal-fin spine fused with body armour plate, without a movable spinous ray at its end; interorbital space convex or with a groove continued to crown of head, which is striated . . . . . →***2***

2a. Interorbital space with a groove continued to crown of head; sutures of lateral plates serrated; postorbital part of head 1/2 or more than 1/2 distance of operculum from base of pectoral fins . . . . . ***Centriscus scutatus***

2b. Interorbital space convex, without groove; sutures of lateral plates smooth; postorbital part of head 3 times the distance of operculum from base of pectoral fins . . . . . ***Centriscus cristatus***

List of species occurring in the area

The symbol is given when species accounts are included.

Aeoliscus strigatus (Günther, 1860)

Centriscus cristatus (De Vis, 1885)

Centriscus scutatus Linnaeus, 1758

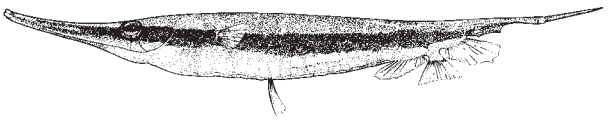
Reference

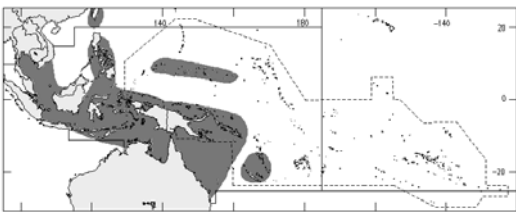
Mohr, E.W. 1937. Revision der Centriscidae (Acanthopterygii, Centrisciformes). *Dana Rept.*, 13:1-69.

Aeoliscus strigatus (Günther, 1860)

En - Shrimpfish.

Maximum total length about 14 cm. Colour yellowish brown to pale green on back, silvery on sides; conspicuous black stripe running from the snout, through the eye, to the base of spinous dorsal fin. Occurs in small schools that frequently seek refuge among the spines of the long-spined sea urchin *Diadema setosum*, or coral branches. Feed primarily on crustacean zooplankton. Indo-West Pacific, but not in the Red Sea.



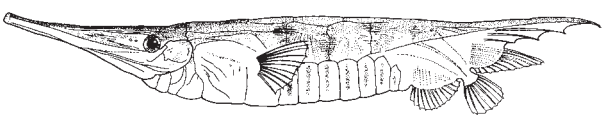


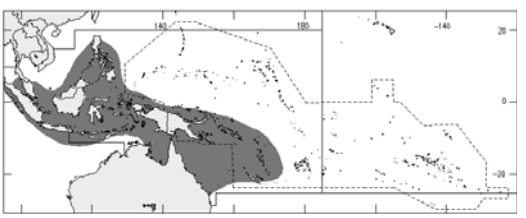
(after Randall, Allen, and Steene, 1990)

Centriscus cristatus (De Vis, 1885)

En - Smooth razorfish.

Maximum total length 30 cm. Colour silvery, with a pronounced black band running through the eye to the base of spinous dorsal fin. Western Pacific, northern Australia.

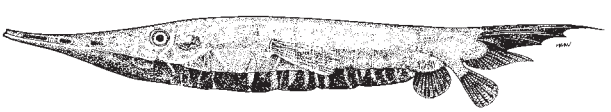


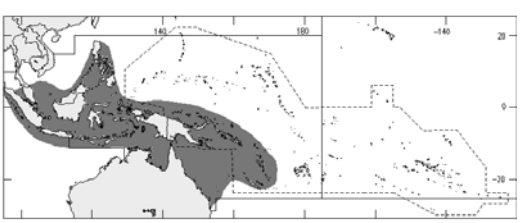


Centriscus scutatus Linnaeus, 1758

En - Serrate razorfish.

Maximum total length 14 cm. Colour silvery, with a dusky lateral streak running length of body; 7 or 8 silvery crossbars on ventral plates. Indo-West Pacific.





(after Sainsbury, Kailola, and Leyland, 1984)

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