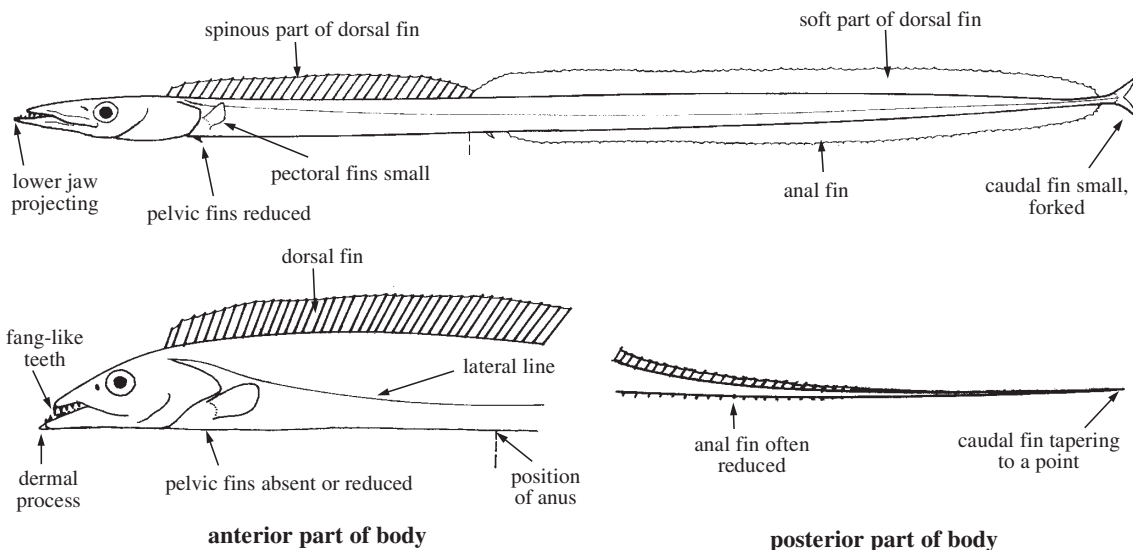


TRICHIURIDAE

Cutlassfishes

by I. Nakamura and N.V. Parin

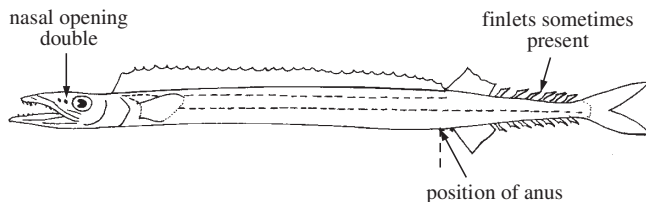
Diagnostic characters: Body remarkably elongate and compressed, ribbon-like, with a tapered tail or small forked caudal fin (size to 225 cm). A single nasal opening on each side of head. Mouth large, jaws not protractile, lower jaw extends anterior to upper jaw. Teeth extremely strong, fang-like in anterior part of upper jaw and sometimes in anterior part of lower jaw. Dorsal fin low and long, beginning shortly behind eye, its anterior spinous part shorter than posterior soft part, 2 parts continuous mostly or interrupted by a shallow notch sometimes. Anal fin low or reduced to short spinules. **Caudal fin either small and forked or absent.** Pectoral fins short and low in position. **Pelvic fins reduced to a scale-like spine** (plus a rudimentary ray in *Benthodesmus*) **or completely absent** (in *Trichiurus* and *Lepturacanthus*). Preanal length less than 1/2 standard length. Lateral line single. Scales absent. **Colour:** body generally silvery or more or less brown in *Aphanopus* and *Lepidopus*.



Habitat, biology, and fisheries: Benthopelagic on continental shelves and slopes and underwater rises, from the surface to a depth of about 2 000 m, found in tropical to warm-temperate waters. Voracious predators feeding on fishes, squids, and crustaceans. Spawning throughout the year in warm waters. Eggs and larvae pelagic. Hairtails (*Trichiurus*) are important in fisheries and species of the other genera are locally exploited commercially. Excellent eating, although the flesh is scanty. Marketed mostly fresh or salted, sometimes also frozen. For 1995, the FAO Yearbook of Fishery Statistics reports a total catch of around 40 800 t of Trichiuridae from the Western Central Pacific.

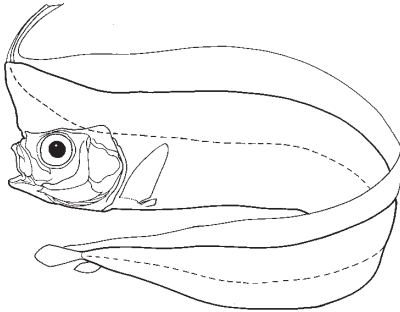
Similar families occurring in the area

Gempylidae: nasal openings double, soft (second) dorsal fin always distinct from, and shorter than spinous (first) dorsal fin, anal fin always well defined, soft rays of second dorsal and anal fins decreasing in height posteriorly and followed by 2 to 7 finlets in most genera, preanal length 1/2 or more than 1/2 of standard length (less than 1/2 of standard length in Trichiuridae), minute or deformed scales usually present.

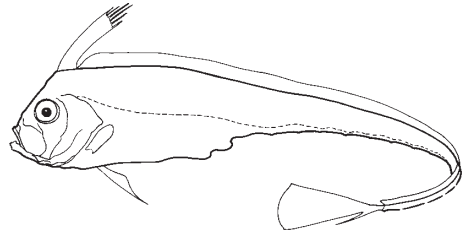


Gempylidae

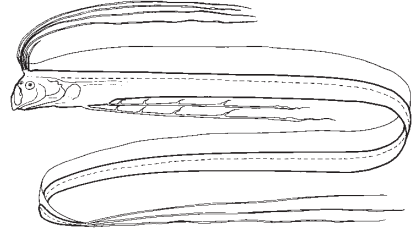
Trachipteroid fishes (Lophotidae, Regalecidae, and Trachipteridae): usually anterior part of dorsal fin variously elongate, each dorsal-fin ray with a lateral spine at its base, anal fin short or absent, pelvic-fin rays 0 to 10.



Lophotidae



Trachipteridae



Regalecidae

Key to the species of Trichiuridae occurring in the area

- 1a. Caudal fin present, small and forked (Fig. 1a); pelvic fins present, but strongly reduced or modified to a scale-like process (flattened spine with 0 to 2 tiny soft rays (absent in some species) (Fig. 2a) → 2
- 1b. Caudal fin absent, body posteriorly tapering into a hair-like process (Fig. 1b); pelvic fins absent or modified into a scale-like process (Fig. 2b) → 11

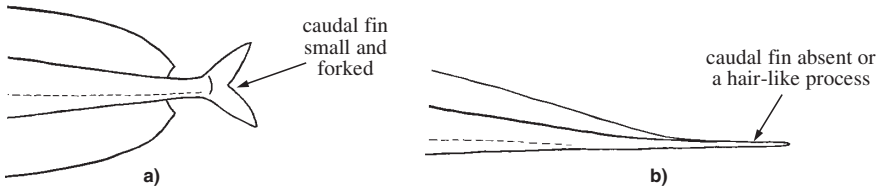


Fig. 1 posterior part of body

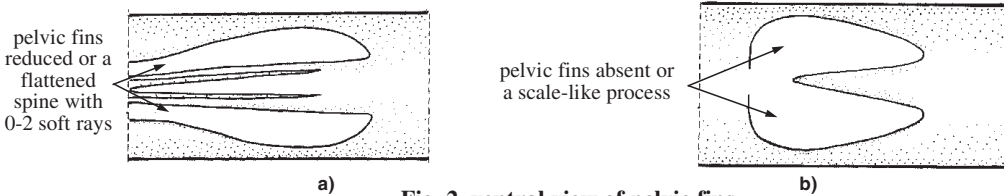


Fig. 2 ventral view of pelvic fins

- 2a. Head profile with a prominent sagittal crest (Fig. 3a); no notch between spinous and soft part of dorsal fin (Fig. 4a) *Assurger anzac*
- 2b. Head profile rising very gradually from tip of snout to origin of dorsal fin without forming a sagittal crest (Fig. 3b); a notch between spinous and soft part of dorsal fin (Fig. 4b) → 3

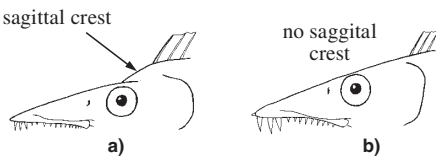


Fig. 3 head profile

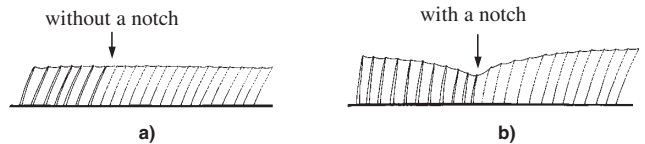


Fig. 4 dorsal fin

- 3a. Spinous part of dorsal fin about 1/2 as long as soft part; dorsal-fin elements 102 to 155
 (*Benthodesmus*) → 4
- 3b. Spinous part of dorsal fin only slightly shorter than soft part; dorsal-fin elements 90 to 109
 (*Aphanopus*) → 5
- 4a. Pelvic fins inserted behind pectoral-fin base (Fig. 5) *Benthodesmus vityazi*
- 4b. Pelvic fins inserted before or below pectoral-fin base → 6
- 5a. Total dorsal-fin elements 94 to 97, including XLI to XLIII spines; total vertebrae 92 to 102
 *Aphanopus microphthalmus*
- 5b. Total dorsal-fin elements 106 to 108, including XLIV to XLVI spines; total vertebrae 106 to 108
 *Aphanopus capricornis*
- 6a. Total dorsal-fin elements 150; anal fin with 102 soft rays; total vertebrae 155 . *Benthodesmus papua*
- 6b. Total dorsal-fin elements 113 to 137; anal fin with 69 to 92 soft rays; total vertebrae 119 to 142
 → 7
- 7a. Total dorsal-fin elements 113 to 129; total vertebrae 119 to 132 → 8
- 7b. Total dorsal-fin elements 129 to 137; total vertebrae 133 to 142 → 10
- 8a. Dorsal-fin spines XXXVIII to XLII (Fig. 6) *Benthodesmus tenuis*
- 8b. Dorsal-fin spines XXXIV to XXXVII → 9

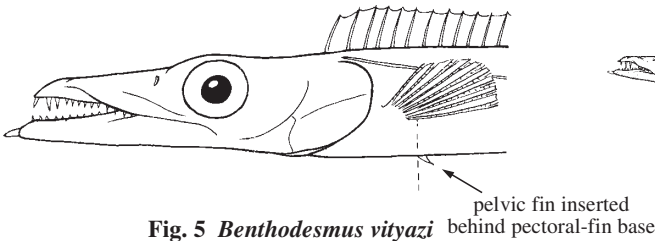


Fig. 5 *Benthodesmus vityazi*

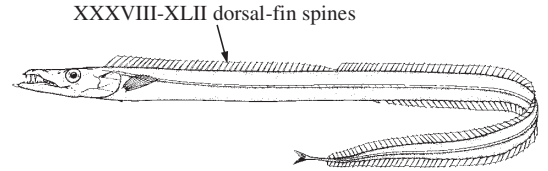


Fig. 6 *Benthodesmus tenuis*

- 9a. Anal fin with 70 to 76 soft rays (Fig. 7); total vertebrae 119 to 124 . *Benthodesmus macrophthalmus*
- 9b. Anal fin with 80 to 84 soft rays (Fig. 8); total vertebrae 126 to 129. *Benthodesmus neglectus*

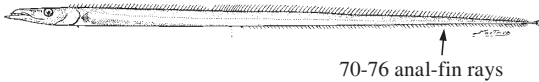


Fig. 7 *Benthodesmus macrophthalmus*

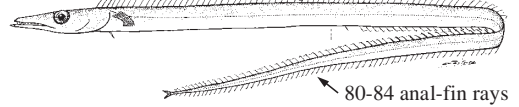


Fig. 8 *Benthodesmus neglectus*

- 10a. Dorsal-fin spines XXXIX to XLIV; anal fin with 73 to 83 soft rays; anal-fin spines situated below eighth to eleventh soft dorsal-fin ray (Fig. 9) *Benthodesmus tuckeri*
- 10b. Dorsal-fin spines XXXVI to XXXIX; anal fin with 86 to 92 soft rays; anal-fin spines situated below second to sixth soft dorsal-fin ray (Fig. 10). *Benthodesmus suluensis*

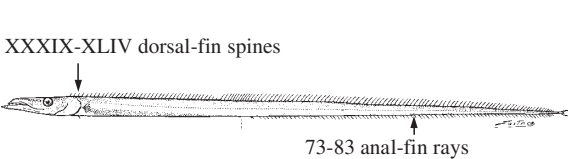


Fig. 9 *Benthodesmus tuckeri*

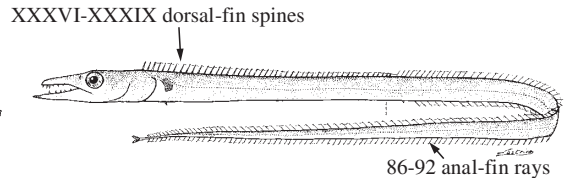


Fig. 10 *Benthodesmus suluensis*

- 11a.** Pelvic fins absent; free margin of subopercle concave (Fig. 11) → **12**
11b. Pelvic fins scale-like; free margin of subopercle convex (Fig. 12) → **13**

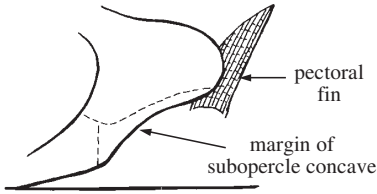


Fig. 11

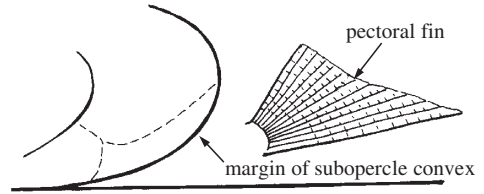


Fig. 12

- 12a.** First anal-fin spine large, its length 1/2 eye diameter; soft anal-fin rays pungent spinules breaking through ventral skin (Fig. 13a); 2 small canine teeth on upper jaw projecting forward (Fig. 13b); a small slit present on ventral side of lower jaw for receiving anterior-most fang of upper jaw (Fig. 13c) *Lepturacanthus savala*
12b. First anal-fin spine small, its length less than pupil diameter; soft anal-fin rays slightly breaking through ventral skin in smaller specimens (Fig. 14a); no canine teeth on upper jaw projecting forward (Fig. 14b); no slit on ventral side of lower jaw (Fig. 14c) (*Trichiurus*) → **14**

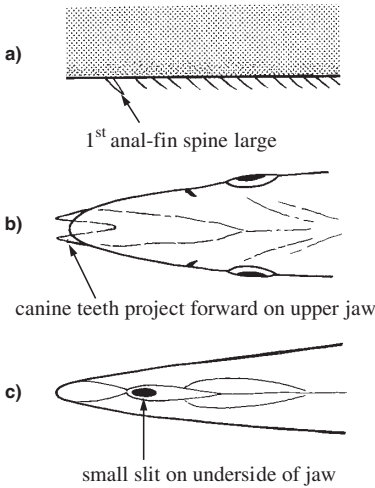


Fig. 13 *Lepturacanthus*

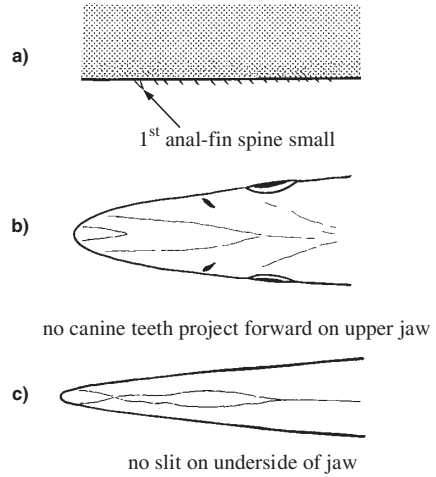


Fig. 14 *Trichiurus*

- 13a.** Pectoral fins short, not reaching lateral line (Fig. 15); anal-fin origin below 47th to 50th soft dorsal-fin ray *Tentoriceps cristatus*
13b. Pectoral fins long, extending beyond lateral line (Fig. 16); anal-fin origin below 31st to 35th or 41st to 43rd soft dorsal-fin ray (*Eupleurogrammus*) → **15**

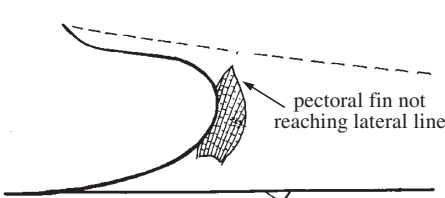


Fig. 15 *Tentoriceps*

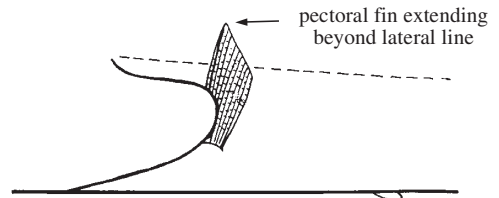









Fig. 16 *Eupleurogrammus*

- 14a.** Fangs on jaws with barbs; dorsal-fin elements more than 130 *Trichiurus lepturus*
14b. Fangs on jaws without barbs; dorsal-fin elements less than 120 *Trichiurus auriga*

- 15a.** A pair of fangs on tip of lower jaw; dorsal-fin membrane slightly tinged with black along spines; dorsal side of posterior part of body slightly black; a black spot just behind dermal process of lower jaw; pelvic fins situated below 11th to 14th soft dorsal-fin ray
 *Eupleurogrammus glossodon*
- 15b.** No fangs on tip of lower jaw; dorsal-fin membrane pale; both dorsal and ventral sides of posterior part of body black; no black spot behind dermal process on ventral side of lower jaw; pelvic fins situated below 15th to 18th soft dorsal-fin ray *Eupleurogrammus muticus*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Aphanopus capricornis* Parin, 1994
-  *Aphanopus microphthalmus* Norman, 1939
-  *Assurger anzac* (Alexander, 1916)
-  *Benthodesmus macrophthalmus* Parin and Becker, 1970
-  *Benthodesmus neglectus* Parin, 1976
-  *Benthodesmus papua* Parin, 1978
-  *Benthodesmus suluensis* Parin, 1976
-  *Benthodesmus tenuis* (Günther, 1877)
-  *Benthodesmus tuckeri* Parin and Becker, 1970
-  *Benthodesmus vityazi* Parin and Becker, 1970
-  *Eupleurogrammus glossodon* (Bleeker, 1860)
-  *Eupleurogrammus muticus* (Gray, 1831)
-  *Lepturacanthus savala* (Cuvier, 1829)
-  *Tentoriceps cristatus* (Klunzinger, 1884)
-  *Trichiurus auriga* Klunzinger, 1884
-  *Trichiurus lepturus* Linnaeus, 1758

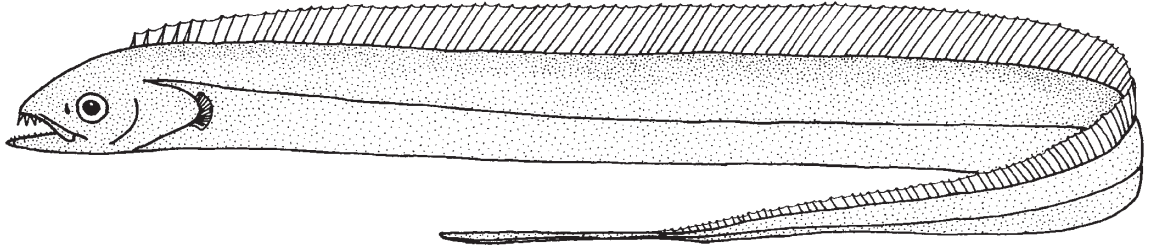
References

- Nakamura, I. and N. Parin. 1993. FAO species catalogue. Vol. 15. Snake mackerels and cutlassfishes of the world (families Gempylidae and Trichiuridae). An annotated and illustrated catalogue of the snake mackerels, snoeks, escolars, gemfishes, sackfishes, domine, oilfish, cutlassfishes, scabbardfishes, hairtails, and frostfishes known to date. *FAO Fish. Synop.*, (125)15:136 p.
- Parin, N.V. 1994. Three new species and new records of the black scabbard fishes genus *Aphanopus* (Trichiuridae). *Voprosy Ikhtiol.*, 34(6):740-746 [in Russian. English transl. in *J. Ichthyol.*]

Tentoriceps cristatus (Klunzinger, 1884)

Frequent synonyms / misidentifications: *Pseudoxymetopon sinensis* Chu and Wu, 1962 / None.

FAO Names: En - Crested hairtail; Fr - Poisson sabre manchot; Sp - Pez sable cuchilla.

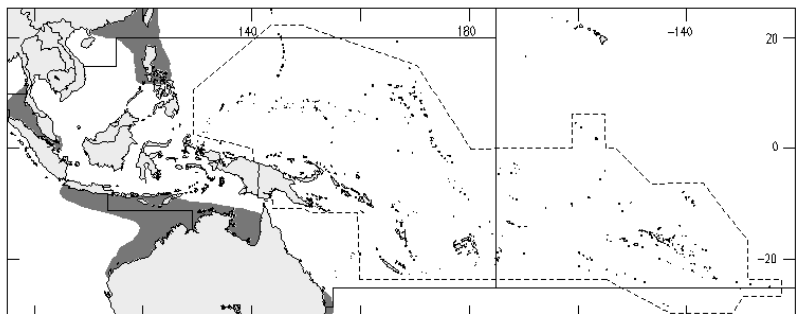


Diagnostic characters: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point posteriorly. **Dorsal profile of head evenly convex.** Eye large, situated laterally, its diameter 5 or 6 times in head length. Mouth large, with a dermal process at tip of each jaw, 2 or 3 fangs in upper and 2 fangs in lower jaw, a single series of sharp compressed lateral teeth in both jaws. **Lower hind margin of gill cover convex.** A single, long-based, dorsal fin with V spines and 126 to 144 soft rays. Anal fin with I minute first spine and I scale-like second spine, reduced to minute spinules buried in skin thereafter, situated below 47th to 50th soft dorsal-fin ray. Caudal fin absent. **Pectoral fins short, not reaching lateral line. Pelvic fins present, but reduced to scale-like processes.** Lateral line running almost straight midlateral, or slightly closer to ventral than to dorsal contour. Scales absent. **Colour:** in fresh specimens, body silvery white becoming silvery grey with dark cloud-like patches after death; jaws and dorsal- and anal-fin bases sooty.

Size: Maximum total length 90 cm, commonly between 30 and 70 cm.

Habitat, biology, and fisheries: Benthopelagic or pelagic, in coastal waters at depths of 30 to 110 m, not found in low salinity waters. Feeds mainly on small fishes, squids, and crustaceans. Caught mainly with bottom trawls and sometimes with bag nets, mixed with other trichiurid fishes in Southeast Asian countries. Marketed fresh and dried salted in the Philippines.

Distribution: Indo-West Pacific from the Red Sea, Mozambique Channel, Saya de Malha Bank, Chagos Islands, Andaman Sea, northern and southeastern Australia, South China Sea, East China Sea, Tasman Sea, Philippines, and southern Japan.

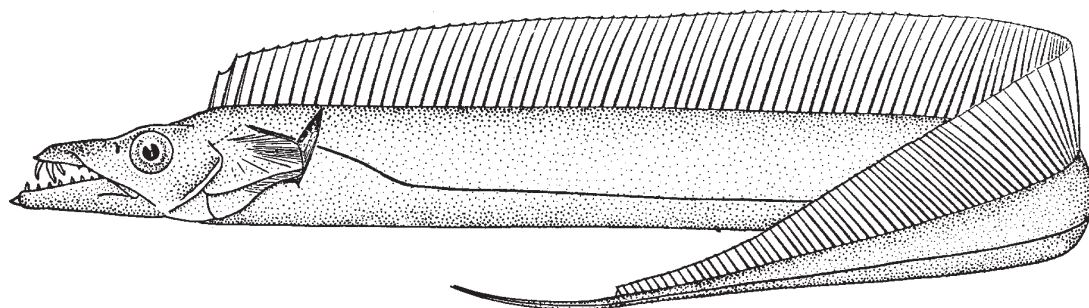


Trichiurus lepturus Linnaeus, 1758

LHT

Frequent synonyms / misidentifications: *Trichiurus haumela* Linnaeus, 1758 / None.

FAO names: **En** - Largehead hairtail; **Fr** - Poisson sabre commun; **Sp** - Pez sable.

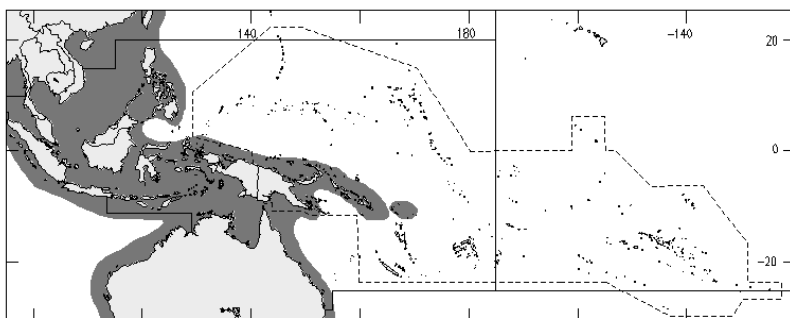


Diagnostic characters: Body extremely elongate and strongly compressed, ribbon-like, tapering to a point posteriorly (tip often broken and regenerated). Eye large, its diameter 5 to 7 times in head length. Mouth large, with a dermal process at tip of each jaw; 2 or 3 pairs of enlarged fangs with barbs near tip of upper jaw, and another pair near tip of lower jaw, a single series of sharp, compressed lateral teeth (often also fang-like in larger specimens) in both jaws, minute teeth on palatines. **Lower hind margin of gill cover concave.** Position of anus closer to snout than to posterior tip of body. **Dorsal fin high and long, without a notch between spinous and soft parts,** with III spines and 130 to 135 soft rays. Anal fin reduced to about 100 to 105 minute spinules, usually embedded in skin or slightly protruding, its origin situated below 39th to 41st soft dorsal-fin ray. Caudal fin absent. **Pectoral fins rather short, but extend beyond lateral line. Pelvic fins absent.** Lateral line beginning at upper margin of gill cover, running oblique to behind tip of pectoral fins, then straight close to ventral contour. Scales absent. **Colour:** fresh specimens steel blue with silvery reflection; pectoral fins semitransparent; other fins sometimes tinged with pale yellow, colour sometimes becoming uniformly silvery grey after death.

Size: Maximum total length 120 cm, commonly between 50 and 100 cm.

Habitat, biology, and fisheries: Benthopelagic, dwells on the continental shelf to a depth of 350 m or more, occasionally in shallow waters and at surface at night. Young and immature fish feed mostly on euphausiids, small pelagic planktonic crustaceans, such as *Paracalanus*, *Acartia*, and *Oncaea*, and small fishes (e.g. anchovies, bregmacerotids, carangids). Adults become more piscivorous and feed on anchovies, sardines, myctophids, bregmacerotids, carangids, sphyraenids, atherinids, sciaenids, mackerels, and occasionally on squids and crustaceans. Large adults usually feed on pelagic prey near surface during daytime and migrate to bottom at night. Caught mainly with bag nets in estuaries, with trolling, shore seines, boat seines, set nets, and bottom or midwater longlines in inshore waters, and with bottom trawls in offshore waters throughout the world. The most important commercially caught trichiurid. From 1990 to 1995, the FAO Yearbook of Fishery Statistics reports a range of yearly catch of 4 568 to 6 601 t of *Trichiurus lepturus* from the Western Central Pacific. Excellent taste for fish fry and various kinds of grills, even though meat scanty.

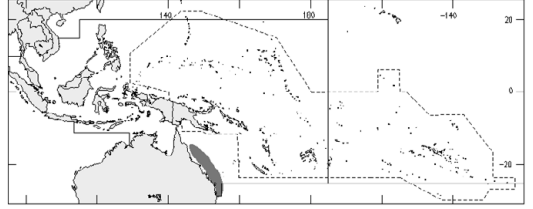
Distribution: Throughout tropical and temperate waters of the world.



Aphanopus capricornis Parin, 1994**En** - Capricorn escabbarfish.

Maximum standard length 86 cm. Benthopelagic at depths of 880 to 1 020 m. No special fishery. Southern tropical Pacific Ocean off Queensland (Australia), and Peru.

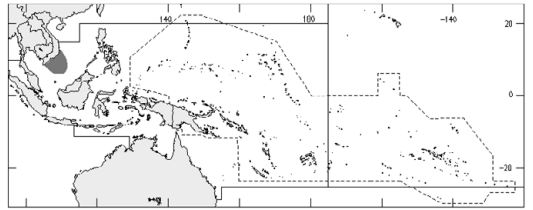
(no illustration available for this species)

***Aphanopus microphthalmus*** Norman, 1939**En** - Smalleye escabbarfish; **Fr** - Poisson sabre petits yeux; **Sp** - Sable ojito.

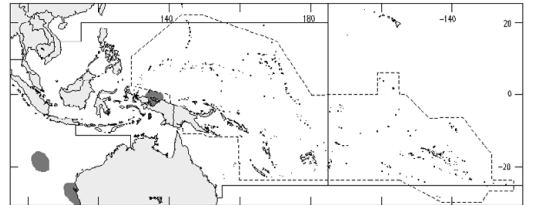
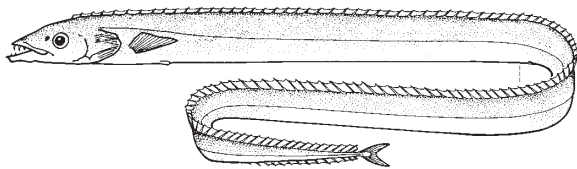
Maximum standard length 94 cm. Benthopelagic at depths of 810 to 1 020 m. No special fishery. Tropical Indian Ocean and South China Sea (recorded from off Viet Nam).



(after Norman, 1939)

***Assurger anzac*** (Alexander, 1916)**En** - Razorback scabbarfish; **Fr** - Poisson sabre resoir; **Sp** - Sable aserrado.

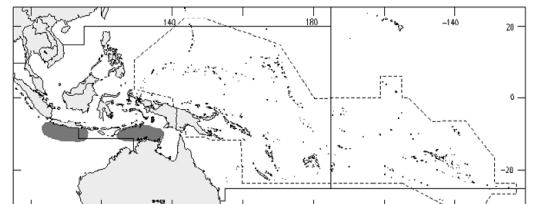
Maximum standard length 225 cm. Probably benthopelagic at depths of 150 to 400 m, juveniles epipelagic or mesopelagic. Feeds on fishes and squids. Known from off Puerto Rico and Uruguay and at Walvis Ridge in the Atlantic, off Western Australia in the Indian Ocean, and in the Pacific off New Guinea, southern Japan, Midway Island, California, Nazca, and Sala y Gomez Ridge. No special fishery.

***Benthodesmus macrophthalmus*** Parin and Becker, 1970**En** - Bigeye frostfish; **Fr** - Poisson sabre gros yeux; **Sp** - Cintilla ojo grande.

Maximum standard length 50 cm. Benthopelagic at depths of 320 to 600 m. No special fishery. Known from the Arafra Sea and the Indian Ocean off Java.



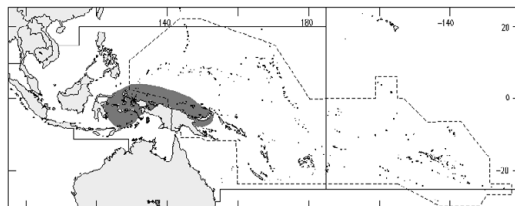
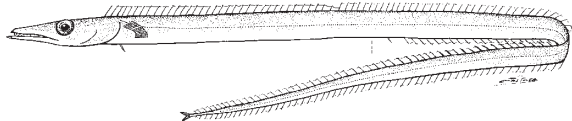
(after Parin and Becker, 1970 and 1971)



Benthodesmus neglectus Parin, 1976

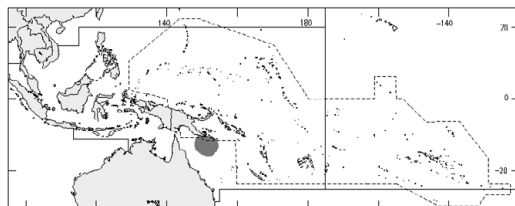
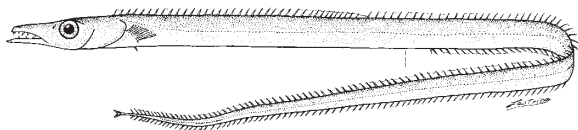
En - Neglected frostfish; **Fr** - Poisson sabre negligé; **Sp** - Cintilla decuido.

Maximum standard length 23 cm. Probably benthopelagic, juveniles mesopelagic at depths of 200 to 800 m. Known from the Pacific Ocean from Halmahera, Flores Sea, and north of New Guinea. No special fishery.

***Benthodesmus papua*** Parin, 1978

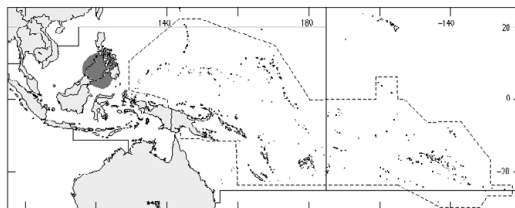
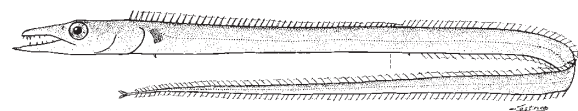
En - Papuan frostfish; **Fr** - Poisson sabre papou; **Sp** - Cintilla papua.

Maximum standard length 24 cm. Probably benthopelagic, juveniles mesopelagic at depths of 200 m. No special fishery. Known from the Coral Sea, southeast of Gulf of Papua.

***Benthodesmus suluensis*** Parin, 1976

En - Philippine frostfish; **Fr** - Poisson sabre philippin; **Sp** - Cintilla filipina.

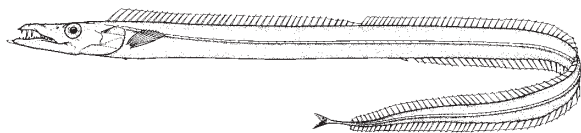
Maximum standard length 18 cm. Probably benthopelagic, juveniles mesopelagic at depths of 200 to 500 m. No special fishery. Known from the Sulu Sea (Philippines).



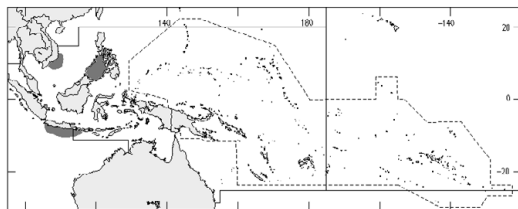
Benthodesmus tenuis (Günther, 1877)

En - Slender frostfish; **Fr** - Sabre fleuret; **Sp** - Cintilla.

Maximum standard length 72 cm or more. Benthopelagic at depths of 200 to 850 m, juveniles mesopelagic. No special fishery. Distributed in the western Atlantic off Cape Hatteras, Gulf of Mexico, Surinam, and southern Brasil; in the eastern Atlantic from Gulf of Guinea to Angola; in the Pacific from the Emperor Seamounts, Japan, Ryukyu Islands, Viet Nam, and the Sulu Sea; in the Indian Ocean off southern Java.



(after Tucker, 1956)



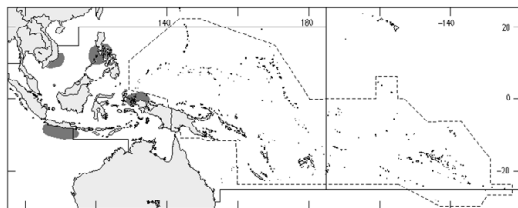
Benthodesmus tuckeri Parin and Becker, 1970

En - Tucker's frostfish; **Fr** - Poisson sabre ruban; **Sp** - Cintilla de Tucker.

Maximum standard length 77 cm. Benthopelagic at depths of 550 to 790 m, juveniles mesopelagic at 500 m. Distributed in the western Pacific Ocean from the Philippines, Viet Nam, Molucca Islands, and southeastern Australia; in the Indian Ocean from Socotra Island, Saya de Malha Bank, Mozambique Channel, and south of Java. No special fishery.



(after Parin and Becker, 1970 and 1971)



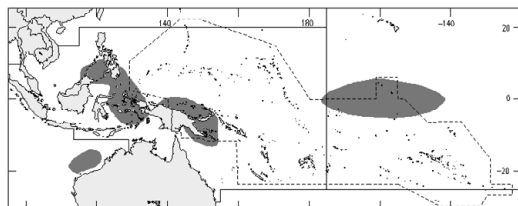
Benthodesmus vityazi Parin and Becker, 1970

En - Vityaz' frostfish; **Fr** - Poisson sabre galon; **Sp** - Cintilla de Vityaz.

Maximum standard length 77 cm. Benthopelagic at depths of 640 to 820 m, juveniles mesopelagic from 170 to 900 m. No special fishery. Known from the western and Central Pacific, seas of the Indo-Australian Archipelago, northeastern and northwestern Indian Ocean.

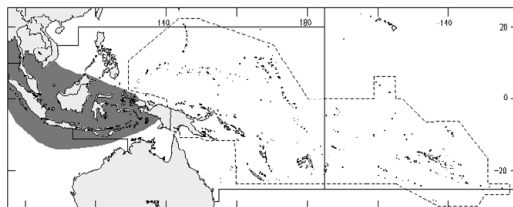
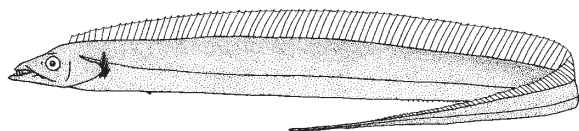


(after Parin and Becker, 1970 and 1971)

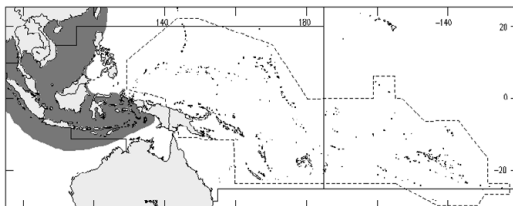
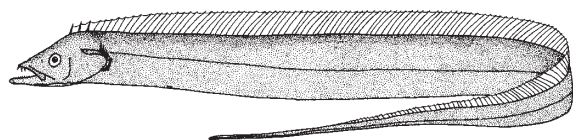


Eupleurogrammus glossodon (Bleeker, 1860)**En** - Longtooth hairtail; **Fr** - Poisson sabre dentu; **Sp** - Pez sable denton.

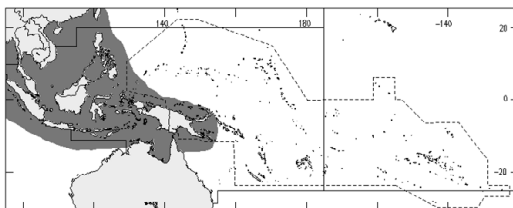
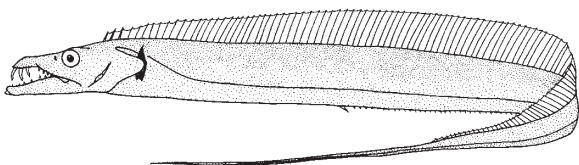
Maximum total length 50 cm, commonly to 40 cm. Benthopelagic, in coastal waters down to depths of about 80 m, often comes close the surface at night. Feeds on crustaceans, squids, and small fishes. Distributed in the Indo-West Pacific including Persian Gulf, India, Sri Lanka, Malaysia, Singapore, Indonesia, and Thailand. Caught mainly with shore seines, bag nets, and bottom trawls with other fishes in coastal waters down to a depth of 50 m.

***Eupleurogrammus muticus*** (Gray, 1831)**En** - Smallhead hairtail; **Fr** - Poisson sabre asbas; **Sp** - Pez sable asbas.

Maximum total length 70 cm, commonly to 50 cm. Benthopelagic, in coastal waters down to depths of about 80 m, often comes close to the surface at night. Feeds on a wide variety of small fishes, squids, and crustaceans. Distributed in the Indo-West Pacific including Persian Gulf, India, Sri Lanka, Malaysia, Indonesia, Gulf of Thailand, China, and southern Korean Peninsula. Caught mainly with shore seines, bag nets, and coastal bottom trawls in coastal waters down to about 50 m.

***Lepturacanthus savala*** (Cuvier, 1829)**En** - Savalani hairtail; **Fr** - Poisson sabre cimeterre; **Sp** - Pez sable savalai.

Maximum total length 100 cm, commonly to 70 cm. Benthopelagic, in coastal waters down to about 100 m, often comes close to the surface at night. Feeds on a wide variety of small fishes and crustaceans. Distributed in the Indo-West Pacific from India and Sri Lanka to Malaysia, Singapore, Indonesia, Philippines, Thailand, China, New Guinea, and northern Australia. Caught mainly with shore seines, bag nets, and coastal bottom trawls in Asian countries. Marketed fresh, iced, and dried-salted.



Trichiurus auriga Klunziger, 1884

En - Pearly hairtail; **Fr** - Poisson sabre brochet; **Sp** - Pez sable perla.

Maximum total length 35 cm. Benthopelagic, in deep waters at depths of 250 to 350 m. Feeds on deep-water shrimps and small fishes, such as myctophids and gonostomatids. Distributed in the Red, Arabian, and Timor seas. Caught with deep-water trawls mixed together with other commercially important fishes as bycatch.

