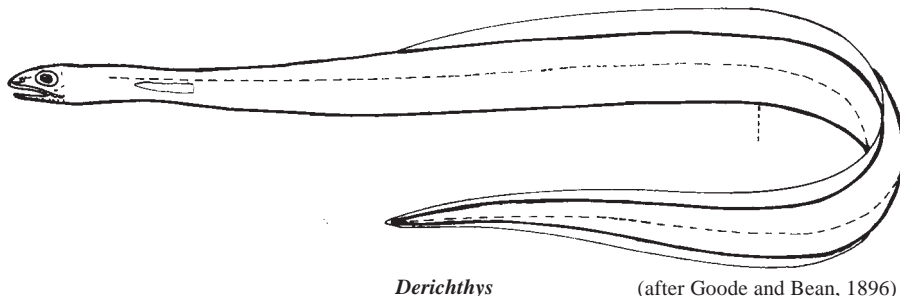


DERICHTHYIDAE

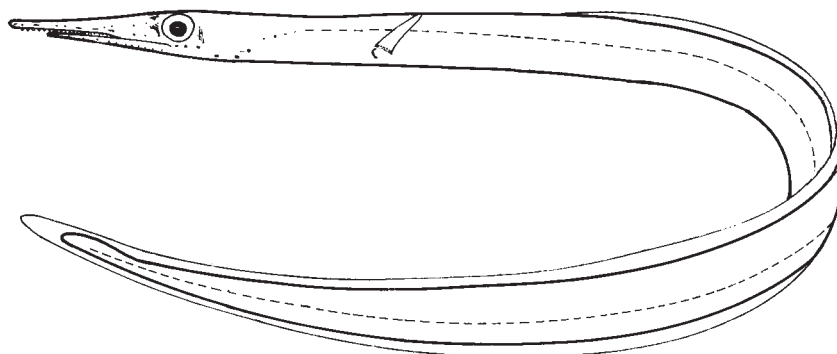
Longneck eels

by D.G. Smith

Diagnostic characters: Body moderately elongate (size to about 60 cm, usually smaller), tail not filamentous, ending in a small caudal fin. Head variable in form, snout either short or markedly elongate; eye well developed; upper jaw extends beyond lower, cleft of mouth ends under or slightly behind eye; lips without upturned or downturned flanges; teeth small, conical, multiserial. Gill opening small, slit-like, located just in front of and below pectoral fin. Dorsal and anal fins confluent with caudal fin; dorsal fin begins on anterior third of body, slightly behind tip of appressed pectoral fins; anal fin begins immediately behind anus, at or slightly behind midbody; dorsal and anal fins both become distinctly reduced near end of tail; pectoral fins present. Scales absent. Lateral line complete, pore system on head well developed. **Colour:** brown, with paler fins; 1 species with a dark midventral streak; no spots, lines, or other distinct markings.

*Derichthys*

(after Goode and Bean, 1896)

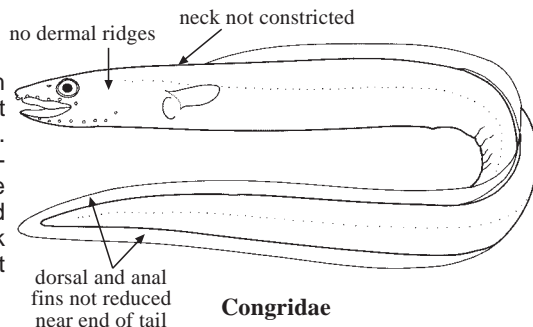
*Nessorhamphus*

(after Robins, 1989)

Habitat, biology, and fisheries: The Derichthyidae includes 2 genera and 3 species of small, seldom-seen, midwater eels. *Derichthys* has a short snout, a constricted neck, and a series of short, longitudinal dermal ridges on the head (presumably sensory in nature). *Nessorhamphus* has a long, somewhat flattened snout, with the posterior nostril located far forward; it lacks the dermal ridges, and its neck is not constricted. Derichthyids are without the strong morphological specializations of the other midwater eels (Nemichthyidae, Serrivomeridae, and Saccopharyngiformes). They spend their entire lives in the open ocean; adults live at depths of several hundred meters. They are of no importance to fisheries.

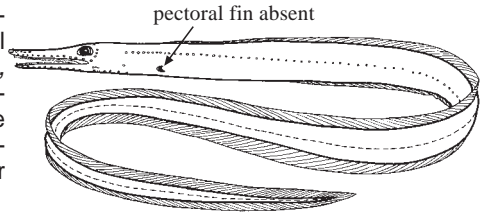
Similar families occurring in the area

Congridae: *Derichthys* is most likely to be confused with members of the Congridae, although the latter are not midwater eels and are unlikely to be collected with it. *Derichthys* may be readily distinguished by the constricted neck, the short, longitudinal dermal ridges on the head, and the dorsal and anal fins reduced near the end of the tail. Congrids do not have a constricted neck, lack ridges on the head, and the dorsal and anal fins are not reduced near the end of the tail.



Congridae

Nettastomatidae: *Nessorhamphus* is most likely to be confused with certain members of the Nettastomatidae. All nettastomatids lack pectoral fins, however, except *Hoplunnis*, which does not occur in the western Pacific. *Hoplunnis* is further distinguished by the enlarged, fang-like teeth on the vomer. The posterior nostril in nettastomatids is highly variable in position, but it is never located nearer to the anterior nostril than to the eye.



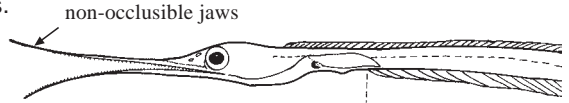
Nettastomatidae

Serrivomeridae: jaws equal or lower jaw protruding; snout not spatulate.

Nemichthyidae: jaws elongate, non-occlusible except in mature males; anus under or shortly behind pectoral fins.



Serrivomeridae



Nemichthyidae

Key to the genera and species occurring in the area

- 1a. Snout and lower jaw short, snout approximately equal to eye diameter; tip of snout not produced and spatulate, extends beyond lower jaw by a distance less than eye diameter (Fig. 1) *Derichthys serpentinus*
- 1b. Snout and lower jaw long, 3 to 4 times eye diameter; tip of snout produced and spatulate, extends beyond lower jaw by a distance equal to or greater than eye diameter (Fig. 2) → 2
- 2a. Snout shorter, 3 to 4 times pigmented eye diameter; a dark streak running along midventral line *Nessorhamphus danae*
- 2b. Snout longer, about 6 times pigmented eye diameter; midventral line without a dark streak *Nessorhamphus ingolfianus*

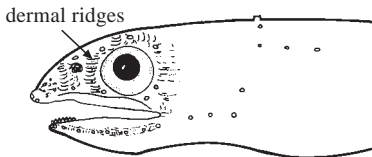


Fig. 1 *Derichthys serpentinus*
(after Robins, 1989)

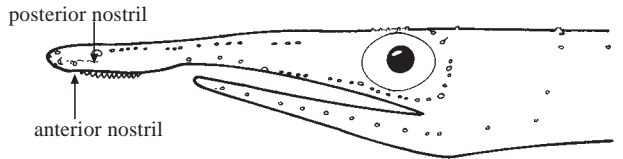


Fig. 2 *Nessorhamphus*

List of species occurring in the area

- Derichthys serpentinus* Gill, 1884
- Nessorhamphus danae* Schmidt, 1931
- Nessorhamphus ingolfianus* (Schmidt, 1912)

References

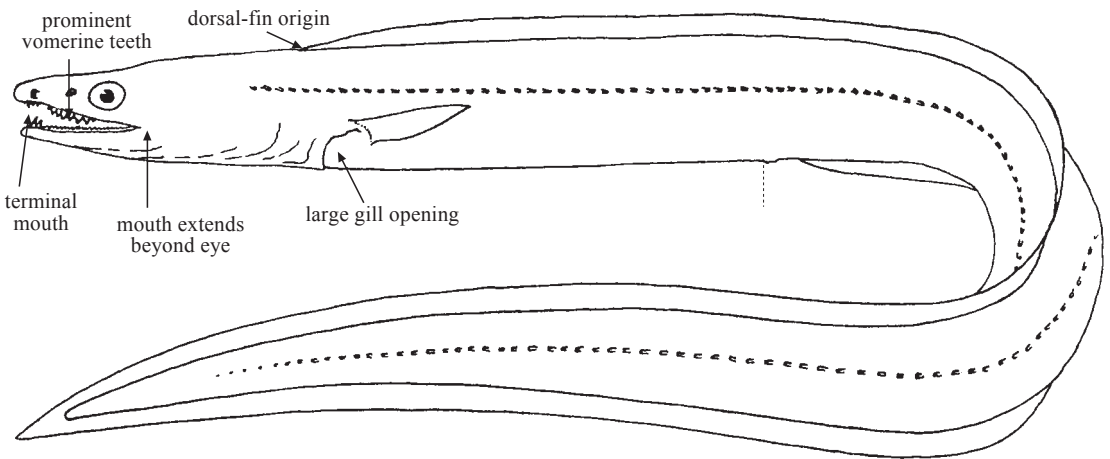
Karmovskaya, E. 1985. Mesopelagic eels of family Derichthyidae (Anguilliformes). *J. Ichthyol.*, 25(6):119-134.
 Robins, C. H. 1989. Family Derichthyidae. In *Fishes of the Western North Atlantic, Part 9*, edited by E.B. Böhlke. *Mem. Sears Found. Mar. Res.*, 1(9):420-431.

MURAENESOCIDAE

Pike congers

by D.G. Smith

Diagnostic characters: Body moderately elongate, more or less cylindrical in front, compressed along tail. Head moderate to moderately elongate. Eye well developed. Snout moderate to acute, projects somewhat beyond tip of lower jaw. Mouth large, gape ends behind posterior margin of eye; lips without fleshy flanges; **tips of lower jaw with enlarged teeth that fit into a notch in underside of snout when mouth closed.** Teeth large, prominent, sharp; multiserial on jaws; typically in 3 rows on vomer, with a median row of canines flanked on each side by a row of much smaller teeth. Anterior nostril tubular, on side of snout just behind tip; posterior nostril a simple opening in front of eye at approximately mideye level. Gill opening a large, oblique slit in front of and below pectoral fins; **gill openings of the 2 sides nearly meet on ventral midline, interspace much smaller than length of gill opening.** Dorsal and anal fins well developed. Scales absent. **Lateral line complete, but usually opening through a complex or branching system of multiple pores rather than a single pore per segment.** **Colour:** brown or silver grey to black, lighter ventrally; vertical fins usually edged in black; no distinct patterns or markings.

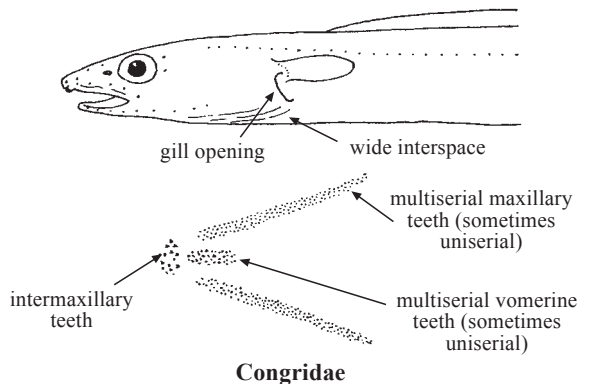


Habitat, biology, and fisheries: Pike congers are small to large eels inhabiting tropical and subtropical coastal waters of all seas, including the Mediterranean. They are more characteristic of continental waters than of oceanic islands. Little is known of their biology, but they appear to be nocturnal and feed on a variety of bottom-living fishes and invertebrates. Like all eels, they spawn in the open sea and have a leptocephalus larva. The larger species are valued as food in this area and elsewhere.

Remarks: This family has been poorly defined and in the past has been a repository for a variety of large-toothed eels that have little else in common. Genera such as *Hoplunnis*, *Xenomystax*, and *Gavialiceps* have now been removed to other families. As currently understood, the Muraenesocidae contains the genera *Congresox*, *Cynopticus*, *Muraenesox*, *Oxyconger*, and *Sauromurenesox*. *Congresox*, *Muraenesox*, and *Oxyconger* have been recorded from this area, but only the first 2 are common.

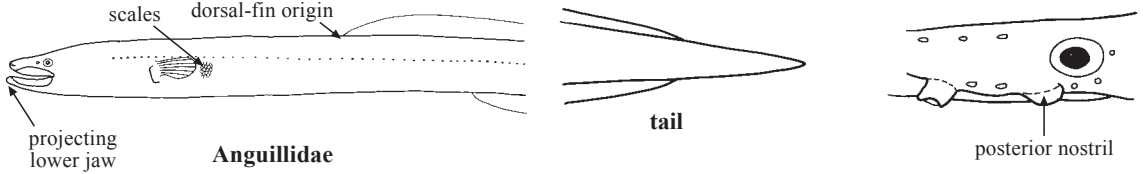
Similar families occurring in the area

Congridae: underside of snout without a conspicuous notch into which lower jaw fits when mouth closed (present in the Muraenesocidae); teeth on vomer (roof of mouth) typically inconspicuous, in a multiserial band or in a single row (prominent and triserial in Muraenesocidae); gill openings are lateral slits which do not nearly meet across midline (gill interspace is externally small in the Muraenesocidae).

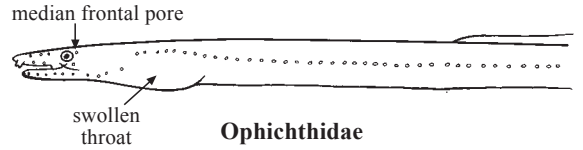


Anguillidae: body covered with tiny embedded scales (scaleless in Muraenesocidae); lower jaw projecting slightly (equal or slightly shorter in Muraenesocidae); dorsal fin begins about midway between pectoral fins and anus or over anus (always above gill opening in Muraenesocidae).

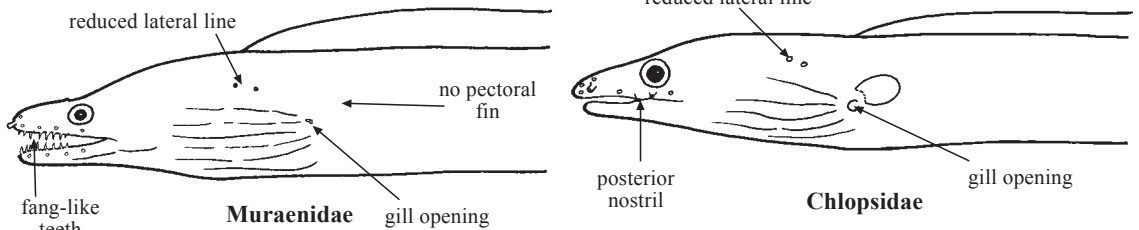
Ophichthidae: in most genera no caudal fin but tail tip a hard, burrowing point (caudal fin present in all Muraenesocidae); posterior nostril usually inside mouth or in some way penetrating upper lip (a simple aperture in Muraenesocidae); throat swollen, supported by many branchiostegal rays overlapping in midline; a median frontal pore on head (no such pore in Muraenesocidae).



Muraenidae: no pectoral fin (present in Muraenesocidae); gill opening a small hole (an oblique slit in Muraenesocidae); typically brightly banded, spotted or mottled.



Chlopsidae: gill opening a small hole (an oblique slit in Muraenesocidae); vomerine teeth in 2 divergent rows (3 or several parallel rows in Muraenesocidae); lateral line system reduced (more or less complete though inconspicuous in some Muraenesocidae); posterior nostril low on snout or flap-like; pectoral fins present or absent.



Key to the genera and species of Muraenesocidae

- 1a. Vomer without a median series of enlarged fangs; caudal fin reduced, tip of tail blunt; anus behind midlength *Oxyconger leptognathus*
- 1b. Vomer with a median series of enlarged fangs; caudal fin not reduced, tip of tail soft and flexible; anus at or before midlength → 2
- 2a. Lower jaw with 1 row of teeth; head large and massive compared to body, maximum depth of head almost twice depth of body at anus *Sauromuraenesox vorax*
(Indian Ocean; not yet recorded from the area)
- 2b. Lower jaw with more than 1 row of teeth (row of large teeth flanked by an inner and/or outer row of smaller teeth); depth of head equal to or only slightly greater than depth of body at anus → 3
- 3a. Large median vomerine teeth round in cross-section, slender, acute, with slightly expanded tips but without basal cusps (Fig. 1a) → 4
- 3b. Large median vomerine teeth compressed, with 1 or 2 basal cusps (Fig. 1b, c) → 5

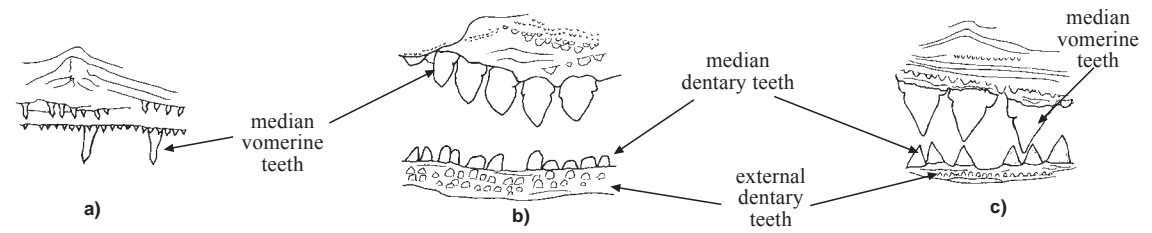


Fig. 1 dentition (lateral view)

- 4a. Length of pectoral fins about 3.2 in head; lateral-line pores before anus 41 or 42; dorsal-fin rays before anus 70 to 75; vertebrae 143 to 149 *Congresox talabon*
- 4b. Length of pectoral fins about 4.1 in head; lateral-line pores before anus 35 to 40; dorsal-fin rays before anus 35 to 40; vertebrae 132 to 145 *Congresox talabonoides*

- 5a. Large median vomerine teeth blade-like in lateral view, anterior edge curved; teeth in lower jaw blunt, not triangular (Fig. 1b) *Cynoponticus*
(Atlantic and eastern Pacific; not yet recorded from the area)
- 5b. Large median vomerine teeth triangular in lateral view, anterior edge straight; principal teeth in lower jaw triangular (Fig. 1c) → 6

- 6a. Head narrower, interorbital width about 10 times in head (Fig. 2a); lateral-line pores before anus 33 to 39; dorsal-fin rays before anus 47 to 49; vertebrae 128 to 141 *Muraenesox bagio*
- 6b. Head broader, interorbital about 8 times in head (Fig. 2b); lateral-line pores before anus 40 to 47; dorsal-fin rays before anus 66 to 78; vertebrae 145 to 159 *Muraenesox cinereus*

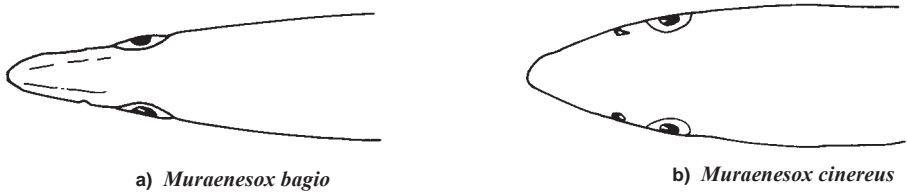


Fig. 2 dorsal view of head

List of species occurring in the area

The symbol ➤ is given when species accounts are included.

- *Congresox talabon* (Cuvier, 1829)
- *Congresox talabonoides* (Bleeker, 1853)
- *Muraenesox bagio* (Hamilton, 1822)
- *Muraenesox cinereus* (Forsskål, 1775)
- *Oxyconger leptognathus* (Bleeker, 1858)

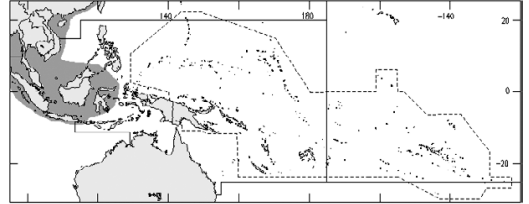
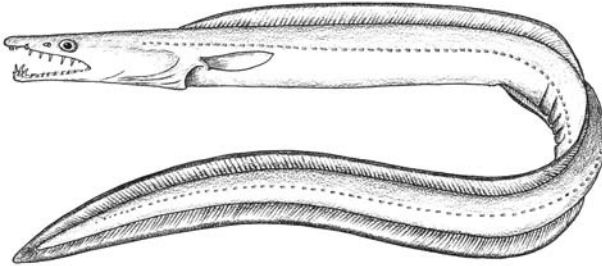
Reference

Castle, P.H.J. and G. J. Williamson. 1975. Systematics and distribution of eels of the *Muraenesox* group (Anguilliformes, Muraenesocidae) - a preliminary report and key. *Spec. Pub. J.L.B. Smith Inst. Ichthyol.*, (15):9 p.

Congresox talabon (Cuvier, 1829)

En - Yellow pike conger; **Fr** - Morénésoce jaune; **Sp** - Morenocio amarillo.

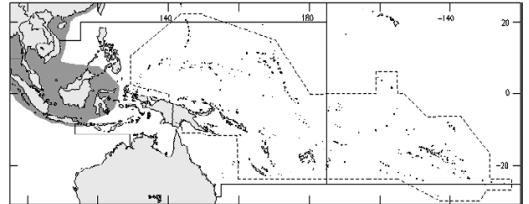
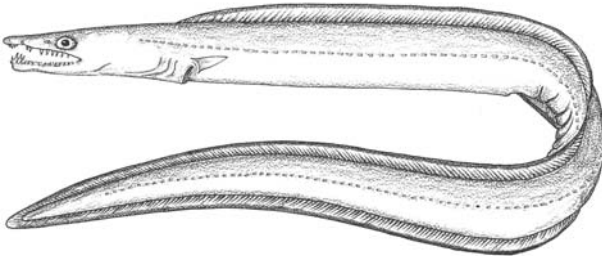
Maximum length about 80 cm. Lives in coastal waters down to about 100 m and in estuaries, over soft bottoms. Nocturnal, feeding mainly on benthic fishes and crustaceans. Caught mainly by longline, trawl, and drift net at night; marketed mainly fresh; separate statistics not available. Occurs from the Bay of Bengal through Malaysian and Indonesian waters to Sulawesi.



Congresox talabonoides (Bleeker, 1853)

En - Indian pike conger; **Fr** - Morénésoce indien; **Sp** - Morenocio indio.

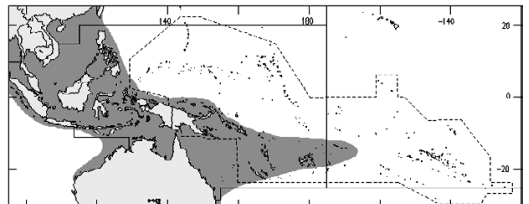
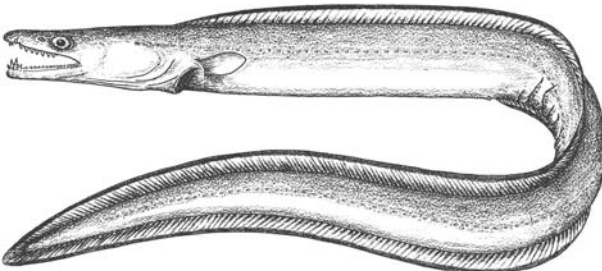
Maximum length about 250 cm. Lives in coastal waters down to about 100 m and in estuaries, over soft bottoms. Nocturnal, feeding on benthic fishes and crustaceans. Caught by longline, trawl, and drift nets at night; marketed mainly fresh; separate statistics not available. Occurs from the Red Sea to Java and Sulawesi.



Muraenesox bagio (Hamilton, 1822)

En - Common pike conger; **Fr** - Morénésoce comun; **Sp** - Morenocio común.

Maximum length about 180 cm. Lives in coastal waters down to about 100 m and in estuaries, over soft bottoms. Nocturnal, feeds on benthic fishes and crustaceans. Caught by longline, trawl, and drift nets; marketed fresh; separate statistics not available. Occurs from east Africa and India to Japan, south through Indonesia to New Guinea, Australia, New Caledonia, and Fiji.

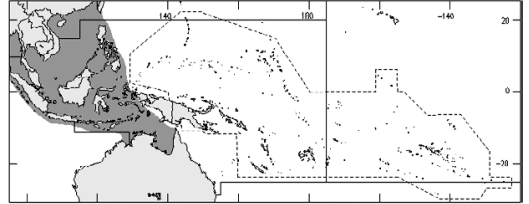
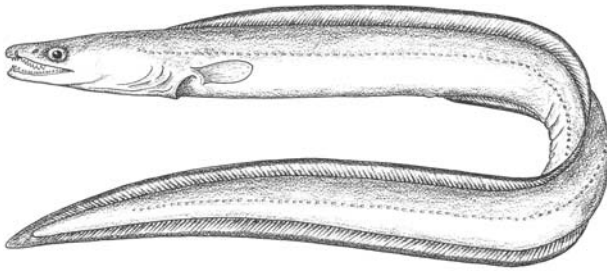


Muraenesox cinereus (Forsskål, 1775)

DPC

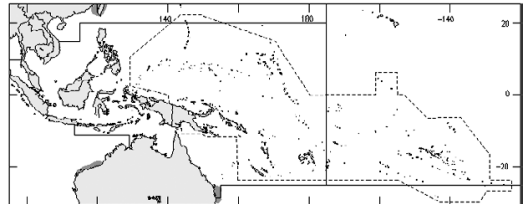
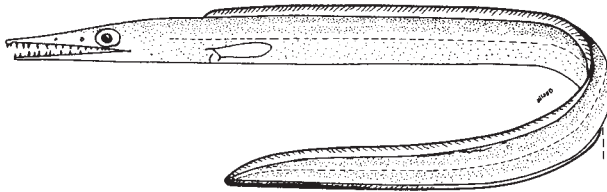
En - Daggertooth pike conger; **Fr** - Morénesoce dague; **Sp** - Morenocio dentón.

Maximum length about 80 cm. Lives in coastal waters down to about 100 m and in estuaries, on soft bottoms. Nocturnal, feeds on benthic fishes and crustaceans. Caught by longline, trawl, and drift nets; marketed fresh. From 1990 to 1995, FAO's Yearbook of Fishery Statistics reports a range of yearly catch of around 2 800 to 5 500 t of *Muraenesox cinereus* from the Western Central Pacific (Thailand, Malaysia). Occurs from the Red Sea to Japan, south through Indonesia to northern Australia.

***Oxyconger leptognathus*** (Bleeker, 1858)

En - Shorttail pike conger.

Maximum length about 30 to 40 cm. Lives in offshore waters in less than 100 m. Poorly known and included in the Muraenesocidae provisionally, pending further study. Of no commercial importance. An antitropical species that occurs mainly north and south of the area, but it has been collected off Brisbane, Queensland, Australia.



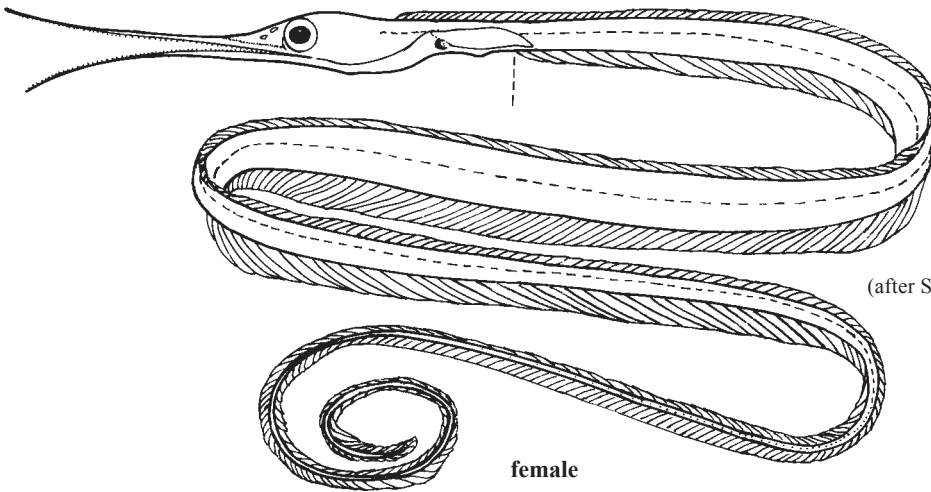
(after Chen and Weng, 1967)

NEMICHTHYIDAE

Snipe eels

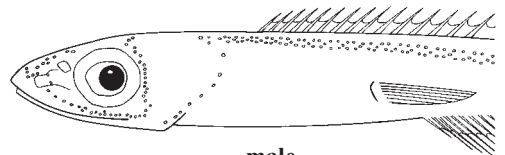
by D.G. Smith

Diagnostic characters: **Body elongate to very elongate**, moderately to strongly compressed; tail moderately attenuate with a small caudal fin, or greatly attenuate and filiform; **anus far forward, either under pectoral fins or less than one head length behind it**. Eye well developed. **Jaws and snout produced into a long, non-occlusible beak in females and immatures**, short in males; cleft of mouth ends under or slightly behind eye; teeth small with recurved tips, close-set in diagonal rows. Anterior and posterior nostrils located on side of head, just in front of eye; anterior nostril without a tube in females and immatures, strongly tubular and forwardly directed in mature males. Gill opening crescentic, located in front of and below pectoral fins. Dorsal and anal fins long and confluent with caudal fin when latter is present, anal fin higher than dorsal; dorsal fin begins over or slightly in front of pectoral fins; anal fin begins just behind anus; pectoral fins present. Scales absent. Lateral line complete, either as a single row of pores or 3 parallel rows of pores; pores on head well developed. Maximum size may exceed 1 m total length, but much of this consists of the attenuated caudal region. **Colour:** variable, may be uniform dark or light brown; reverse countershaded, dark below and light above; completely pale, with or without internal dark bars, and with or without a patch of dark pigment spots below stomach.



(after Smith and Nielsen, 1989)

Habitat, biology, and fisheries: Nemichthyids live in the midwaters of the world ocean; adults are found at depths of several hundred to more than 2 000 m. They are of no importance to fisheries.



(after Nielsen and Smith, 1978)

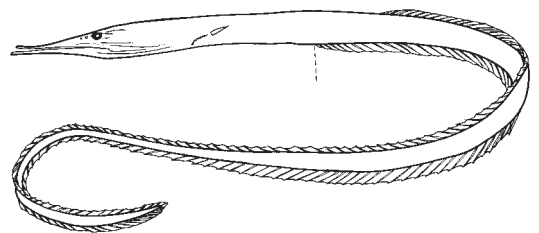
Similar families occurring in the area

Cyematidae: cyematids have the jaws produced into a similar non-occlusible beak, but they have a short, stubby body and small eyes.

Serrivomeridae: serrivomerids have prolonged jaws, but they are fully occlusible. In serrivomerids, the dorsal fin begins over or behind the anus; in nemichthyids, the dorsal fin always begins in front of the anus. The anus in serrivomerids is located well behind the head, at about the first 1/3 or first 1/4 of the total length.



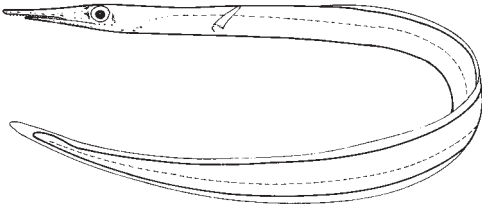
Cyematidae



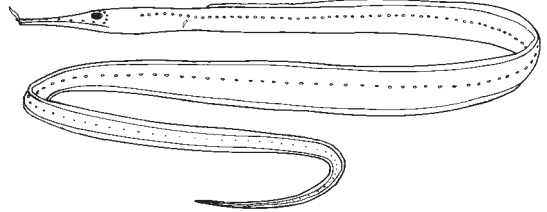
Serrivomeridae

Derichthyidae: in derichthyids, the jaws are occlusible, the dorsal fin begins behind the pectoral fins, and the anus is located far behind the pectoral fins, near midbody.

Nettastomatidae: nettastomatids have long jaws, but they are fully occlusible. The anus is located well behind the gill opening. The pectoral fins are absent in all Indo-West Pacific nettastomatids.



Derichthyidae



Nettastomatidae

Key to the genera of Nemichthyidae occurring in the area

- 1a. Caudal region extremely elongated and thread-like (Fig. 1a), a distinct caudal fin absent; 3 rows of pores in lateral line (Fig. 2a); no dermal ridges on head *Nemichthys*
- 1b. Caudal region not thread-like (Fig. 1b), a small caudal fin present; 1 row of pores in lateral line (Fig. 2b); small, longitudinal dermal ridges on head (Fig. 3) → 2



b) *Labichthys*, *Avocettina*
Fig. 1 caudal region

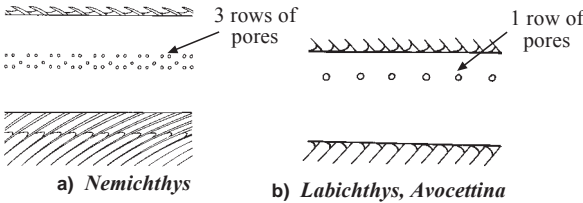


Fig. 5 detail of body surface (lateral view)

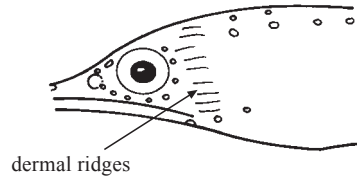


Fig. 2 lateral view of head

- 2a. Anus located under pectoral fins (Fig. 4) *Labichthys*
- 2b. Anus located behind pectoral fins (Fig. 5) *Avocettina*

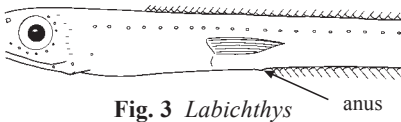


Fig. 3 *Labichthys* anus

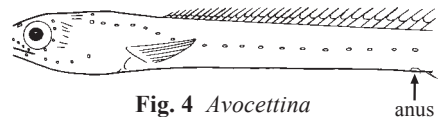


Fig. 4 *Avocettina* anus

List of species occurring in the area

Note: the following list is provisional. *Nemichthys* in particular is highly variable, and different populations have been recognized at different levels by different authorities. The list presented here is the most conservative interpretation. Future studies may show that *Nemichthys scolopaceus* should be split into several geographically distinct species. *Labichthys carinatus* has not been recorded from the area, but it occurs off Hawaii and in the Indian Ocean, and is likely to be found in the intervening waters as well.

- Avocettina acuticeps* (Regan, 1916)
- Avocettina infans* (Günther, 1878)
- Avocettina paucipora* Nielsen and Smith, 1978
- ?*Labichthys carinatus* Gill and Ryder, 1883
- Nemichthys curvirostris* (Strömman, 1896)
- Nemichthys scolopaceus* Richardson, 1848

References

Karmovskaya, E. 1990. Leptocephali of eels of the genus *Nemichthys* (Nemichthyidae, Osteichthys). *J. Ichthyol.*, 30(4):551-563.

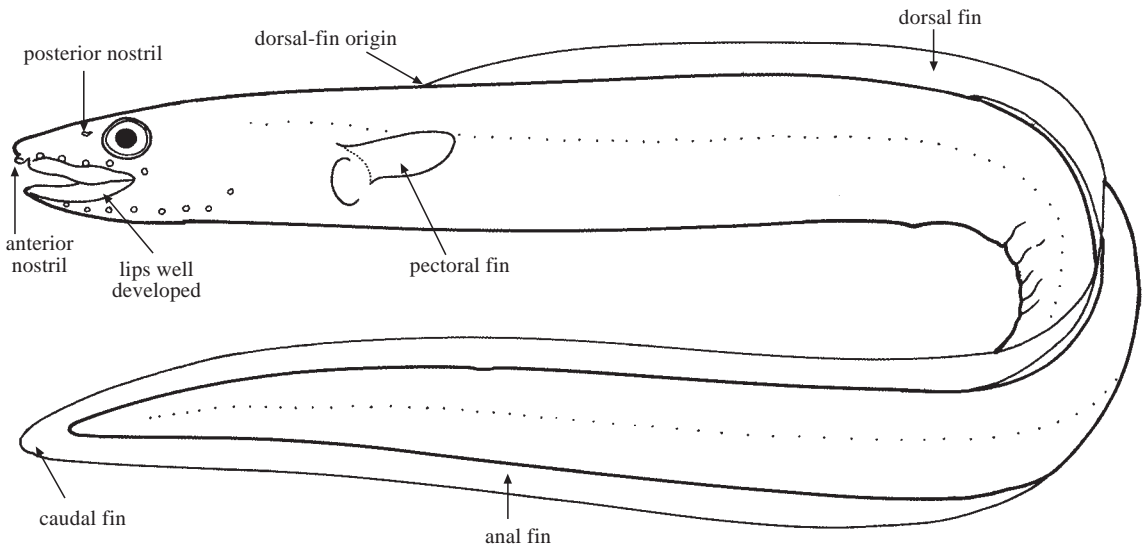
Nielsen, J. G. and D.G. Smith. 1978. The eel family Nemichthyidae. *Dana Rept.*, (88):71 p.

CONGRIDAE

Conger eels

by D.G. Smith

Diagnostic characters: Body moderately elongate to extremely elongate, round in cross-section anteriorly, compressed posteriorly; anus usually located at anterior half to third of total length; tail variable, from blunt and stiffened to long and slender. **Eye well developed, sometimes very large.** Snout variable, from long and pointed to short and pug-nosed; tip of snout usually extends at least slightly beyond tip of lower jaw, except in Heterocongrinae, where lower jaw protrudes. Anterior nostril tubular, near tip of snout; posterior nostril usually located on side of head in front of eye. Mouth variable, gape usually ending at some point beneath eye; in most species tip of lower jaw fits into space behind intermaxillary tooth patch; flanges on upper and lower lip present or absent. Teeth variable, from small and granular to long and fang-like; in many species, intermaxillary teeth visible when mouth closed. Branchiostegal rays long but not overlapping ventrally, moderate in number, usually about 8 to 12. Gill opening a crescentic slit, just in front of pectoral fins. Dorsal and anal fins always present, confluent around tail; **dorsal fin begins over or slightly behind pectoral fins, always closer to pectoral fins than to anus;** caudal fin sometimes reduced, but some rays almost always present; pectoral fins usually present, well developed in most species, but reduced or absent in heterocongrines and *Gavialiceps*. Scales absent. Lateral line complete. **Colour:** most species plain brown or grey, pale ventrally, vertical fins often edged in black; some heterocongrines have conspicuous markings.



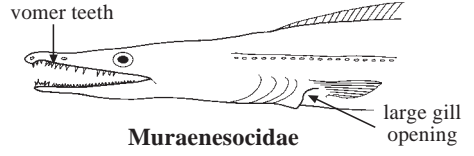
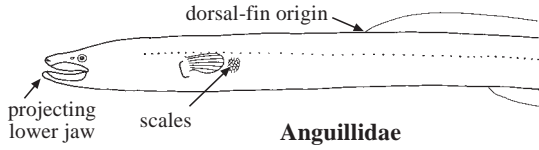
Habitat, biology, and fisheries: Congers are small to large eels found in tropical to temperate seas worldwide; a few species can reach 2 to 3 m in total length, but most are much smaller. They occur primarily on sand or mud bottoms from the coastline to depths of 2 000 m or more; most species live on the shelf or slope. Many burrow during the day and actively forage at night. The Heterocongrinae are the most distinct of the congrids, and among the few that show conspicuous morphological specializations. These are the so-called garden eels, which live in burrows in coral sand and project the front portion of the body from the burrow to feed on zooplankton. The remainder of the family are bottom dwellers that feed on a variety of fishes and invertebrates. Some species of *Conger* and a few *Ariosoma* are found in commercial fisheries, but on the whole they are of little importance. From 1990 to 1995, FAO's Yearbook of Fishery Statistics reports a range of yearly catch of around 2 000 to 3 000 t of Congridae from the area (Philippines only). They are caught by trawls, traps, and by hook-and-line, and are marketed mostly fresh. Because of their diversity and abundance, congrids probably play a more important role in the ecology of the area than their relatively minor position in the fishery would indicate.

Remarks: The genus *Coloconger* has in the past been included in the Congridae. It is here considered to represent a distinct family and is treated under the Colocongridae. The genera *Gavialiceps* and *Xenomystax* have been placed in the Muraenesocidae but are here considered to be congrids.

Similar families occurring in the area

Anguillidae: body covered with tiny embedded scales (scaleless in Congridae); lower jaw projecting slightly; dorsal fin begins about midway between pectoral fins and anus, or over anus (always above or before pectoral-fin tips in Congridae).

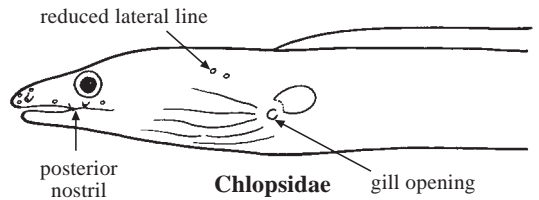
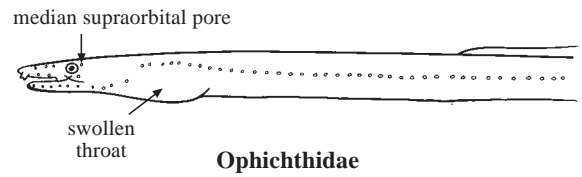
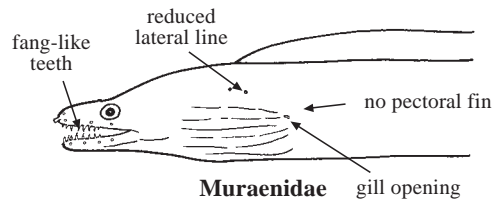
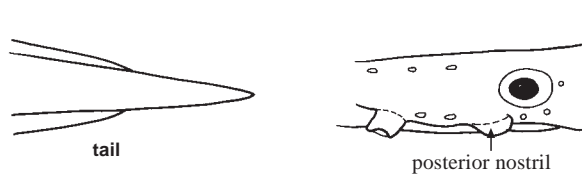
Muraenesocidae: mouth very large, extending to beyond eye (mouth in Congridae barely reaches rear margin of eye); vomerine teeth prominent, fang-like (relatively small in Congridae); gill openings nearly meet each other across ventral midline.



Ophichthidae: in most genera no caudal fin but tail tip a hard, burrowing point (caudal fin present in most Congridae); posterior nostril usually inside mouth or in some way penetrating upper lip (a simple aperture in Congridae); throat swollen, supported by many branchiostegal rays overlapping in midline; a median frontal pore on head (no such pore in Congridae, although there is a median supratemporal pore).

Muraenidae: no pectoral fins (almost always present in Congridae); gill opening a small hole (a vertical slit in Congridae); teeth fang-like or molar-like (small and conical in Congridae); typically brightly banded, spotted or mottled.

Chlopsidae: gill opening a small hole; vomerine teeth in 2 divergent rows (a single or several parallel rows in Congridae); lateral line system reduced (prominent in Congridae); posterior nostril low on snout or flap-like; pectoral fins present or absent.

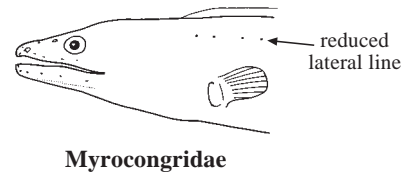
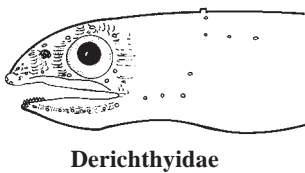
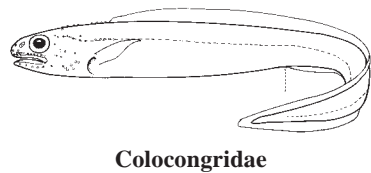
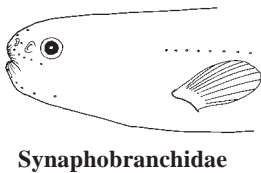


Synphobranchidae: any of the following characters, singly or in combination; scales present; gill openings displaced ventrally away from pectoral fins, sometimes united on the ventral midline; pectoral fins absent; dorsal fin beginning far behind pectoral fins; anus under pectoral fins; a row of enlarged vomerine teeth, each formed by a fusion of 2 teeth.

Colocongridae: anus far behind midlength.

Derichthyidae: constricted neck (*Derichthys*) or produced, spatulate snout (*Nessorhamphus*).

Myrocongridae: lateral line reduced to a few pores at anterior end.



Key to the subfamilies and genera occurring in the area

Note: in some congridrids the tip of the tail is frequently lost through injury. This can affect proportional measurements and give unnaturally high values for any proportion based on total length. The key below assumes that the specimen is intact. All genera known from the Indo-West Pacific are included in this key. Some specified genera have not been recorded in the Western Central Pacific, but any of these could show up in future collections.

- 1a. Body extremely elongate; mouth very oblique; snout very short, much less than diameter of eye (Figs 1 and 2); pectoral fins reduced; caudal fin reduced or absent externally (subfamily **Heterocongrinae**) → 2
- 1b. Body moderately elongate; mouth horizontal or slightly oblique; snout only slightly less than, to somewhat greater than diameter of eye; pectoral fins well developed; caudal fin present though sometimes reduced → 3
- 2a. Flange on upper lip continuous across tip of snout, anterior nostril penetrating through flange; mouth very small, its angle just level with anterior margin of eye (Fig. 1) **Heteroconger**
- 2b. Flange on upper lip not continuous across tip of snout, anterior nostril free from flange; mouth moderate, its angle reaching middle of eye (Fig. 2) **Gorgasia**
- 3a. Preanal length usually greater than 40% of total length; caudal fin short and tip of tail stiff; posterior nostril usually below mideye level; dorsal- and anal-fin rays unsegmented; flange present on upper lip (subfamily **Bathymyrinae**) → 4
- 3b. Preanal length usually less than 40% of total length; posterior nostril at or above mideye level; caudal fin usually not reduced, tip of tail soft and flexible (except *Gnathophis*, *Diploconger*, and *Scalanago*); dorsal- and anal-fin rays segmented; flange on upper lip present or absent (subfamily **Congrinae**) → 9
- 4a. Posterior nostril covered by a flap (Fig. 3) **Parabathymyrus**
- 4b. Posterior nostril exposed → 5

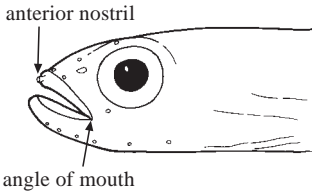


Fig. 1 *Heteroconger*

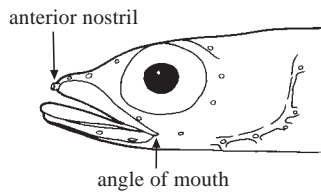


Fig. 2 *Gorgasia*

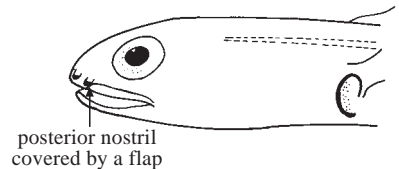


Fig. 3 *Parabathymyrus*

- 5a. Intermaxillary tooth patch fully exposed and curving upward on anterior face of snout (Fig. 4). **Bathymyrus**

- 5b. Intermaxillary tooth patch slightly exposed in ventral view, but not curving upward on anterior face of snout → 6

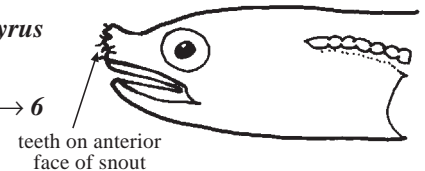


Fig. 4 *Bathymyrus*

- 6a. Teeth in a single row on each jaw except for some short extra rows anteriorly; posterior nostril near mideye (Fig. 5) **Congriscus**
(genus not yet recorded from the area)

- 6b. Teeth in at least 3 rows on each jaw; posterior nostril below mideye → 7

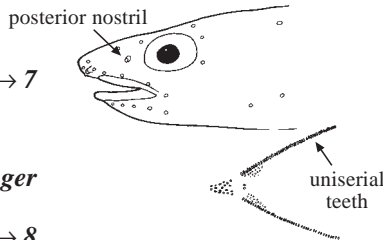


Fig. 5 *Congriscus*

- 7a. Snout very short, less than eye diameter (Fig. 6) **Chiloconger**

- 7b. Snout greater than eye diameter → 8

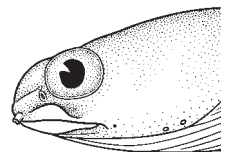


Fig. 6 *Chiloconger*

- 8a. Colour uniform, without spots, blotches, or vertical bands (Fig. 7) *Ariosoma*
- 8b. Spots, blotches, or vertical bands present (Fig. 8) *Poeciloconger*

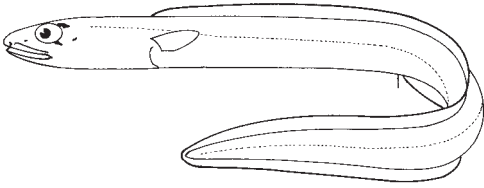


Fig. 7 *Ariosoma*

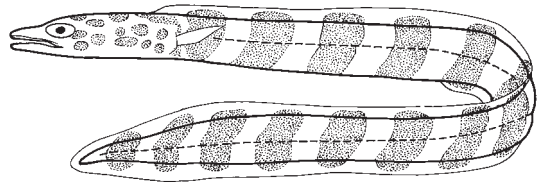


Fig. 8 *Poeciloconger*

- 9a. Ends of some branchiostegal rays protrude freely through gill opening (Fig. 9) *Blachea*
- 9b. Ends of branchiostegal rays do not protrude freely through gill opening → 10
- 10a. Lips reduced, maxillary and lateral mandibular teeth exposed when mouth closed → 11
- 10b. Lips well developed, maxillary and lateral mandibular teeth concealed when mouth closed → 13



exposed branchiostegal rays

Fig. 9 *Blachea*

- 11a. Inner row of maxillary and mandibular teeth not separated from outer rows by an edentulous groove. *Congrhynchus*
- 11b. Inner row of maxillary and mandibular teeth separated from outer rows by an edentulous groove (Fig. 10) → 12
- 12a. Pectoral fins absent or reduced to a rudiment; snout long and slender (Fig. 11) *Gavialiceps*
- 12b. Pectoral fins well developed; snout not as long and slender (Fig. 12) *Xenomystax* (genus not yet recorded from the area)

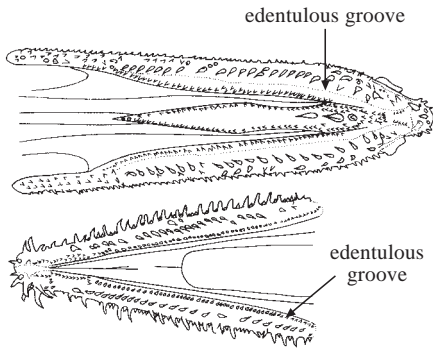
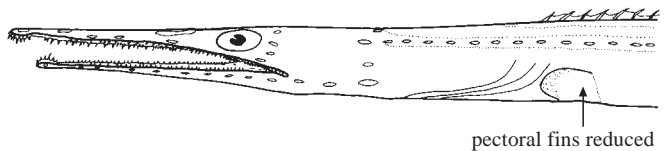


Fig. 10 dentition of upper and lower jaws



pectoral fins reduced

Fig. 11 *Gavialiceps*

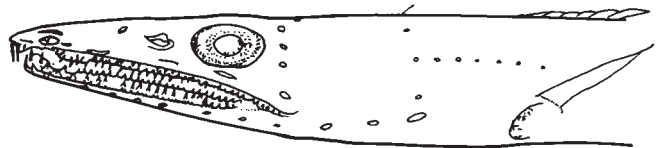
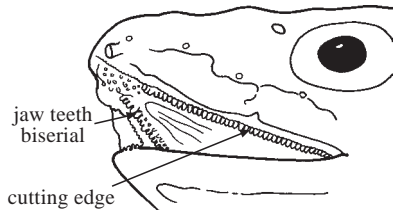


Fig. 12 *Xenomystax*

- 13a. Maxillary and mandibular teeth in 1 or 2 rows, the outer row forming a cutting edge; flange well developed on upper lip (Fig. 13) *Conger*
- 13b. Maxillary and mandibular teeth in narrow or wide bands, not forming a cutting edge. → 14
- 14a. Caudal fin reduced, tip of tail slightly stiffened → 15
- 14b. Caudal fin not reduced, tip of tail soft and flexible → 17



jaw teeth biserial

cutting edge

Fig. 13 *Conger*

- 15a. Lateral line with a series of long, vertical branches covering much of side of body (Fig.14) *Scalanago*
(genus not yet recorded from the area)
- 15b. Lateral line normal or with very short vertical branches → 16
- 16a. Cephalic and lateral-line pores forming a double row, those on body at end of short transverse branches (Fig. 15) *Diploconger*
(genus not yet recorded from the area)
- 16b. Cephalic and lateral-line pores forming a single row (Fig. 16) *Gnathophis*

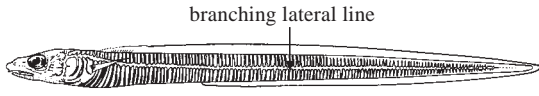


Fig. 14 *Scalango*

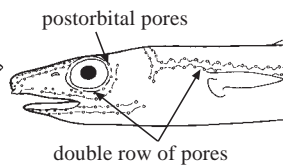


Fig. 15 *Diploconger*

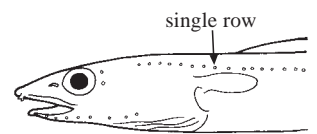


Fig. 16 *Gnathophis*

- 17a. Vomerine teeth in a single row, extending far back on roof of mouth (Fig. 17) *Uroconger*
- 17b. Vomerine teeth in a patch or band, or in a very short row → 18
- 18a. Vomerine teeth in a small cluster of sharp teeth anteriorly, usually with 1 or 2 enlarged and in tandem, and a few smaller ones flanking them (Fig. 18); pores along upper lip enlarged → 19
- 18b. Vomerine teeth forming a multiseriate band on roof of mouth, none enlarged or fang-like; pores along upper lip usually not enlarged → 20

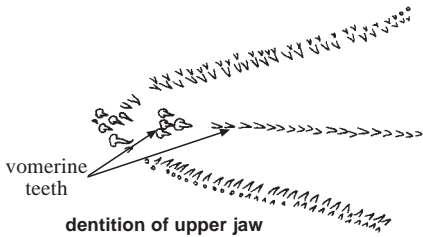


Fig. 17 *Uroconger*

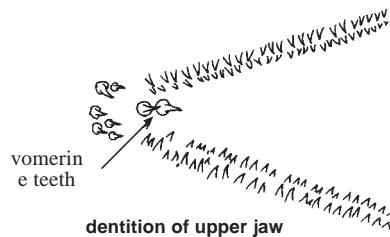


Fig. 18

- 19a. Mouth terminal; intermaxillary and anterior mandibular teeth enlarged and fang-like; body soft and flabby; gill opening very small, 3 to 4 times or more in interbranchial (Fig.19) *Bathyuroconger*
- 19b. Snout projecting in front of lower jaw; intermaxillary and anterior mandibular teeth may be slightly enlarged, but not conspicuous and fang-like; body firm; gill opening less than 3 times in interbranchial (Fig. 20) *Bathycongrus*

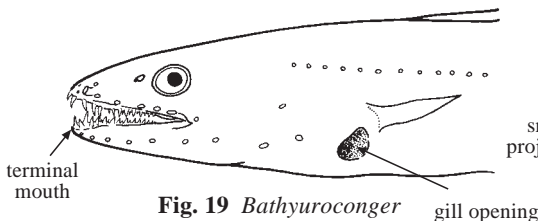


Fig. 19 *Bathyuroconger*

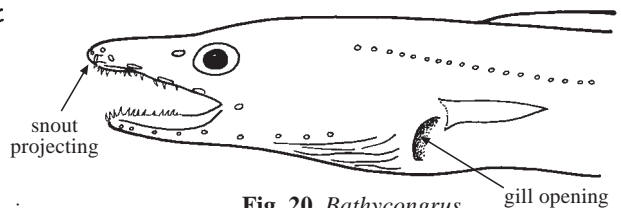


Fig. 20 *Bathycongrus*

- 20a. Snout short and bluntly rounded, its length 5 times or more in head length → 21
- 20b. Snout longer and more acute, its length about 3 to 4 times in head length → 22

- 21a. Tip of snout ends in a series of fleshy ridges and folds (Fig. 21) *Macrocephenchelys*
- 21b. Tip of snout without fleshy ridges and folds (Fig. 22) "*Rhynchoconger*" *brevirostris*

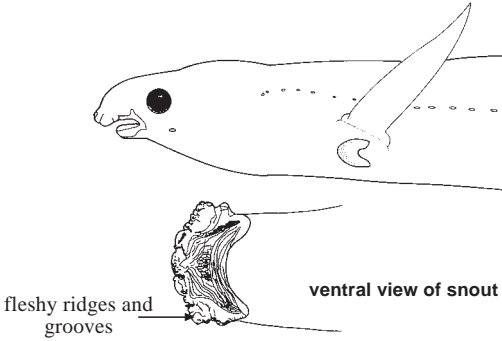


Fig. 21 *Macrocephenchelys*

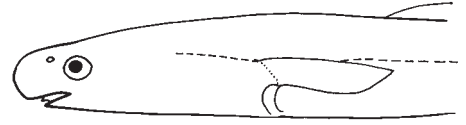


Fig. 22 "*Rhynchoconger*" *brevirostris*

- 22a. Vomerine tooth patch very short, its length little if any greater than its width → 23
- 22b. Vomerine tooth patch more elongate, its length substantially greater than its width → 24
- 23a. Intermaxillary tooth patch elongate, its length substantially greater than its width; intestine luminous in life (Fig. 23) *Lumiconger*
- 23b. Intermaxillary tooth patch not elongate, its length equal to or less than its width (Fig. 24) *Rhynchoconger*

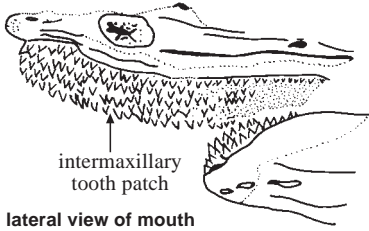


Fig. 23 *Lumiconger*

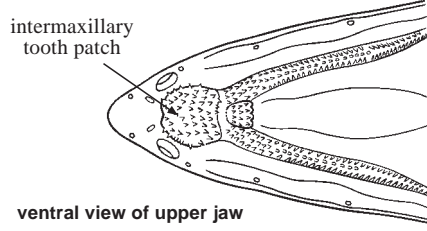


Fig. 24 *Rhynchoconger*

- 24a. Posterior nostril high on head, above anterior part of eye (Fig. 25) *Acromycter*
(genus not yet recorded from the area)
- 24b. Posterior nostril on side of head, below upper margin of eye → 26
- 25a. Mouth small, its angle does not reach anterior margin of eye; only 2 pores along upper lip between anterior nostril and angle of mouth (Fig. 26) *Promyllantor*
- 25b. Mouth larger, its angle reaching anterior margin of eye; 4 pores along upper lip between anterior nostril and angle of mouth → 26

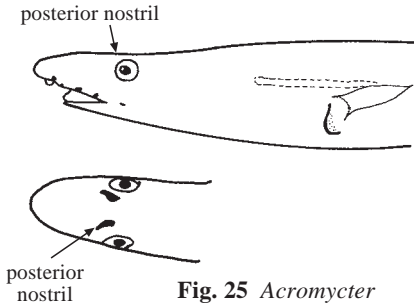


Fig. 25 *Acromycter*

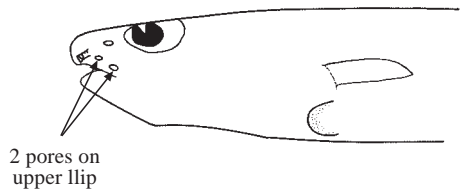


Fig. 26 *Promyllantor*

- 26a. Body of adults covered with minute, hair-like epidermal processes; southern hemisphere *Bassanago*
- 26b. Body of adults not covered with minute, hair-like epidermal processes; northern hemisphere *Japonoconger*
(both genera not yet recorded from the area)

List of species occurring in the area

Notes: 1) The Congridae is poorly known at the species level in the Indo-West Pacific, and the following list is provisional. 2) "*Rhynchoconger*" *brevirostris* Chen and Weng is a valid species but does not belong in *Rhynchoconger*; it is listed here under its original genus pending further study. *Macrocephenchelys soela* Castle, 1990 may be a synonym. 3) *Rhechias* is now considered a synonym of *Bathycongrus*.

Subfamily BATHYMYRINAE

- Ariosoma anagoides* (Bleeker, 1864)
- Ariosoma megalops* Fowler, 1938
- Ariosoma scheelei* (Strömman, 1896)
- Ariosoma* spp.
- Bathymyrus simus* Smith, 1965
- Bathymyrus smithi* Castle, 1968
- Chiloconger* sp.
- Parabathymyrus brachyrhynchus* (Fowler, 1934)
- Poecilconger fasciatus* Günther, 1872

Subfamily CONGRINAE

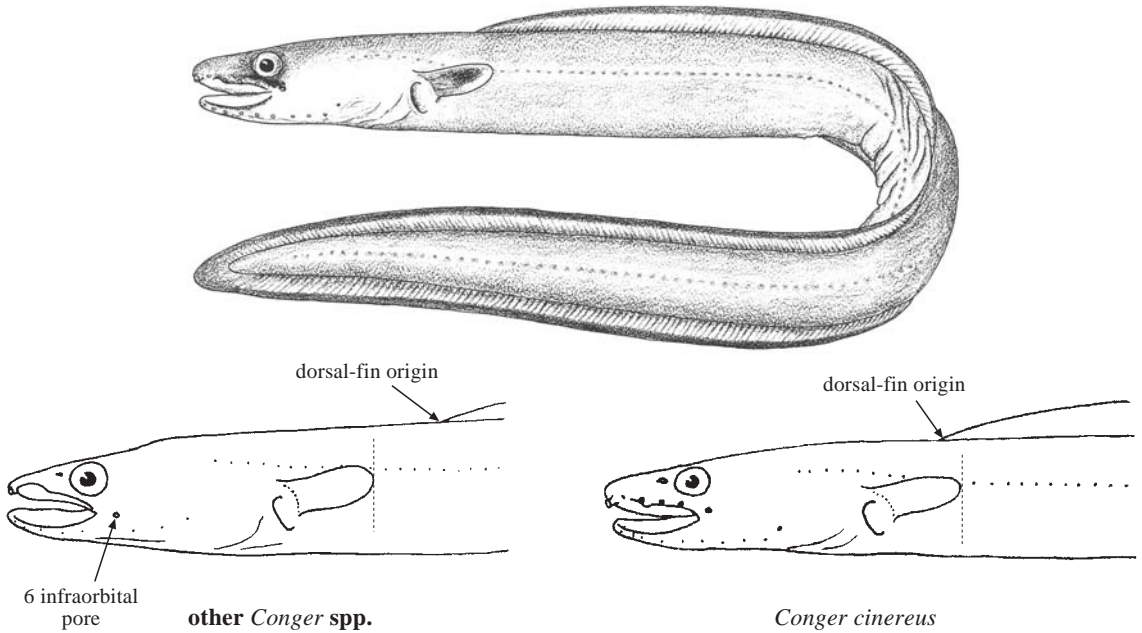
- Bathycongrus guttulatus* (Günther, 1887)
- Bathycongrus* spp.
- Bathyroconger parvibranchialis* (Fowler, 1934)
- Bathyroconger vicinus* (Vaillant, 1888)
- Blachea xenobranchialis* Karrer and Smith, 1980
- Conger cinereus* Rüppell, 1828
- ← *Conger macrocephalus* Kanazawa, 1958
- Conger philippinus* Kanazawa, 1958
- Conger* spp.?
- Congrhynchus talabonoides* Fowler, 1934
- Gavialiceps javanicus* Karmovskaya, 1993
- Gnathophis* spp.
- Lumiconger arafura* Castle and Paxton, 1984
- Macrocephenchelys brachialis* Fowler, 1934
- Promyllantor purpureus* Alcock, 1890
- "*Rhynchoconger*" *brevirostris* Chen and Weng, 1967
- Rhynchoconger ectenurus* (Jordan and Snyder, 1901)
- Uroconger lepturus* (Richardson, 1845)

Subfamily HETEROCONGRINAE

- Gorgasia barnesi* Robison and Lancraft, 1984
- Gorgasia maculata* Klausewitz and Eibl-Eibesfeldt, 1959
- Gorgasia neocepaea* Böhlke, 1951
- Gorgasia preclara* Böhlke and Randall, 1981
- Gorgasia* spp.
- Heteroconger chapmani* (Herre, 1923)
- Heteroconger cobra* Böhlke and Randall, 1981
- Heteroconger hassi* (Klausewitz and Eibl-Eibesfeldt, 1959)
- Heteroconger lentiginosus* Böhlke and Randall, 1981
- Heteroconger perissodon* Böhlke and Randall, 1981
- Heteroconger polyzona* Bleeker, 1868
- Heteroconger taylori* Castle and Randall, 1995
- Heteroconger* spp.

References

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- Castle, P.H.J. 1964. Congrid leptocephali in Australasian waters, with descriptions of *Conger wilsoni* (Bl. and Schn.) and *C. verreauxi* Kaup. *Zool. Pub. Victoria Univ. Wellington*, (37):45 p.
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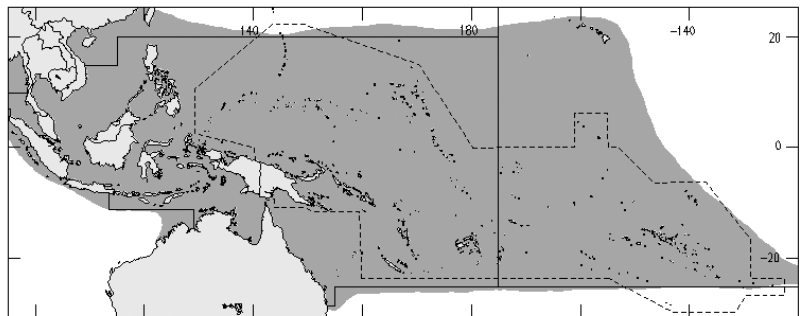
Conger cinereus* Rüppell, 1828*Frequent synonyms / misidentifications:** None / None.**FAO names:** En - Longfin conger; Fr - Congre oiro; Sp - Congrio de aleta larga.

Diagnostic characters: Head length contained 7 to 9 times in total length; **flanges on upper and lower lips well developed; 2 rows of teeth in jaws, those of outer row larger, closely set and compressed to form a cutting edge;** mouth reaching slightly beyond centre of eye; **sixth infraorbital pore located close behind and slightly above posterior angle of jaw. Dorsal fin begins over middle of appressed pectoral fins.** Lateral-line pores before anus 27 to 42, vertebrae 139 to 146. **Colour:** grey to brown, lighter ventrally, usually with broad, diffuse bars; dorsal and anal fins edged in black; a black spot on pectoral fins of adults; a diffuse black streak below eye.

Size: Maximum total length 80 cm, commonly to 50 cm.

Habitat, biology, and fisheries: This is probably the most commonly seen congrid eel in the Western Central Pacific. It occurs on coral reefs, often in very shallow water, where it feeds on small fishes and invertebrates. It is widely caught by various types of nets and trawls and by hook-and-line, although there is no special fishery for it; marketed fresh.

Distribution: Widely distributed throughout the entire Indo-West Pacific, from East Africa and the Red Sea to Easter Island. The Hawaiian population has been recognized as a separate subspecies, *Conger cinereus marginatus*. Further studies are needed to determine whether the species is homogeneous over the rest of its range.



Remarks: In all other species of *Conger*, the dorsal fin begins behind the tips of the appressed pectoral fins, and the sixth infraorbital pore is level with the angle of the mouth and distinctly behind it (see figures above).

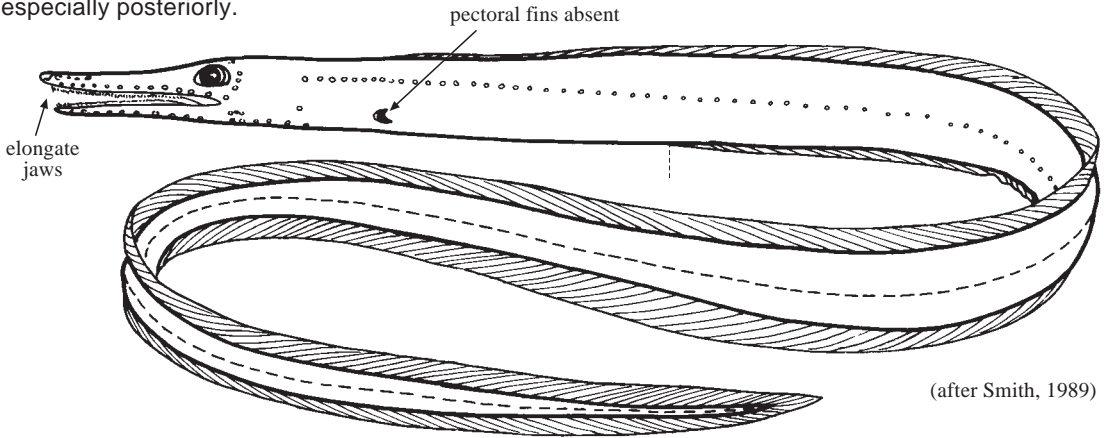
Other genera of Congridae are distinguished by characters given in the key.

NETTASTOMATIDAE

Duckbill eels

by D.G. Smith

Diagnostic characters: **Body elongate**, anus before midlength; **tail slender, attenuate**, often broken and regenerated. Head slender. Eye well developed. **Snout and jaws elongate, snout projects a variable distance beyond tip of lower jaw**. Mouth large, gape extends to about rear margin of eye; no fleshy flange on upper or lower lip; some teeth visible when mouth closed; tip of lower jaw fits into depression behind intermaxillary tooth patch. Teeth generally small, conical, multiserial on jaws and vomer, some vomerine teeth enlarged but no species in the area has large fangs. Anterior nostril tubular, near tip of snout; posterior nostril variable in position, either in front of eye, on lip, on top of head, or on top of body behind head. **Dorsal and anal fins present, confluent with caudal fin; dorsal fin begins over or slightly behind gill opening. Pectoral fins absent in all species occurring in the area.** Scales absent. Lateral line complete. **Colour:** brown, lighter ventrally, without markings; dorsal and anal fins often edged in black, especially posteriorly.

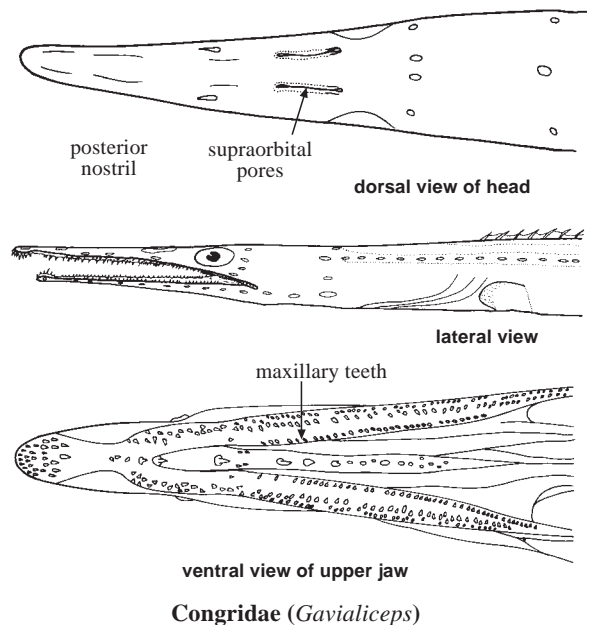


Habitat, biology, and fisheries: Nettastomatids are slender, elongate eels found in moderate to deep water. They live on or near the bottom. Five genera are present in the area. A sixth genus, *Hoplunnis* is restricted to the Atlantic and eastern Pacific.

Similar families occurring in the area

The elongate body and head and the absence of pectoral fins distinguish the Nettastomatidae from all but a few other eels.

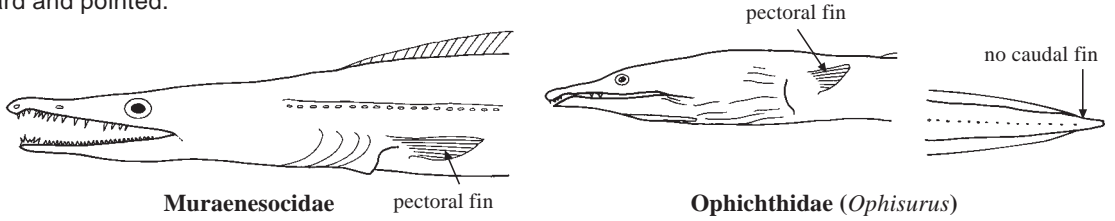
Congridae: *Gavialiceps*, a genus, currently placed in the Congridae, superficially looks very much like a nettastomatid but can be distinguished by 3 characters. The posterior nostril in *Gavialiceps* is located far forward on the snout, closer to the anterior nostril than to the eye; in nettastomatids, the posterior nostril is closer to the eye than to the anterior nostril. In *Gavialiceps*, the supraorbital pores are enlarged and slit-like; in nettastomatids, they are not. Finally, in *Gavialiceps* the inner row of teeth on the upper jaw is separated from the outer rows by a longitudinal toothless groove; in nettastomatids, there is no such separation.



Congridae (*Gavialiceps*)

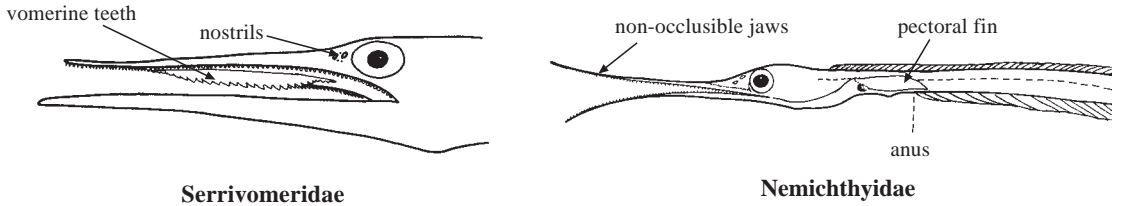
Muraenesocidae: muraenesocids, as the family is currently recognized, have elongate jaws with exposed teeth, but they have well-developed pectoral fins.

Ophichthidae: a few ophichthids, such as *Ophisurus*, have elongate snout and jaws. *Ophisurus*, however, has well-developed pectoral fins, and in most ophichthids the caudal fin is absent and the tip of the tail is hard and pointed.



Serrivomeridae: serrivomerids are midwater eels and have elongate, slender jaws. The lower jaw usually projects beyond the upper, and most species have enlarged, saw-like teeth on the vomer. In addition, the anterior and posterior nostrils are located close together, immediately in front of the eye. Serrivomerids have small pectoral fins, which are absent in the Indo-West Pacific nettastomatids.

Nemichthyidae: prolonged, non-occlusible jaws; pectoral fins present; anus located under or shortly behind pectoral fins.



Key to the genera of Nettastomatidae occurring in the area

- 1a. Posterior nostril located in front of eye, at mideye level (Fig. 1); teeth present on pterygoid (Fig. 2) *Saurenchelys*
- 1b. Posterior nostril located on lip, or on top of or behind head; no teeth on pterygoid → 2

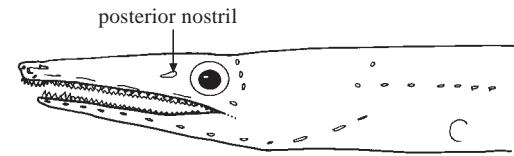


Fig. 1 *Saurenchelys*

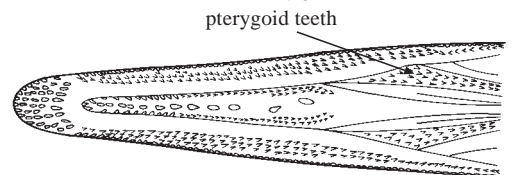


Fig. 2 ventral view of upper jaw (*Saurenchelys*)

- 2a. Posterior nostril opening into a slit in upper lip (Fig. 3) *Facciolella*
- 2b. Posterior nostril near level of top of eye, on or behind head → 3

- 3a. Tip of snout ending in a long, fleshy proboscis (Fig. 4) *Venefica*
- 3b. Tip of snout not ending in a long, fleshy proboscis → 4



Fig. 3 *Facciolella*

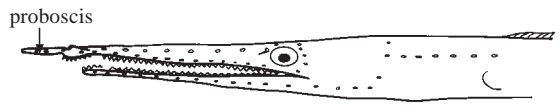


Fig. 4 *Venefica*

- 4a. Eight to 10 pores along upper jaw; posterior nostril on top of head behind rear margin of eye, or on back behind head (Fig. 5) *Nettenchelys*
- 4b. Eleven to 14 pores along upper jaw; posterior nostril on top of head, in front of rear margin of eye (Fig. 6) *Nettastoma*

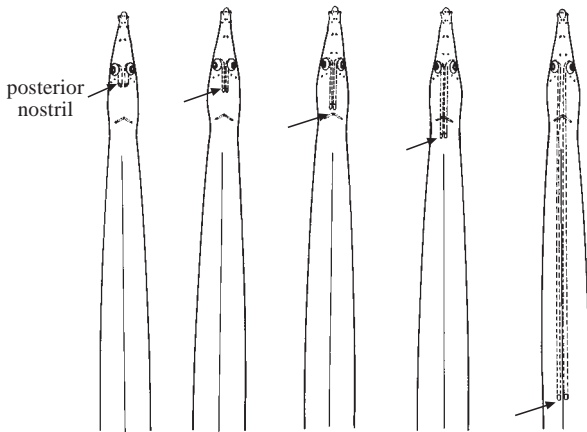


Fig. 6 anterior part of body (dorsal view)

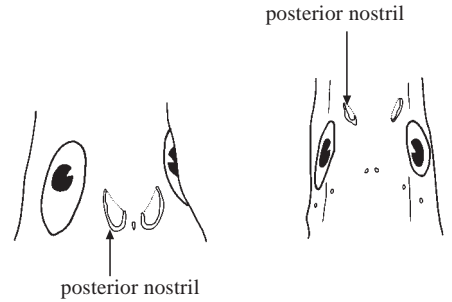


Fig. 5 region of nostrils and eyes (dorsal view)

List of species occurring in the area

Note: the species composition of *Facciolella* and *Saurenychelys* is uncertain. The variety of leptocephali indicates that each contains several species, but these have not been clearly distinguished as adults.

Facciolella spp.

Nettastoma parviceps Günther, 1877

Nettastoma solitarium Castle and Smith, 1981

Nettenchelys gephyra Castle and Smith, 1981

Saurenychelys spp.

Venefica multiporosa Karrer, 1982

References

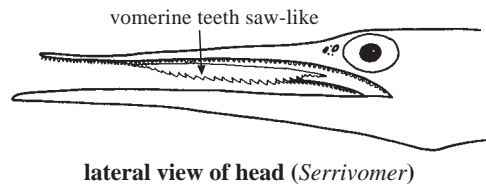
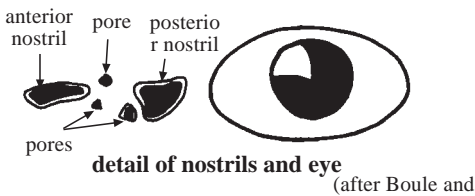
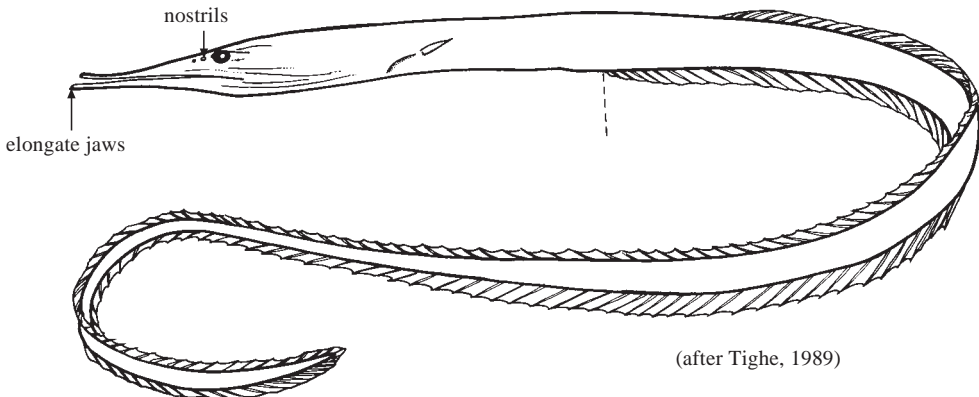
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- Smith, D.G. and P.H.J. Castle. 1982. Larvae of the nettastomatid eels: systematics and distribution. *Dana Rept.*, (90):29 p.
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SERRIVOMERIDAE

Sawtooth eels

by D.G. Smith

Diagnostic characters: Body moderate to elongate, anus before midbody, at about first quarter to third of total length; tail slender but not greatly attenuated. Head slender. Eye fairly well developed. **Snout and jaws elongate and pointed.** Mouth large, gape ending approximately under posterior margin of eye; upper and lower jaws approximately equal length or lower slightly longer; no fleshy flange on upper or lower lip. Maxillary and mandibular teeth relatively small, conical, in 2 to several rows; **vomerine teeth either small and granular, or large and saw-like and arranged in 2 closely-set rows.** **Anterior and posterior nostrils close together, immediately in front of eye.** Dorsal and anal fins present, confluent with caudal fin, anal fin somewhat higher than dorsal fin; **dorsal fin begins over or slightly behind anus.** Pectoral fins present though small. Scales absent. **Lateral line reduced, pores absent on body and on head, limited to 3 small pores between anterior and posterior nostrils.** **Colour:** dark brown or black, with an iridescent silvery or bronze epidermal layer, the latter often lost during net capture; no markings.



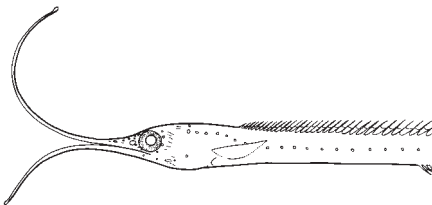
Habitat, biology, and fisheries: Serrivomerids are midwater eels, found mainly at depths of 500 to 1 000 m. At maturity, serrivomerids exhibit some sexual dimorphism; in males the upper jaw shortens, the dentition is modified or reduced, and the anterior nostril becomes tubular. Two genera are recognized, *Serrivomer* and *Stemonidium*, differing mainly in the form of the dentition. They are of no importance to fisheries.

Similar families occurring in the area

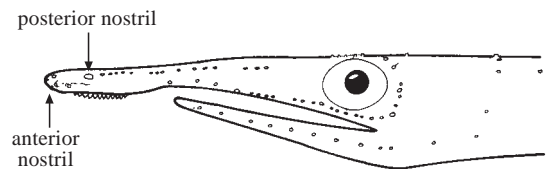
Serrivomerids are distinctive eels and unlikely to be confused with members of other families.

Nemichthyidae: except for sexually mature males, nemichthyids have greatly elongated, non-occlusible jaws. They also have a complete lateral line with well-developed pores.

Derichthyidae: *Nessorhamphus* has elongated jaws, but the snout is somewhat depressed and spatulate, and the nostrils are near the tip of the snout. The lateral line is complete.



Nemichthyidae



Nessorhamphus (**Derichthyidae**)

Key to the genera of Serrivomeridae occurring in the area

- 1a. Dorsal fin begins behind anus (Fig. 1a); vomerine teeth enlarged and forming a saw-toothed row (Fig. 2a). *Serrivomer*
- 1b. Dorsal fin begins over or slightly ahead of anus (Fig. 1b); vomerine teeth small and granular and in several rows (Fig. 2b) *Stemonidium*

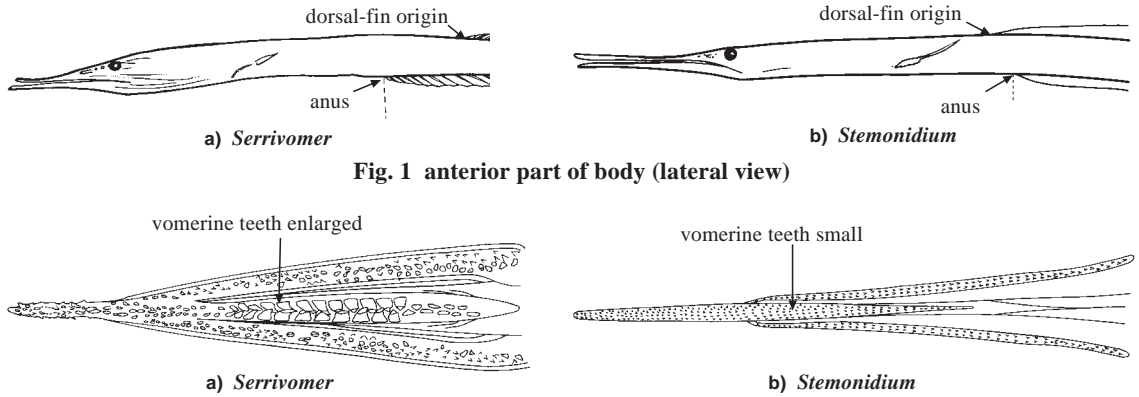


Fig. 1 anterior part of body (lateral view)

Fig. 2 ventral view of upper jaw

List of species occurring in the area

Note: the following list is provisional, pending a critical re-evaluation of the nominal species. The species listed here are those given by Bauchot, 1959.

- Serrivomer bertini* Bauchot, 1959
Serrivomer jespersenii Bauchot-Boutin, 1954
Serrivomer neocaledoniensis Bauchot, 1959
Serrivomer samoensis Bauchot, 1959
Serrivomer sector Garman, 1899
Stemonidium hypomelas Gilbert, 1905

References

- Bauchot, M.-L. 1959. Etude des larve leptocephales du groupe *Leptocephalus lanceolatus* Strömman et identification à la famille des Serrivomeridae. *Dana Rept.*, (48):148 p.
- Tighe, K.A. 1989. Family Serrivomeridae. In *Fishes of the Western North Atlantic, Part 9*, edited by E.B. Böhlke. *Mem. Sears Found. Mar. Res.*, 1(9):613-627.