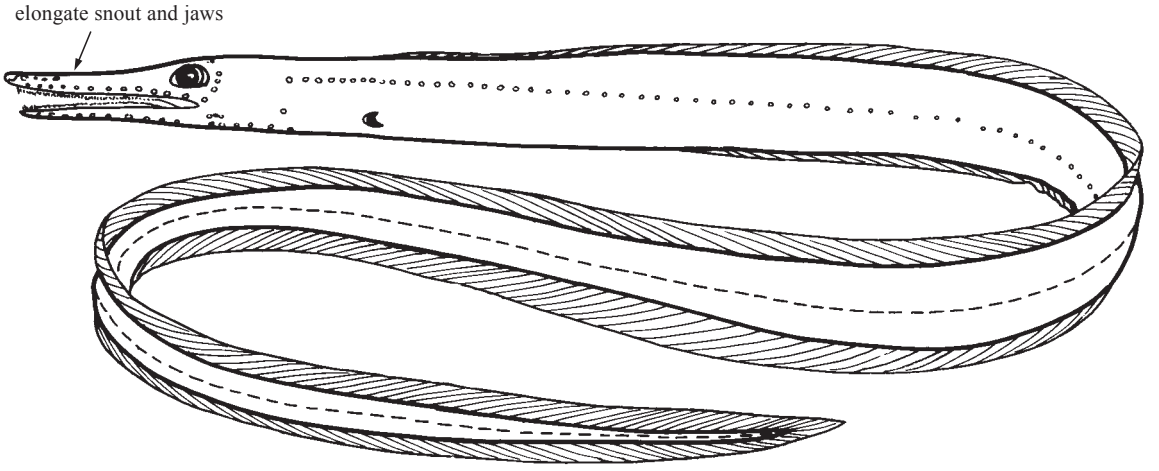
NETTASTOMATIDAE

Duckbill eels

by D.G. Smith, National Museum of Natural History, Washington, D.C., USA

Diagnostic characters: Maximum size approximately 1 m, usually smaller. **Body elongate**, anus before midlength; **tail slender, attenuate**, often broken and regenerated. **Head slender, snout and jaws elongate, snout projecting a variable distance beyond tip of lower jaw**. Eye well developed. **Mouth large, gape extending to about rear margin of eye; no fleshy flange on upper or lower lip; some teeth exposed when mouth closed**; tip of lower jaw fits into depression behind intermaxillary tooth patch. Teeth on jaws and vomer generally small, conical, multiserial, except in *Hoplunnis*, which has enlarged vomerine fangs. Dorsal and anal fins present, confluent with caudal fin; dorsal fin begins over or slightly behind gill opening. Pectoral fin present or absent. 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 live on or near the bottom in moderate to deep water. Although they are occasionally taken in trawls, they have no commercial value.

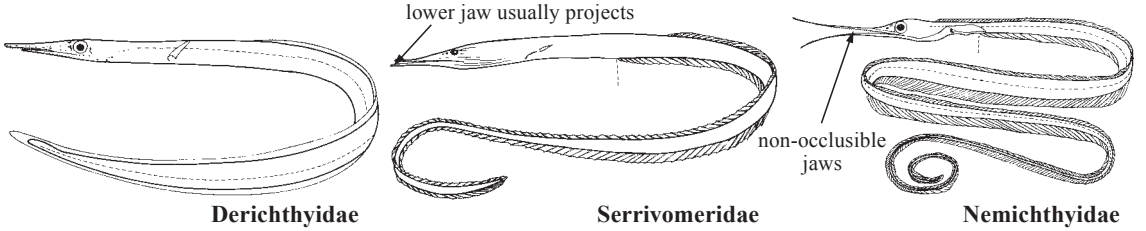
Similar families occurring in the area

The elongate body and head and the attenuate tail distinguish the Nettastomatidae from all but a few other eels.

Derichthyidae (*Nessorhamphus*): the jaws are elongate, but the snout is depressed and spatulate, and the posterior nostril is near the tip of the snout.

Serrivomeridae: have elongate, slender jaws, but the lower jaw usually projects beyond the upper. Most species have enlarged teeth on the vomer, but these are arranged alternately in a double row, resulting in a saw-like appearance, quite different from the separated fangs present on some nettastomatids (*Hoplunnis*). In serrivomerids, the anterior and posterior nostrils are located close together, immediately in front of the eye. Serrivomerids are pelagic in habit, unlike the benthic nettastomatids.

Nemichthyidae: have an elongate snout, but the upper and lower jaws diverge and are non-occlusible.



Key to the species of Nettastomatidae occurring in the area

1a. Pectoral fin present . . . . . → *2*

1b. Pectoral fin absent . . . . . → *6*

2a. Lateral-line pores before anus more than 50; total length often greater than 600 mm . . . . . ***Hoplunnis megista***

2b. Lateral-line pores before anus fewer than 50; total length less than 600 mm . . . . . → *3*

3a. Pterygoid teeth present except in very young individuals; lateral vomerine teeth close-set and numerous (Fig. 1) . . . . . ***Hoplunnis tenuis***

3b. Pterygoid teeth absent; lateral vomerine teeth few and widely spaced or absent . . . . . → *4*

4a. Lateral vomerine teeth absent except in very young individuals; stomach pale . . . . . ***Hoplunnis macrura***

4b. Lateral vomerine teeth present at all stages (Fig. 2); stomach black . . . . . → *5*

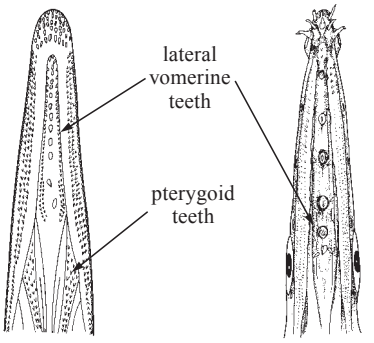


Fig. 1 teeth on roof of mouth

Fig. 2 teeth on roof of mouth

5a. Colour pale with scattered small, dark spots (Fig. 3); intestine pale; vertebrae in intact specimens 222 to 231 . . . . . ***Hoplunnis diomediana***

5b. Colour darkly mottled with brown spots (Fig. 4); intestine black; vertebrae in intact specimens 254 to 260 . . . . . ***Hoplunnis similis***

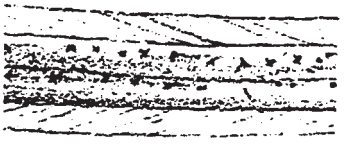


Fig. 3 colour pattern on side of body

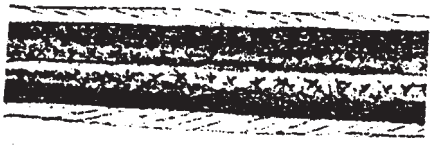


Fig. 4 colour pattern on side of body

6a. Posterior nostril at mid-eye level (Fig. 5); pterygoid teeth present (Fig. 1) . . . . . ***Saurenchelys***

6b. Posterior nostril distinctly above or below mideye level; pterygoid teeth absent . . . . . → *7*

7a. Posterior nostril a slit in upper lip (Fig. 6) . . . . . ***Facciolella***

7b. Posterior nostril above mideye level, located variably from a point in front of anterior margin of eye to dorsal surface of body behind occiput . . . . . → *8*

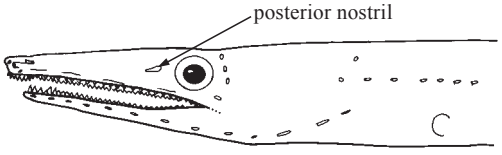


Fig. 5 lateral view of head (*Saurenchelys*)

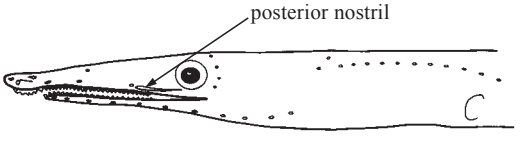


Fig. 6 lateral view of head (*Facciolella*)

8a. Posterior nostril behind posterior margin of eye, on head or dorsal surface of body (Fig. 7); 8 to 10 pores along upper jaw; snout 2.7 to 3.1 in head . . . . . → ***9***

8b. Posterior nostril on head above anterior margin of eye (Fig. 8); 11 to 16 pores along upper jaw; snout 1.8 to 2.8 in head . . . . . → ***11***

9a. Anterior vomerine teeth forming an enlarged median series (Fig. 9); posterior nostril on top of head slightly behind posterior margin of eye (Fig. 7a); small, about 200 mm or less . . . . . ***Nettenchelys pygmaea***

9b. Anterior vomerine teeth not forming an enlarged median series (Fig. 10); posterior nostril at or behind occiput; larger than 200 mm . . . . . → ***10***

10a. Posterior nostril on occiput just before supratemporal canal; median supratemporal pore present (Fig. 7b) . . . . . ***Nettenchelys inion***

10b. Posterior nostril behind supratemporal canal; median supratemporal pore absent (Fig. 7c) . . . . . ***Nettenchelys exoria***

11a. A fleshy proboscis at snout tip (Fig. 11); 8 to 13 pores in supraorbital canal . . . . . ***Venefica procera***

11b. No fleshy proboscis at tip of snout; 4 to 6 pores in supraorbital canal . . . . . → ***12***

12a. Two pores in supraorbital canal between anterior nostril and eye (Fig. 12); lateral-line pores before anus 44 to 49 . . . . . ***Nettastoma melanura***

12b. Three pores in supraorbital canal between anterior nostril and eye (Fig. 13); lateral-line pores before anus 38 to 41 . . . . . ***Nettastoma syntresis***

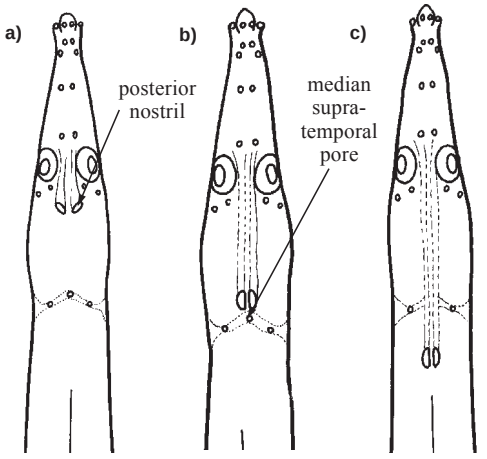


Fig. 7 dorsal view of head and nostrils

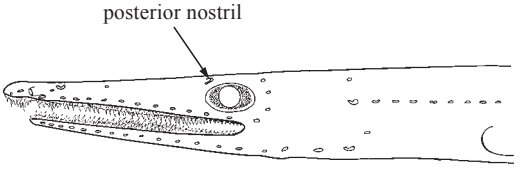


Fig. 8 lateral view of head

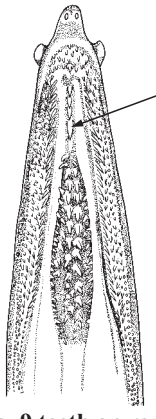


Fig. 9 teeth on roof of mouth

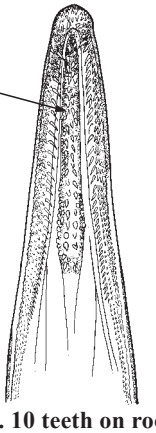


Fig. 10 teeth on roof of mouth

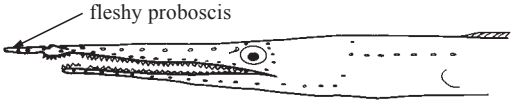


Fig. 11 lateral view of snout (*V. procera*)

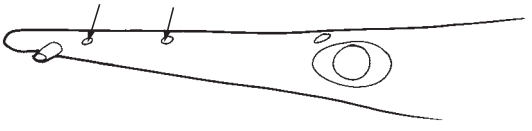


Fig. 12 lateral view of snout (*N. melanura*)

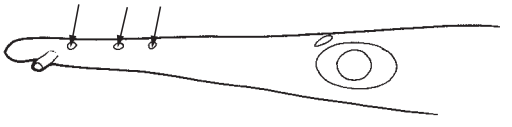


Fig. 13 lateral view of snout (*N. syntresis*)

List of species occurring in the area

Note: The species composition of *Facciolella* and *Saurenchelys* has not been satisfactorily established. Species of these 2 genera are largely indistinguishable as adults, except for vertebral counts, which are of limited use due to the frequent occurrence of broken tails. Leptocephali are easier to distinguish, but most have not yet been linked to an adult. One species of *Saurenchelys* has been described from the area, but others probably exist. At least 2 species of *Facciolella* inhabit the area, based on leptocephali, but they have not yet been diagnosed as adults, and names are not available for them.

Facciolella spp. To approximately 70 cm. Throughout the area.

Hoplunnis diomediana Goode & Bean, 1896. To 55 cm. E Gulf of Mexico and Atlantic coast of US.
Hoplunnis macrura Ginsburg, 1951. To 55 cm. W and S Gulf of Mexico and coast of South America.
Hoplunnis megista Smith & Kanazawa, 1989. To 111 cm. Known from the S Caribbean.
Hoplunnis similis Smith, 1989. To 50 cm. Bahamas and Caribbean.
Hoplunnis tenuis Ginsburg, 1951. To 58 cm. Throughout the area.

Nettastoma melanura Rafinesque, 1810. To 78 cm. Throughout the area except for a restricted region around the Bahamas; also E Atlantic and Mediterranean.
Nettastoma syntresis Smith & Böhlke, 1981. To 55 cm. Found only off the W edge of the Bahamas including: Santaren Channel, E Nicholas Channel, NW Old Bahama Channel, NW Providence Channel; it replaces *Nettastoma melanura* in these places.

Nettenchelys exoria Böhlke & Smith, 1981. To 47 cm. Known from the E coast of Florida.
Nettenchelys inion Smith & Böhlke, 1981. To at least 43 cm. Known from 1 specimen, collected in the Straits of Florida.

Saurenchelys cognita Smith, 1989. To 52 cm. Gulf of Mexico and Atlantic coast of US.
Saurenchelys sp. To 52 cm. Caribbean and S America.

Venefica procera (Goode & Bean, 1883). To 111 cm. Throughout the area.

Reference

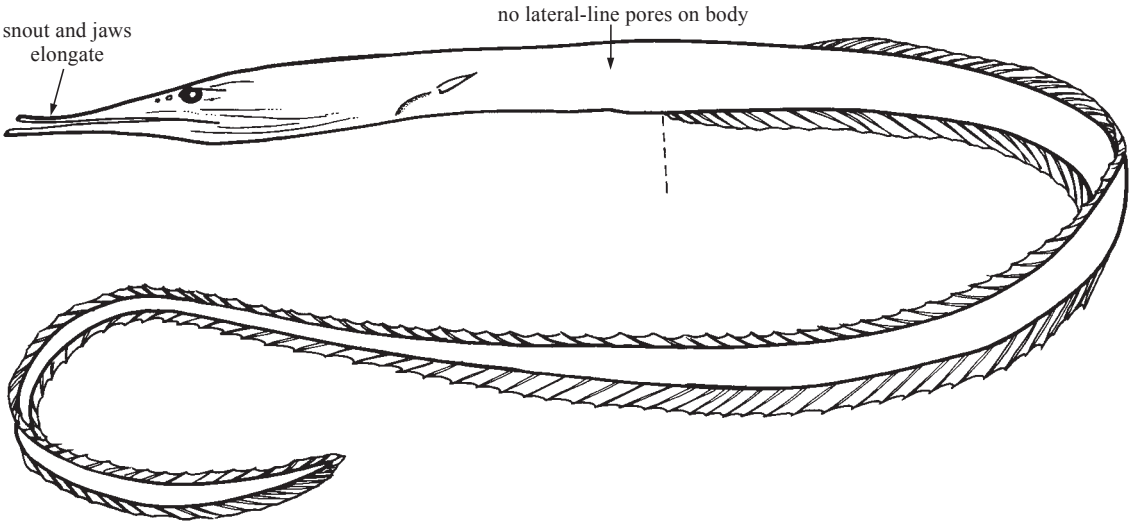
Smith, D.G. 1989. Family Nettastomatidae. In Fishes of the Western North Atlantic, edited by E. B. Böhlke. *Mem. Sears Found. Mar. Res.,* 1(9):568-612.

SERRIVOMERIDAE

Sawtooth eels

by D.G. Smith, National Museum of Natural History, Washington, D.C., USA

Diagnostic characters: Body moderate to elongate, anus before midbody, at about first 1/4 to 1/3 of total length; tail slender but not greatly attenuated. Head slender. Eye fairly well developed. **Snout and jaws elongate and pointed;anterior and posterior nostrils close together, immediately in front of eye**. Mouth large, gape ending approximately under posterior margin of eye; upper and lower jaws approximately equal in 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**. Dorsal and anal fins present, confluent with caudal fin, anal fin somewhat higher than dorsal; **dorsal fin begins over or slightly behind anus**. Pectoral fin present though small. Scales absent. **Lateral line reduced, pores on body absent and on head limited to 3 small pores between anterior and posterior nostrils. Colour:** dark brown or black, with an irridescent silvery or bronze epidermal layer, the latter often lost during net capture. No markings.

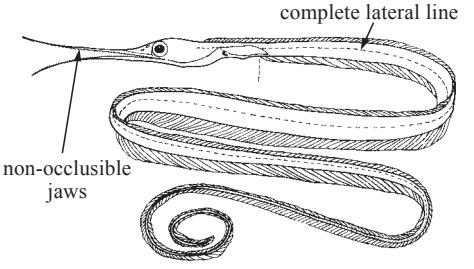


Habitat, biology, and fisheries: Serrivomerids are midwater eels, found mainly at depths of 500 to 1 000 m. At maturity, serrivomerids exhibit some sexual dimorphism; in males the upper jaw shortens, the dentition is modified or reduced, and the anterior nostril becomes tubular. They are of no importance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

Similar families occurring in the area

Serrivomerids are distinctive eels and unlikely to be confused with anything else.

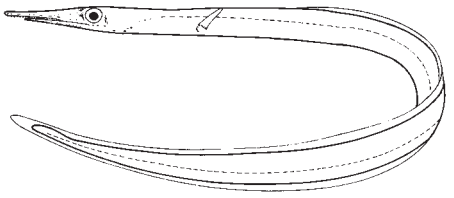
Nemichthyidae: except for sexually mature males, nemichthyids have greatly elongated, non-occlusible jaws. They also have a complete lateral line with well-developed pores.



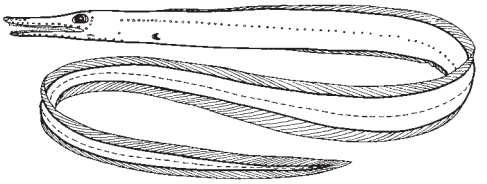
Nemichthyidae

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.

Nettastomatidae: have elongated jaws, but the anterior nostril is near the tip of the snout, far from the posterior nostril. The lateral line is complete.



Derichthyidae



Nettastomatidae

Key to the species of Serrivomeridae occurring in the area

1a. Dorsal fin begins over or slightly ahead of anus (Fig.1); vomerine teeth small and granular and in several rows (Fig. 2) . . . . . ***Stemonidium hypomelas***

1b. Dorsal fin begins behind anus (Fig. 3); vomerine teeth enlarged and forming a saw-toothed row (Fig. 4) . . . . . → *2*

Fig. 1 lateral view

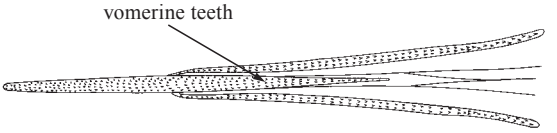


Fig. 2 tooth patches on roof of mouth

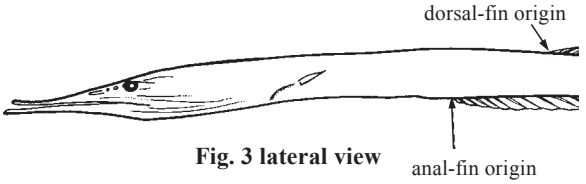


Fig. 3 lateral view

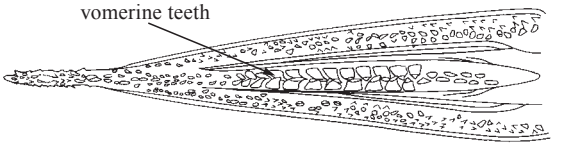


Fig. 4 tooth patches on roof of mouth

2a. Body with a silvery epidermal layer; each vomerine tooth about 3 or 4 times as long as wide; dorsal-fin rays 142 to 173; anal-fin rays 122 to 156; anterior tips of first 4 or 5 branchiostegal rays extend beyond their articulation with hyoid arch (Fig.5) . . . . . ***Serrivomer beanii***

2b. Body with a bronze epidermal layer; each vomerine tooth about twice as long as wide; dorsal-fin rays 175 to 200; anal-fin rays 165 to 192; anterior tips of first 4 or 5 branchiostegal rays not extending beyond their articulation with hyoid arch . . . . . ***Serrivomer lanceolatoides***

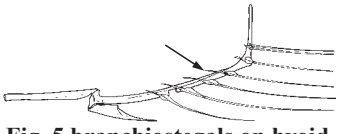


Fig. 5 branchiostegals on hyoid arch

List of species occurring in the area

Note: The nominal species *Platuronides danae, P. ophiocephalus, P. acutus*, and *Serrivomer brevidentatus* are synonyms of *Serrivomer lanceolatoides*.

Serrivomer beanii Gill and Ryder, 1883. To 75 cm. Widely distributed in the N Atlantic, but rare or absent in Caribbean and Gulf of Mexico.

Serrivomer lanceolatoides (Schmidt, 1916). To 64 cm. Throughout the area and E Atlantic.

Stemonidium hypomelas Gilbert, 1905. To 38 cm. Equatorial Atlantic, S of about 15°N; absent from Caribbean and equatorial Indo-Pacific.

Reference

Tighe, K.A. 1989. Family Serrivomeridae. In Fishes of the Western North Atlantic, edited by E.B. Böhlke. *Mem. Sears Found. Mar. Res.*, 1(9):613-627.