

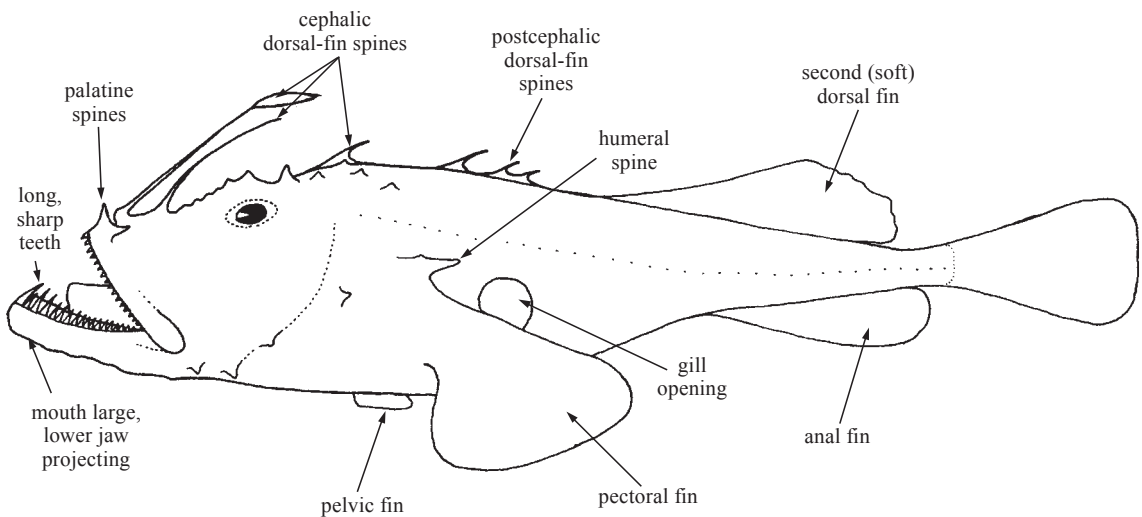
Order LOPHIIFORMES

LOPHIIDAE

Anglerfishes (goosefishes, monkfishes)

by J.H. Caruso, University of New Orleans, Louisiana, USA

Diagnostic characters: Head and anterior part of body much depressed and very broad, posterior portion of body tapering; maximum size to about 200 cm, about 120 cm in the area, commonly 25 to 45 cm. Head rounded, bearing numerous sharp spines and ridges on dorsal and lateral surfaces, the most conspicuous of which are the following: 1 very large prominent spine or group of spines immediately anterior to each pectoral-fin base (humeral spines); 1 pair of sharp prominent spines on either side of snout, immediately behind mouth (palatine spines); a bony ridge above eyes with 2 or 3 short spines (frontal spines); and 2 bony ridges on snout running forward from eyes (frontal ridges); interorbital space slightly concave. Mouth very large and wide, upper jaw protractile and the lower projecting, both bearing numerous long, sharp, depressible teeth; gill openings fairly large, low in pectoral-fin axil, sometimes extending forward in front of pectoral-fin base. Two separate dorsal fins, the first composed of 2 or 3 isolated slender spines on head (cephalic spines) and of 1 to 3 spines (often connected by a membrane, at least in juveniles), at the level of pectoral fins (postcephalic spines); first 2 cephalic spines located at anterior end of snout, the foremost modified into an angling apparatus, usually bearing a fleshy appendage (esca) at tip; the third cephalic spine, when present, is located at level of humeral spines; anal fin with 6 to 11 soft rays, below second dorsal fin; caudal fin with 8 rays, the 2 outer rays unbranched; pectoral-fin rays unbranched, terminating in small fleshy filaments; pelvic fins on ventral surface of head, anterior to pectoral fins. Lateral line present, but usually indistinct. Skin smooth, naked, often with fleshy flaps on head and/or body (well visible only when fish is immersed in liquid). Colour: dorsal surface usually uniform light to dark brown or grey (changing with substrate), lighter on ventral surface; distinctive markings present in some species.



Habitat, biology, and fisheries: Most monkfishes inhabit soft bottoms of the continental slope, usually at depths beyond 200 m, with some species inhabiting depths in excess of 1 000 m. North of Area 31, *Lophius americanus* also inhabits very shallow depths, occasionally entering high-salinity bays and estuaries during the winter months. Two species, *Lophius americanus* and *Lophius gastrophysus*, are at present exploited off the Atlantic coast of the USA, although the largest part of the catch is taken to the north of Area 31. They are highly esteemed as food fishes.

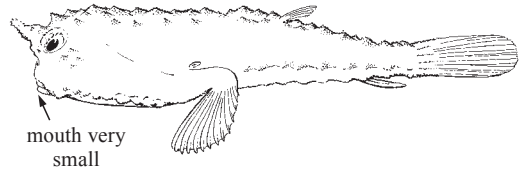
Similar families occurring in the area

Ogcocephalidae: fishing lure small, placed in a depression between snout tip and mouth; head broader and more strongly depressed, devoid of long, slender dorsal-fin spines; mouth very small, without long sharp teeth.

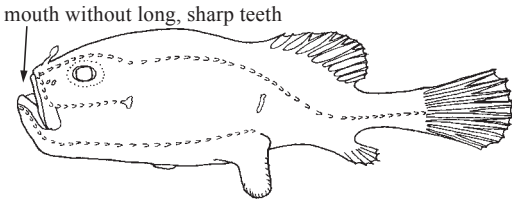
Chaunacidae: body rounded, not flattened; head cuboid, devoid of long, slender dorsal-fin spines; mouth large, but without long, sharp teeth; skin very loose and flaccid, bearing small spiny scales; lateral-line canals conspicuous, especially on head; colour deep pink or reddish.

Antennariidae: body short, globose, slightly compressed; teeth small, villiform.

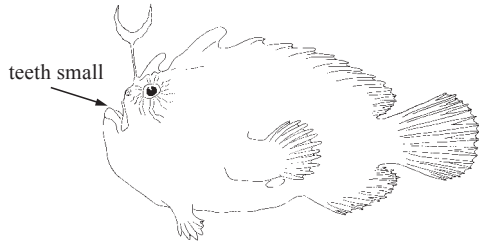
Bathypelagic anglerfish families: no pelvic fins; second and third dorsal-fin spines greatly reduced or absent; also, body shape different.



Ogcocephalidae



Chaunacidae



Antennariidae

Key to the species of Lophiidae occurring in the area

- 1a. Third (cephalic) dorsal-fin spine present → 2
- 1b. Third (cephalic) dorsal-fin spine absent *Sladenia shaefersi*
- 2a. Gill opening not extending in front of pectoral fin; bony ridge on snout rugose; soft dorsal-fin rays 9 to 12; anal-fin rays 8 to 11; pectoral-fin rays 22 to 28; vertebrae 27 (Fig. 1) (*Lophius*) → 3
- 2b. Gill opening extending in front of pectoral fin; bony ridge on snout smooth; soft dorsal-fin rays 8; anal-fin rays 6; pectoral-fin rays 14 to 21; vertebrae 19 (Fig. 2) (*Lophiodes*) → 4

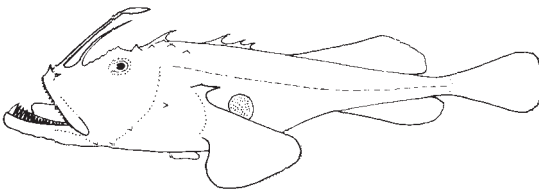


Fig. 1 *Lophius*

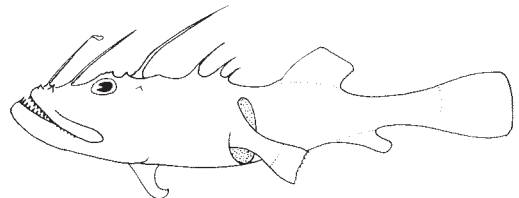








Fig. 2 *Lophiodes*

- 3a. Underturned posterior margin of pectoral fin black, distal portion of ventral surface of pectoral fin turning gradually darker; 9 or 10 dorsal-fin rays; 22 to 26 pectoral-fin rays *Lophius gastrophysus*
- 3b. Underturned posterior margin of pectoral fin not black, distal portion of ventral surface of pectoral fin changing abruptly from pale colour to dark brown or grey; 11 or 12 dorsal-fin rays; 25 to 28 pectoral-fin rays *Lophius americanus*

- 4a. Spinous portion of dorsal fin with 6 spines, 3 cephalic, 3 post-cephalic (last postcephalic spine may be very small and very close to previous spine); dorsal surface of head, body, and pectoral fins covered with fine mesh- or chain-like pattern *Lophiodes reticulatus*
- 4b. Spinous portion of dorsal fin with 5 spines, 3 cephalic, 2 postcephalic; chain-like colour pattern absent. → 5
- 5a. First dorsal-fin spine (illicium) darker than surrounding skin on head; bait (esca) a pale, unpigmented bulb *Lophiodes beroe*
- 5b. First dorsal-fin spine (illicium) pale, not darker than surrounding skin on head; bait (esca) with pigment becoming progressively darker toward tip *Lophiodes monodi*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Lophiodes beroe* Caruso, 1981.
-  *Lophiodes monodi* Le Danois, 1971.
-  *Lophiodes reticulatus* Caruso and Suttkus, 1979.
-  *Lophius americanus* Valenciennes in Cuvier and Valenciennes, 1837.
-  *Lophius gastrophysus* Miranda-Ribeiro, 1915.
-  *Sladenia shaefersi* Caruso and Bullis, 1976.

References

Caruso, J.H. 1981. The systematics and distribution of the lophiid anglerfishes. I: A revision of the genus *Lophiodes* with the description of two new species. *Copeia*, 1981(3):522-549.

Caruso, J.H. 1983. The systematics and distribution of the lophiid anglerfishes. II: Revisions of the genera *Lophiomus* and *Lophius*. *Copeia*, 1983(1):11-30.

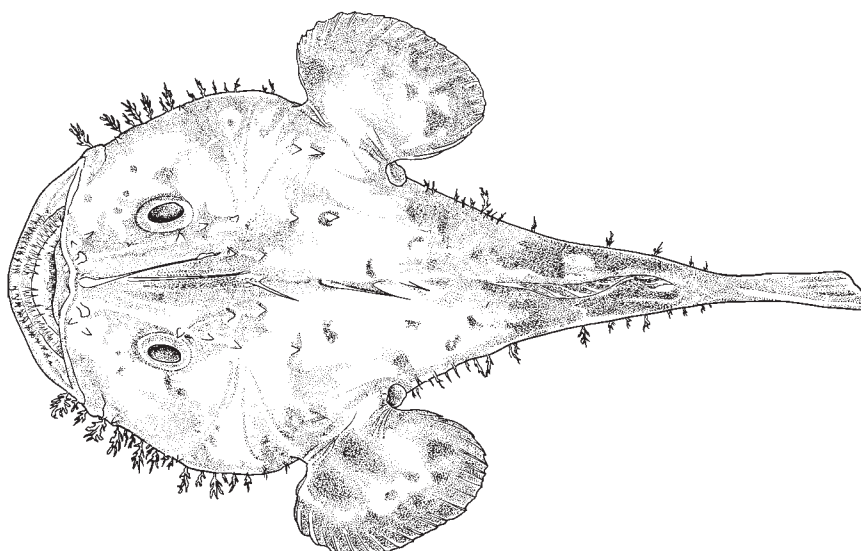
Caruso, J.H. 1985. The systematics and distribution of the lophiid anglerfishes. III: Intergeneric relationships. *Copeia*, 1985(4):870-875.

Lophius americanus Valenciennes, 1837

ANG

Frequent synonym / misidentifications: None / None.

FAO Names: **En** - American angler (AFS: Goosefish); **Fr** - Baudroie d'Amérique; **Sp** - Rape americano.

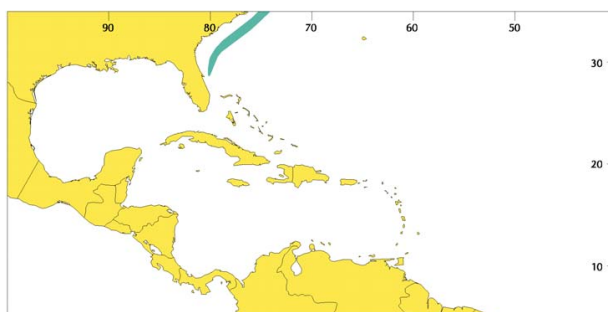


Diagnostic characters: Head and anterior part of body much depressed and very broad, posterior portion of body tapering. Head appearing rounded from above, bearing numerous sharp spines on dorsal and lateral surfaces; humeral spines (in front of pectoral-fin bases) long, straight, well developed, with 2 smaller spines arising from sides; inner and outer sphenotic spines (behind eyes) well developed; **frontal ridges (running forward from eyes) rough; gill openings below and behind pectoral-fin bases.** First dorsal fin consisting of 3 isolated spines on head (cephalic spines), the foremost modified into an angling apparatus, and a group of short, slender spines behind head (**postcephalic spines**) **connected by a black membrane; length of last (third) cephalic spine and of first (anteriormost) post-cephalic spine less than least distance between frontal ridges; second (soft) dorsal fin with 11 or 12 rays; pectoral fins with 25 to 28 rays; anal fin with 9 or 10 rays.** **Colour:** dorsal surface uniform dark brown, ventral surface light tan; ventral surface of pectoral fins becoming abruptly darker distally.

Size: Maximum to 120 cm, commonly to 90 cm.

Habitat, biology, and fisheries: Bottom-dwelling on both hard and soft substrates (hard sand, gravel, pebble, or shell bottoms to soft mud) from inshore waters (including high-salinity bays and estuaries when temperature is suitable) to continental slope at depths to at least 840 m; temperature range 0 to 24 C (in Area 31, greatest winter concentrations at depths of 180 to 225 m (3 to 6 C), greatest summer concentrations at 25 to 220 m, with the greatest abundance at 25 to 92 m (5 to 9 C)). Feeds mainly upon fishes, but known to take a variety of marine birds; attracts fishes by rapidly moving angling apparatus (illicium and esca); capable of swallowing very large prey; spawning from spring to early autumn; eggs contained within long (up to 12 m long by 1.5 m wide), ribbon-like, gelatinous mass called egg veil; a single female may produce over 1.3 million eggs. A good food fish, marketed fresh or frozen; present fishing grounds along the Atlantic coast of the USA, with main fishing grounds to the north of Area 31; caught mainly with trawls; separate statistics are not reported for this species from Area 31.

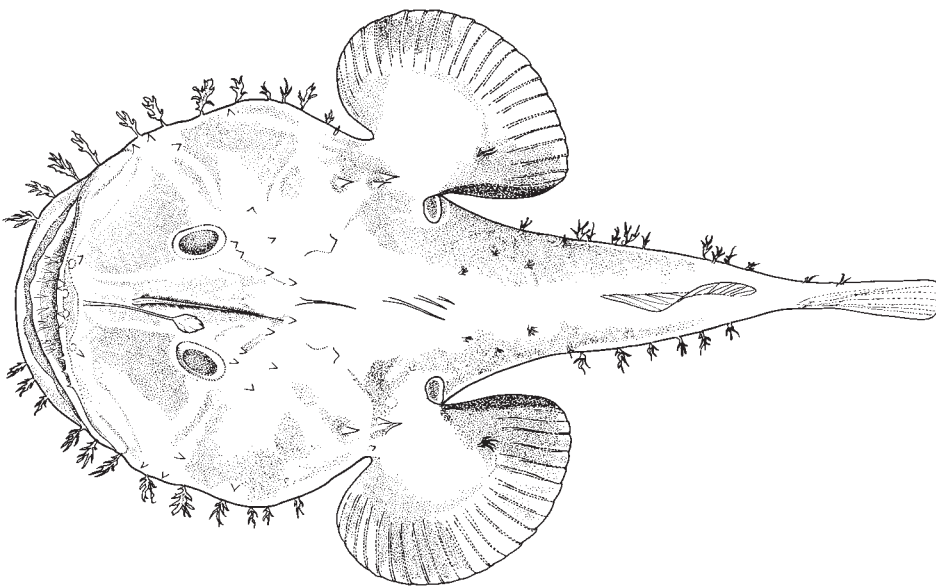
Distribution: Coast of eastern North America from the southern and eastern parts of the Grand Banks off Newfoundland, and the northern side of the Gulf of St. Lawrence southward to the coast of Florida (approximately 29 N).



***Lophius gastrophysus* Miranda-Ribeiro, 1915**

Frequent synonyms / misidentifications: None / None.

FAO Names: **En** - Blackfin goosefish; **Fr** - Baudroie pêcheuse; **Sp** - Rape pescador.

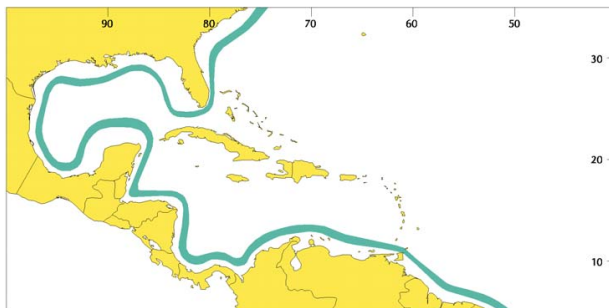


Diagnostic characters: Head and anterior part of body much depressed and very broad, posterior portion of body tapering. Head appearing rounded from above, bearing numerous sharp spines on dorsal and lateral surfaces; humeral spines (in front of pectoral-fin bases) long, straight, well developed, with 2 smaller spines arising from sides; inner and outer sphenotic spines (behind eyes) well developed; frontal ridges (running forward from eyes) rough; gill openings below and behind pectoral-fin bases. First dorsal fin consisting of 3 isolated spines on head (cephalic spines), the foremost modified into an angling apparatus, and a group of short, slender spines behind head (**postcephalic spines**) with **dark brown or black bases but lacking connecting membranes**; **length of last (third) cephalic spine greater than least distance between frontal ridges, approximately equal to distance between frontal spines**; **length of first (anteriormost) postcephalic spine approximately equal to or greater than least distance between frontal ridges**; **second (soft) dorsal fin with 9 or 10 rays**; **anal fin with 8 or 9 rays**; **pectoral fins with 22 to 26 rays**. **Colour:** dorsal surface uniform dark brown or grey, with occasional pattern of fine reticulations; ventral surface dusky, slightly lighter than dorsal surface and without reticulations; **pectoral fins with ventral surface becoming gradually darker distally, and underturned posterior margin with a distinct black band** (which may be difficult to distinguish on darker specimens).

Size: Maximum: 60 cm; commonly to 45 cm.

Habitat, biology, and fisheries: Bottom-dwelling at depths between 200 and 700 m. Feeds mainly on fishes. A good foodfish, marketed fresh or frozen, but the fishery potential of this species is not yet known; present fishing grounds along the Atlantic coast of the USA; caught with bottom trawls; separate statistics are not reported for this species from Area 31.

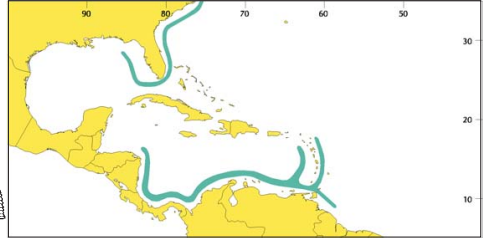
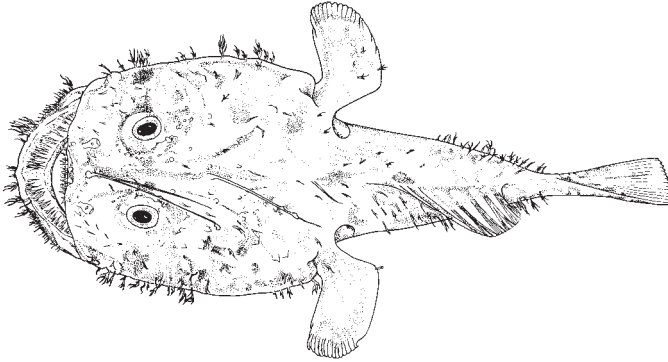
Distribution: Off continental coasts throughout the area, northward extending to Cape Hatteras and southward to northern coast of Argentina.



***Lophiodes beroe* Caruso, 1981**

En - White anglerfish.

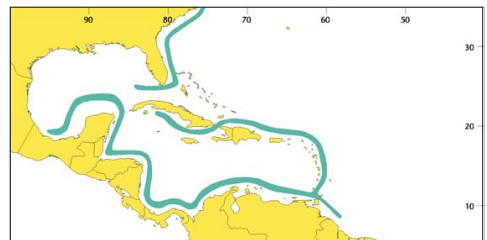
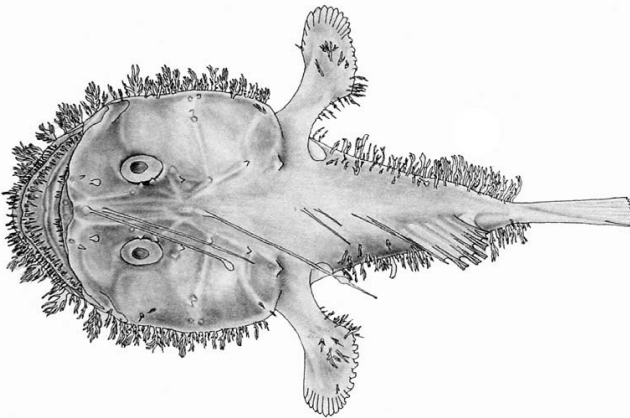
Maximum size 30 cm, commonly 15 cm. Northeastern Gulf of Mexico (ca. 27.5 N) to northern coast of South America (about 7.75 N). Depth range: 345 to 860 m; temperature range: 9 to 11 C. A continental slope species caught occasionally when trawling at appropriate depths.



***Lophiodes monodi* Le Danois, 1971**

En - Club bait anglerfish.

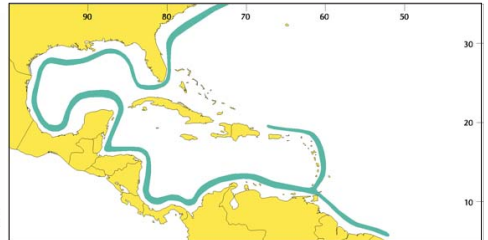
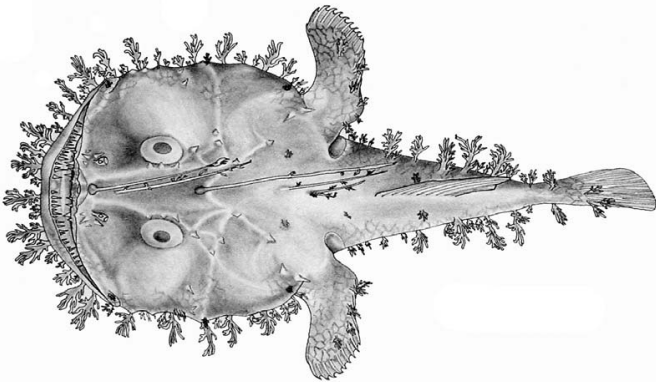
Maximum size 30 cm, commonly 14 cm; Gulf of Mexico and Atlantic Ocean off southern Florida (ca. 25 N) to northern coast of South America (about 7 N). Depth range: 365 to 550 m. A continental slope species caught occasionally when trawling at appropriate depths.



***Lophiodes reticulatus* Caruso and Suttkus, 1979**

En - Reticulated goosefish; **Fr** - Baudroie reticulée; **Sp** - Rape chato.

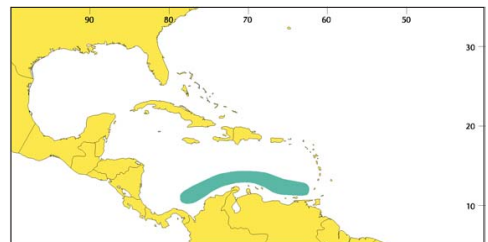
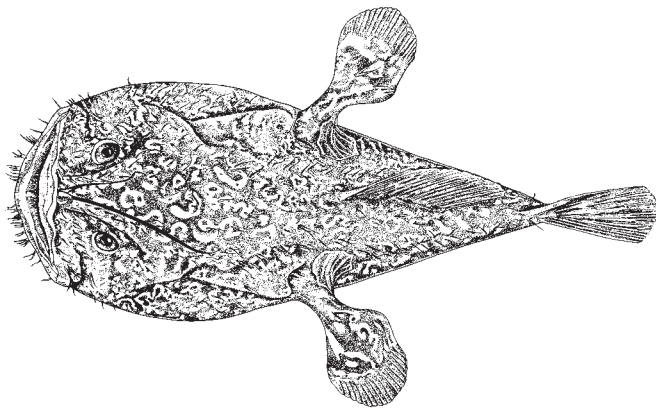
Maximum size 30 cm, commonly 15 cm, Atlantic coast off North Carolina (about 33.5 N) and northern Gulf of Mexico (about 30 N) to northern coast of South America (ca. 7.25 N), Depth range: 65 to 370 m; temperature range: 12 to 19 C; A continental slope species occasionally taken on outer continental shelf. Caught occasionally when trawling at appropriate depths.



***Sladenia shaeferi* Caruso and Bullis, 1976**

En - Shaefer's anglerfish.

Known from only 2 specimens: holotype (397 mm standard length) collected off Point Baru, Colombia at 1 200 m, and paratype (146 mm standard length) collected northwest of Aruba at 850 m.

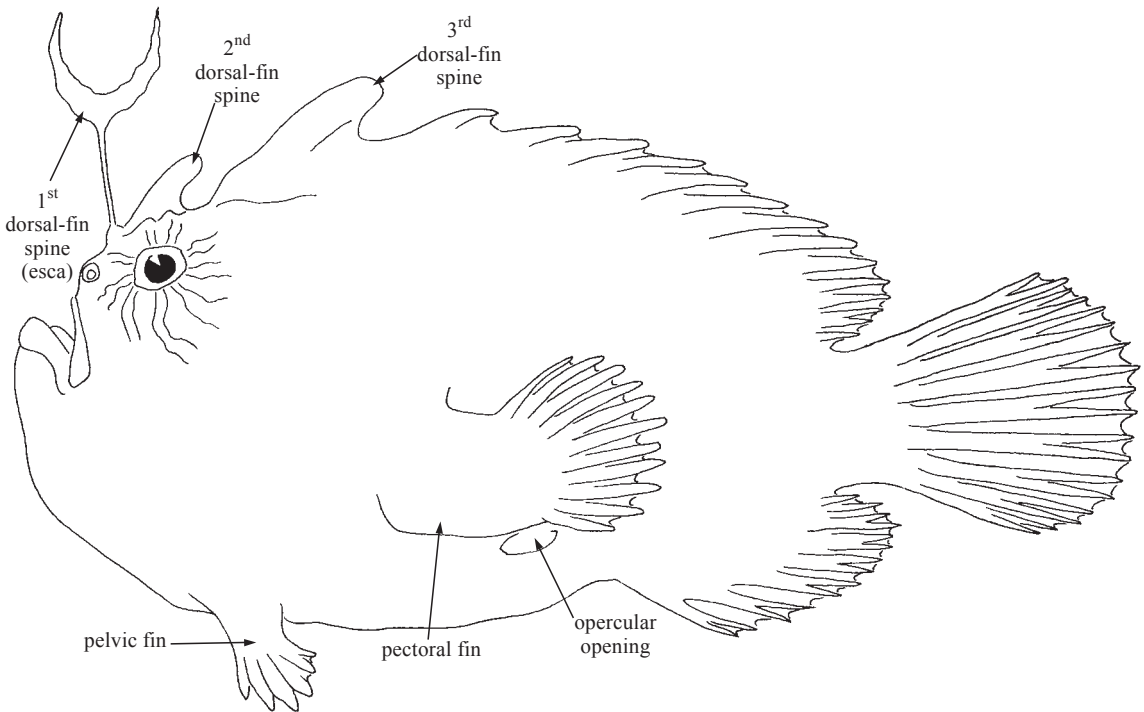


ANTENNARIIDAE

Frogfishes (sea mice, anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Some reaching a total length of over 50 cm, but most species do not exceed 20 cm. **Body short, deep, globose, slightly compressed.** Mouth large, oblique to vertical, with numerous small, villiform teeth. Eyes small, lateral. **Opercular (gill) opening restricted to a small pore** located behind and below pectoral-fin base. Spinous dorsal fin of 3 spines, widely separated from soft part of fin. **First dorsal-fin spine (illicium) free from rest of fin, nearly always bearing a well-developed terminal bait (esca);** second and third dorsal-fin spines also free from rest of fin, well developed, and covered by thick skin. **Pectoral-fin lobe elongate, leg-like;** fin single, not divided into upper and lower portions. Skin spinulose or naked, often with membranous filaments or flaps. **Colour:** usually in 2 phases: a more common light phase with light tan to yellow, brown, or rust background usually overlaid with black, brown, pink, or bright yellow streaks, bars, and/or spots on head, body, and fins; a dark phase with dark brown to black background with streaks, bars, or spots showing through as deeper black, tips of rays of paired fins often white.



Habitat, biology, and fisheries: Frogfishes spend the greater part of their lives squatting on the bottom in shallow water or, as in the case of *Histrio*, clinging to floating sargassum weed. Frogfishes are found worldwide in tropical and subtropical waters. Despite their sedentary nature, nearly all are voracious carnivores that sit quietly waiting for smaller fishes to pass by, at which time they enticingly wriggle their bait to attract the potential prey to their cavernous mouths. Their ovaries are tightly rolled like a double scroll, and eggs are released embedded in a single, large, buoyant gelatinous mass. Besides their value in the aquarium trade, they are of no significant economic interest in Area 31.

Similar families occurring in the area

Lophiidae: body greatly depressed (flattened dorsoventrally), not globose.

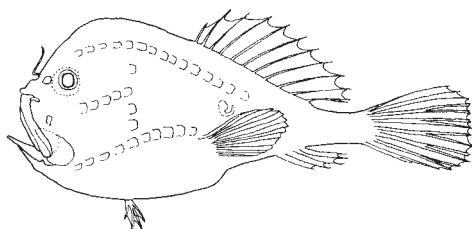


Lophiidae

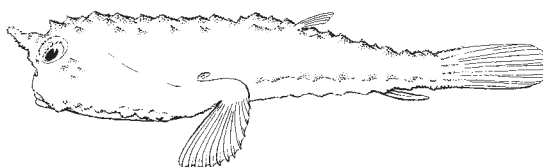
Chaunacidae: second and third dorsal-fin spines reduced and embedded beneath skin; pelvic fins of 1 spine and 4 soft rays; body globose, slightly compressed.

Ogcocephalidae: remnant of second dorsal-fin spine embedded beneath skin, third dorsal-fin spine absent; body greatly depressed, not globose.

Meso- and bathypelagic anglerfish families: pelvic fins absent; second and third dorsal-fin spines greatly reduced or absent.



Chaunacidae



Ogcocephalidae

Key to the genera of Antennariidae occurring in the area

- 1a. Skin of body rough, everywhere covered with extremely close-set spinules; pectoral-fin lobe broadly connected to body (Fig. 1); pelvic fins short, considerably less than 25% standard length; benthic in coral or rocky reefs, or on muddy or sandy bottoms *Antennarius*
- 1b. Skin of body smooth, appearing naked (dermal spinules, if present, difficult to detect without microscopic aid); pectoral-fin lobe free from body (Fig. 2); pelvic fins long, greater than 25% standard length; pelagic in floating sargassum weed *Histrion*



Fig. 1 pectoral-fin lobe (*Antennarius*)



Fig. 2 pectoral-fin lobe (*Histrion*)

List of species occurring in the area

- Antennarius bermudensis* Schultz, 1957. To 6.1 cm SL. Tropical NW Atlantic.
- Antennarius multiocellatus* (Valenciennes, 1837). To 11.3 cm SL. Tropical and subtropical NW Atlantic.
- Antennarius ocellatus* (Bloch and Schneider, 1801). To 32 cm SL. Tropical NW Atlantic.
- Antennarius pauciradiatus* Schultz, 1957. To 4 cm SL. Tropical NW Atlantic.
- Antennarius radiosus* Garman, 1896. To 18 cm SL. N Atlantic.
- Antennarius striatus* (Shaw, 1794) [= *Antennarius scaber* (Cuvier, 1817)]. To 15.5 cm SL. Atlantic, Indian, and W Pacific.
- Histrion histrion* (Linnaeus, 1758). To 14.1 cm SL. Atlantic, Indian, and W Pacific.

References

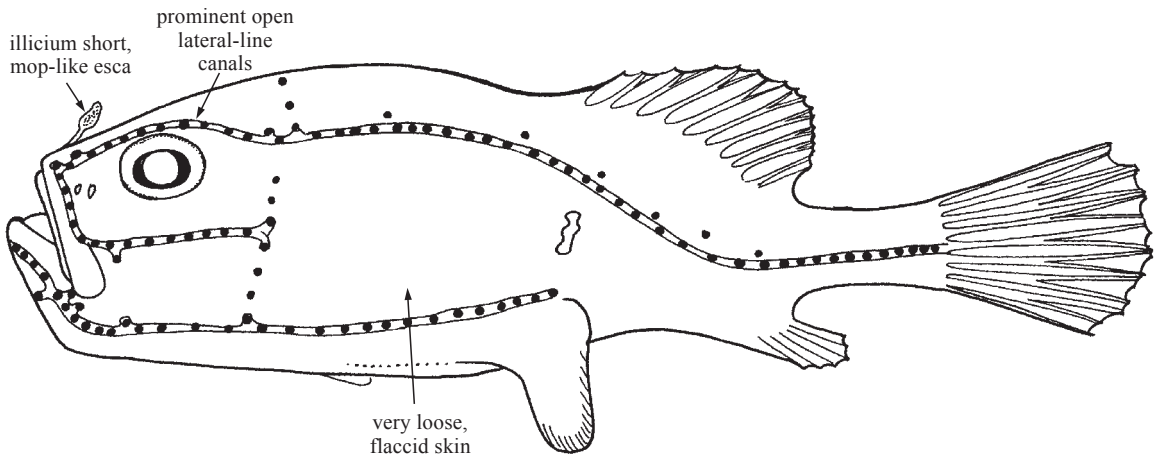
Pietsch, T.W. 1984. The genera of frogfishes (family Antennariidae). *Copeia*, 1984(1):27-44.
 Pietsch, T.W. and D.B. Grobecker. 1987. *Frogfishes of the world: systematics, zoogeography, and behavioral ecology*. Stanford University Press, Stanford, California, 420 p.

CHAUNACIDAE

Sea toads (gapers, coffinfishes)

by J.H. Caruso, University of New Orleans, Louisiana, USA

D **Diagnostic characters:** Maximum size 30 cm, common to 15 cm; body rounded and very slightly compressed with very loose, flaccid skin; body tapers to small rounded tail. Head very large and globose, roughly cuboid and bearing especially prominent open lateral-line canals; eyes dorsolateral and covered with a clear 'window' of skin; mouth large, oblique to nearly vertical, with relatively small, sharp, slender teeth. Spinous dorsal fin represented by single short spine modified as angling apparatus (illicium) and located just behind snout in front of an ovoid, scaleless patch, or depression into which it can be retracted, bait (esca) consists of dense cluster of numerous, short, thread-like cirri giving angling apparatus the appearance of a short mop; 2 additional cephalic dorsal-fin spines present as embedded vestiges, and postcephalic dorsal-fin spines absent; soft dorsal fin with 10 to 12 rays, anal fin with 5 to 7 soft rays, pectoral fins narrow and paddle-like, with 10 to 15 soft rays. Skin densely covered with small to minute spine-like scales that are somewhat similar both in shape and feel to the placoid scales of some sharks. Single open lateral-line canal on body joins conspicuous canals on head and extends posteriorly to proximal portion of caudal fin; lateral line proper with 17 to 42 neuromasts. **Colour:** generally pink, reddish, orange, or rose-coloured; some species with pale diffuse spots of yellow or olive green.

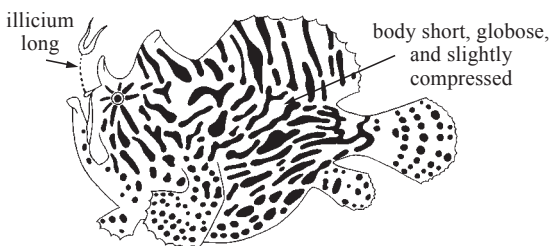


Habitat, biology, and fisheries: Bottom dwellers on hard to soft substrates of the continental slope at depths of 90 to 2 600 m.

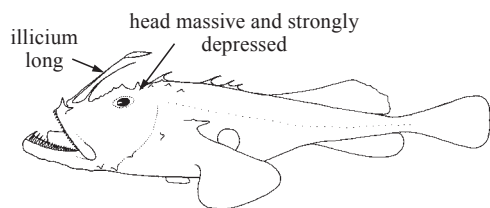
Similar families occurring in the area

Antennariidae: illicium long, not short and mop-like; body short, globose, slightly compressed; teeth small, villiform.

Lophiidae: head massive and strongly depressed, appearing rounded from above; body depressed and tapering; mouth large, bearing long, slender, depressible teeth; fishing apparatus long and slender, other slender dorsal spines located on and behind head; skin scaleless and bearing fleshy tendrils.



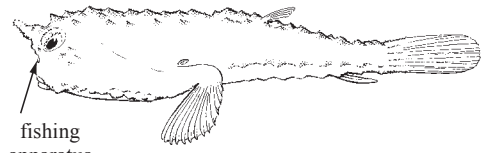
Antennariidae



Lophiidae

Ogcocephalidae: fishing apparatus small, placed in a depression between snout tip and mouth; head broader and more strongly depressed, devoid of long, slender dorsal-fin spines; mouth very small, without long and sharp teeth; head and body covered with tight skin rather than loose, flabby skin, usually with large plate-like or blunt spine-like scales.

Bathypelagic anglerfish families: no pelvic fins; second and third dorsal fin spines greatly reduced or absent; colour dark, usually black or brown, not shades of red or orange.



fishing apparatus small

Ogcocephalidae

Key to the species of Chaunacidae occurring in the area

- 1a. Skin coarsely spinose, dermal denticles widely spaced; anal-fin soft rays 5 or 6, usually 6; lateral line (BI) with 17 to 21 neuromasts, other neuromast counts AB 9, BD 1, DG 2, GH 3 (Fig. 1) *Bathychaunax roseus*
- 1b. Skin finely spinose, dermal denticles closely spaced; anal-fin soft rays 6 or 7, usually 7; lateral line (BI) with 29 to 42 neuromasts, other neuromast counts AB 10 to 13, BD 2 to 4, DG 3 to 5, GH 10 to 13 (Fig. 2) → 2

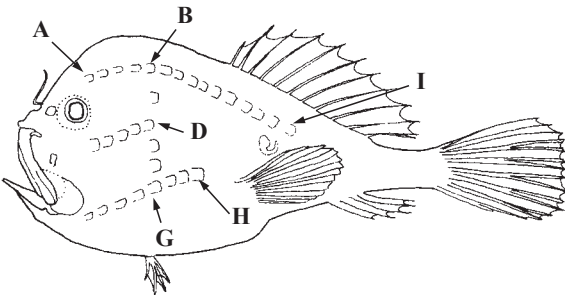


Fig. 1 Bathychaunax

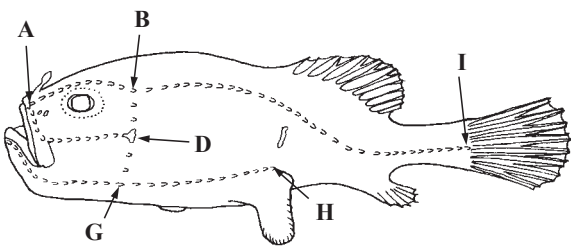


Fig. 2 Chaunax

- 2a. Illicial cavity (scaleless area behind illicium) dark brown or black and strongly concave; front surface of esca black, rear surface translucent or white *Chaunax pictus*
- 2b. Illicial cavity (scaleless area behind illicium) pale, not differing from surrounding pigmentation, and flat or very slightly concave; esca pale or dusky with uniform pigmentation all around *Chaunax suttkusi*

List of species occurring in the area

Bathychaunax roseus (Barbour, 1941). To 22 cm. W Atlantic just S of the Sable Island Bank to the Caribbean Sea W of the Windward Passage; depth range: 900 to 2 200 m.

Chaunax pictus Lowe, 1846. To 35 cm, common 15 to 18 cm. South Carolina to Guatemala in W Atlantic, Madeira to Gambia in E Atlantic at depths ranging from 275 to 625 m.

Chaunax suttkusi Caruso, 1989. To 30 cm, common 15 to 18 cm. South Carolina to Rio Grande Plateau in W Atlantic, Ireland to Angola in E Atlantic; depth range: 220 to 1 060 m.

Reference

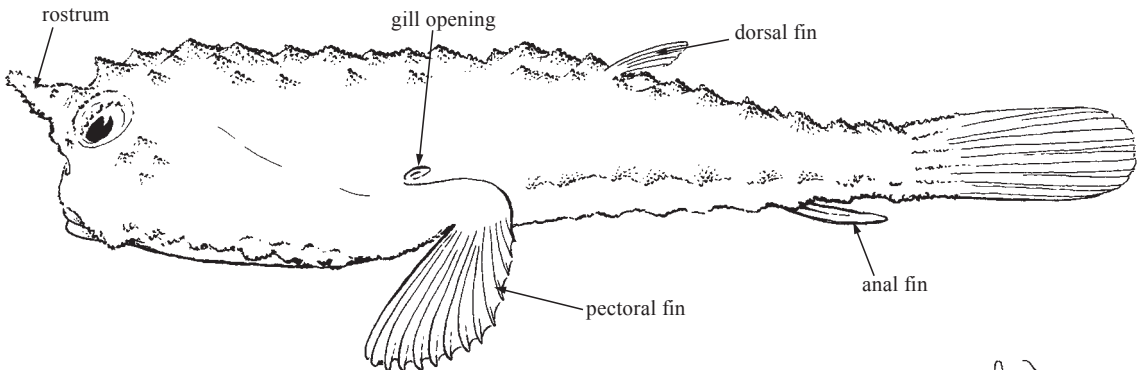
Caruso, J.H. 1989. Systematics and distribution of the Atlantic chaunacid anglerfishes (Pisces: Lophiiformes). *Copeia*, 1989(1):153-165.

OGCOCEPHALIDAE

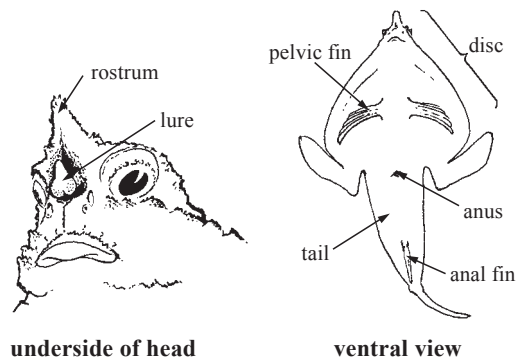
Batfishes

M.G. Bradbury, Moss Landing Marine Laboratories, CA, USA

Diagnostic characters: Small to medium-sized fishes (to 25 cm), flattened like skates. Seen from above, large head triangular or circular in outline (called the disc). A fishing lure in cavity just above mouth, the lure a smooth-skinned glandular structure that can be extended in front of the mouth a short distance. Roof of cavity usually juts out in front of head, forming the rostrum, which can be short and shelf-like to long and horn-like. Eyes of moderate size, about 7 to 15% of standard length, skin surrounding the iris often covered with prickly-like scales. Mouth small, lips usually thickened, teeth very tiny, arranged in rows on pads on jaws. Gill openings small, round, located behind the pectoral fin attachments. Dorsal fin small, only 4 to 7 short rays, located on tail halfway between disc and caudal fin. Anal fin slender, lappet-like, only 3 or 4 rays. Pectoral fins attached to sides of disc, appearing leg-like. Pelvic fins attached to ventral surface of disc in advance of pectoral fins. Lateral-line organs appear as smooth mounds about size of pin-head, nested in shallow pits with small protective flaps of skin, most visible on underside of disc along its edges, and on sides of tail. Scales highly modified to form an armour of prominent cones, sometimes with sharp spines, sometimes with rough granular surfaces. In many species, scales on underside of body are small prickles densely arranged, like shark shagreen. Short hair-like extensions of skin (cirri) often present, especially around edges of disc and sides of tail. **Colour:** species with rostrum horn-shaped and disc triangular in shape (*Ogcocephalus*, *Zalieutes*, and *Malthopsis*) pale to dark grey or brown on dorsal surface; underside of body cream to orange or red; pink to red colouring sometimes on lips and/or pectoral fins; often with spots or network pattern on face, shoulders, tail, pectoral fins. Species with rostrum small and disc more circular in shape (*Halieutichthys* and *Dibranchus*) coloured light tan to pinkish; in *Halieutichthys* the upper surface often overlain by a dark network pattern. Pectoral fins in *Halieutichthys* with intense black markings, background colour sometimes yellow. Sharp tips of conical scales in some species coloured lighter or darker than background colour, giving a spotted appearance.



Habitat, biology, and fisheries: A few species of adult and adolescent batfishes found inshore on open bottoms among rocks or reefs to depths around 90 m, but most taken well offshore from mud or sand bottoms, usually in less than 200 m, a few species reaching 1 000 m or more. Diet includes small snails, small clams and scallops, a variety of worms and small crustaceans, and occasionally small fishes. As far as known, eggs, larvae, and postlarvae all pelagic, the postlarvae transparent, globular in shape, sometimes reaching 25 to 30 mm, metamorphosing upon settling to the bottom. Captive batfishes seldom move except wiggling their lures sporadically when food organisms are presented; lures appear to exude fluid, but it is not known which food organisms are attracted by such lures. Rarely eaten. No fishery.



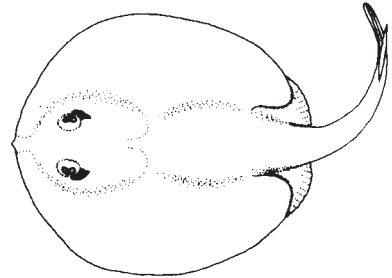
Captive batfishes seldom move except wiggling their lures sporadically when food organisms are presented; lures appear to exude fluid, but it is not known which food organisms are attracted by such lures. Rarely eaten. No fishery.

Similar families occurring in the area

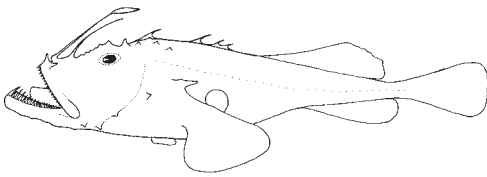
Urolophidae (and other batoid fishes): distinguished from batfishes by having 5 pairs of gill openings on ventral surface of disc and by having pelvic fins posterior to pectoral fins, not situated ventrally on centre of disc.

Lophiidae: tubercles or scales entirely absent; although lophiids have lures, these are attached to long spines on the front of the head, not nested in cavity over mouth.

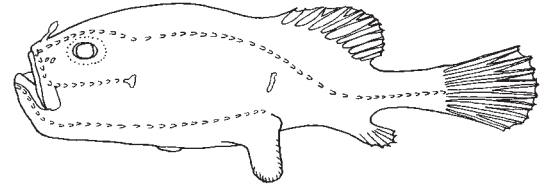
Chaunacidae: body not compressed, but rounded or cuboid; mouth large and oblique to nearly vertical; lure visible on snout, not nested in cavity over mouth.



Urolophidae



Lophiidae



Chaunacidae

Key to the genera of Ogcocephalidae occurring in the area

1a. Underside of body naked; pectoral-fin lobe attached to tail by skin (Fig. 1); lure in cavity above mouth very small, often obscured by puffy skin *Halieutichthys*

1b. Underside of body completely covered by small prickles-like and/or rough cone-shaped scales; pectoral-fin lobes separated from tail, forming distinct elbow (Fig. 2); lure prominent in cavity above mouth → 2

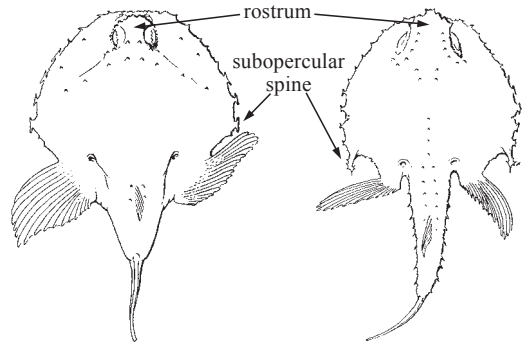


Fig. 1 *Halieutichthys*

Fig. 2 *Dibranchius*

2a. A large, elongate subopercular spine ending in 4 to 8 sharp spinelets on each side (Fig. 2); rostrum like a shelf of sharp spines over the lure *Dibranchius*

2b. Subopercular spine blunt or little developed or, if large, without spinelets; rostrum horn-shaped, short to bizarrely long → 3

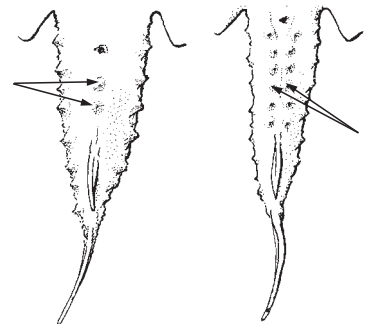


Fig. 3 *Ogcocephalus*

Fig. 4

3a. Underside of tail densely covered with small prickles; a few larger cone-shaped scales sometimes present, especially in midline (Fig. 3); most species more than 8 cm *Ogcocephalus*

3b. Underside of tail with dense small prickles as above, but also 2 longitudinal rows of larger cone-shaped scales, 1 row on either side of midline (Fig. 4); small species, usually 8 cm or less → 4

4a. When disc viewed from above, rostrum short, cone-shaped, pointed straight ahead, with an equal-sized cone flaring out on either side; subopercular spine not developed. *Zalieutes*

4b. Rostrum short, slender, markedly upturned. Subopercular spine large, thick, flaring backwards *Malthopsis*

List of species occurring in the area

Dibranchius atlanticus Peters, 1876. 140 mm SL. E and W Atlantic.

Dibranchius tremendus Bradbury, 1999. 200 mm. SL. E and W Atlantic.

Halieutichthys aculeatus (Mitchill, 1818). 100 mm SL. Throughout Area 31.

Ogocephalus corniger Bradbury, 1980. 140 mm SL. E Gulf Mexico and Atlantic coast US.

Ogocephalus cubifrons (Richardson, 1836). 230 mm SL. E Gulf Mexico and Atlantic coast US.

Ogocephalus declivirostris Bradbury, 1980. 140 mm SL. NW Gulf of Mexico.

Ogocephalus nasutus (Cuvier, 1829). 240 mm SL. Bahamas and Caribbean.

Ogocephalus notatus (Valenciennes, 1837). 140 mm SL. Area S31.

Ogocephalus pantostictus Bradbury, 1980. 270 mm SL. N and NW Gulf Mexico.

Ogocephalus parvus Longley and Hildebrand, 1940. 90 mm SL. Area 31 except W Gulf Mexico.

Ogocephalus pumilus Bradbury, 1980. 70 mm SL. Area S31.

Ogocephalus rostellum Bradbury, 1980. 160 mm SL. Atlantic coast U.S.

Malthopsis gnoma Bradbury, 1998. 60 mm SL. Area 31 from N Cuba and N Puerto Rico toward S.

Zalieutes mcgintyi (Fowler, 1952). 70 mm SL. Area 31, except W Gulf Mexico.

References

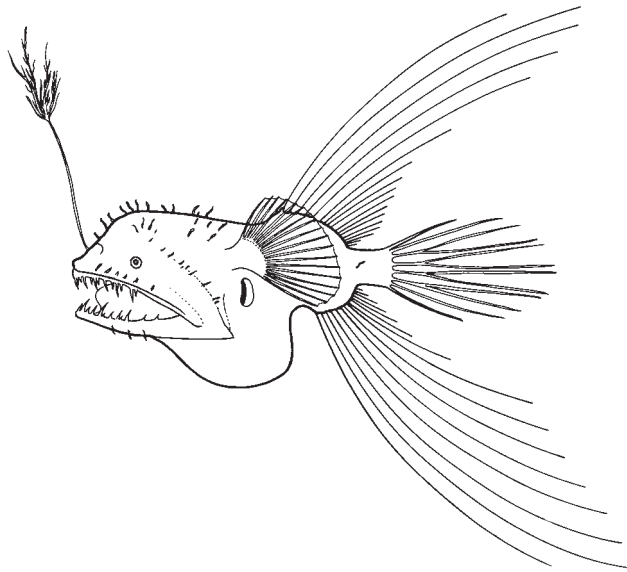
- Bradbury, M.G. 1980. A revision of the fish genus *Ogocephalus* with descriptions of new species from the western Atlantic Ocean (Ogocephalidae; Lophiiformes). *Proc. Calif. Acad. Sci.*, 42(7):229-285.
- Bradbury, M.G. 1998. A new species of *Malthopsis* (Lophiiformes; Ogocephalidae) from the western Atlantic Ocean. *Bull. Mar. Sci.*, 63(1):207-211.
- Bradbury, M.G. 1999. A review of the fish genus *Dibranchius* with descriptions of new species and a new genus, *Solocisquama*, (Lophiiformes; Ogocephalidae). *Proc. Calif. Acad. Sci.*, 15(5):259-310.

CAULOPHRYNIDAE

Fanfin anglerfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 17 cm, males 1.6 cm. Soft dorsal fin with 6 to 22 rays; anal fin with 5 to 19 soft rays; **8 caudal-fin soft rays**. Females with body short, globose; **first dorsal-fin spine (illicium) shorter than standard length, usually bearing slender cutaneous filaments along its length and numerous branched filaments at its terminus, but lacking a bulbous, bacteria-filled bioluminescent bait (esca); dorsal- and anal-fin soft rays extremely long; neuromasts of acoustico-lateralis system located at tips of extremely long filaments. Adult males parasitic on females, with skin naked and denticular teeth of upper and lower jaw fused at base. Larvae and free-living males with well-developed pelvic fins; parasitic males and metamorphosed and adult females with pelvic fins absent. Colour:** dark brown to black over entire surface of head, body, fins (except for the distal portion of the bait and sometimes the first dorsal-fin spine), and oral cavity; viscera unpigmented.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws and becoming parasitic through fusion of tissue and apparently blood vessels. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: caulophrynids easily distinguished by having extremely long dorsal- and anal-fin rays, a luring apparatus lacking a bulbous, bacteria-filled bioluminescent bait, and neuromasts of the acoustico-lateralis system located at the tips of extremely long cutaneous filaments.

List of species occurring in the area

Caulophryne jordani Goode and Bean, 1896. Females to 15.4 cm SL, males unknown. Worldwide.

Caulophryne polynema Regan, 1930. Females to 14.1 cm SL, males to 1.6 cm. NE Atlantic and NE Pacific.

Reference

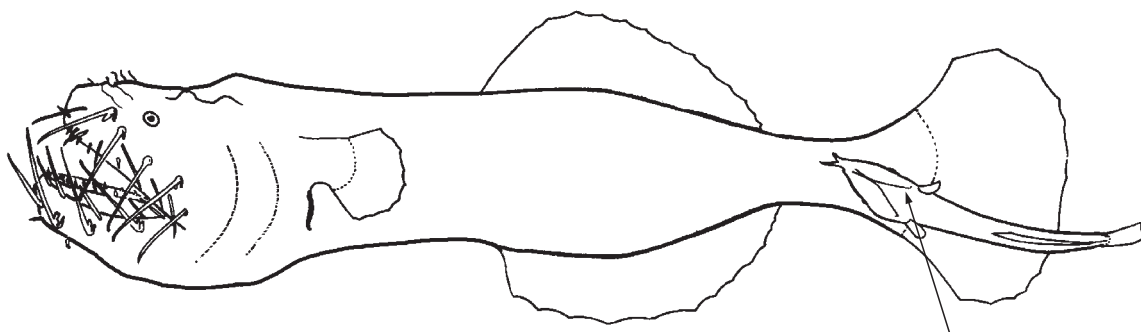
Pietsch, T.W. 1979. Systematics and distribution of ceratioid anglerfishes of the family Caulophrynidae with the description of a new genus and species from the Banda Sea. *Contrib. Sci. Nat. Hist. Mus. Los Angeles Co.*, 310:25 p.

NEOCERATIIDAE

Neoceratiid anglerfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 7.5 cm, males 1.9 cm. **Soft dorsal fin with 11 to 13 soft rays; anal fin with 10 to 13 soft rays; pelvic fins absent.** Females with body slender, elongate, slightly compressed; cleft of mouth horizontal, extending posteriorly beyond eyes; **2 or 3 series of mobile, hooked teeth on outer margin of jaws; first dorsal-fin spine (luring apparatus) absent; bioluminescent structures apparently absent;** lower jaw extending slightly beyond upper jaw; **a pair of prominent nasal papillae;** skin naked. **Adult males parasitic on females;** eyes and olfactory organs degenerate; lower denticular tooth-plate triradiate, each projection terminating in a double hook; upper denticular teeth absent; skin naked. **Colour:** dark red-brown to black over entire surface of head, body, and fins.



males smaller than and parasitic on females (attachment site variable; some females without attached males, some with multiple males)

Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes. Females feeding in some unknown way (luring apparatus, and apparently bioluminescent structures, absent), perhaps snagging soft-bodied, passive invertebrates with their elongate, hooked, external jaw teeth; males actively seeking mates by means of highly developed sense organs, attaching themselves to females by means of specialized tooth-bearing denticles born on the tips of the jaws and becoming parasitic through fusion of tissue and apparently blood vessels. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: neoceratiids are easily distinguished by having a slender, elongate, slightly compressed body; 2 or 3 series of mobile, hooked teeth on outer margin of the jaws; first dorsal-fin spine (luring apparatus) absent; a pair of prominent nasal papillae; and naked skin.

List of species occurring in the area

Neoceratias spinifer Pappenheim, 1914. Females to 7.5 cm, males to 1.9 cm. Worldwide.

Reference

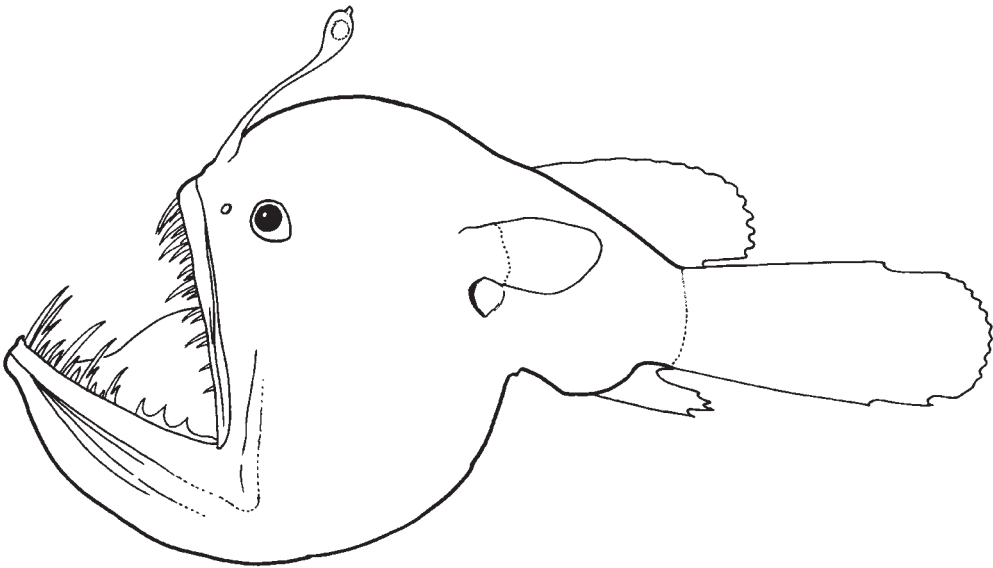
Bertelsen, E. 1951. The ceratioid fishes. Ontogeny, taxonomy, distribution, and biology. *Dana Rept.*, (39):276 p.

MELANOCETIDAE

Black devils (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 12 cm, males 2.8 cm. **Soft dorsal fin with 12 to 17 rays; anal fin with 4 soft rays (very rarely 3 or 5); pelvic fins absent.** Females with body short, deep, globose; **first dorsal-fin spine (illicium) short, less than 70% length of head and body, bearing a conspicuous terminal bioluminescent bait (esca); bait without filaments or appendages;** snout and chin smooth, without papillae; sphenotic spines absent; skin smooth, appearing naked. **Males free-living, not becoming parasitic on females,** with eyes large, elliptical, directed laterally; olfactory organs large; skin spinulose; a median series and 2 or 3 transverse series of denticular teeth on snout, all fused at base; lower denticular teeth in a median and 2 lateral groups fused at base. **Colour:** dark brown to black over entire surface of head and body (except for distal portion of bait); fins colourless in adolescent females.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: melanocetids are distinguished by a combination of features including a short, deep, globose body; a long dorsal fin containing 12 to 17 rays; a short anal fin with 4 soft rays (very rarely 3 or 5); sphenotic spines absent; and skin smooth, appearing naked.

List of species occurring in the area

Melanocetus johnsonii Günther, 1864. Females to 13.5 cm, males to 2.8 cm. Worldwide.

Melanocetus murrayi Günther, 1887. Females to 12 cm, males to 2 cm. Worldwide.

Reference

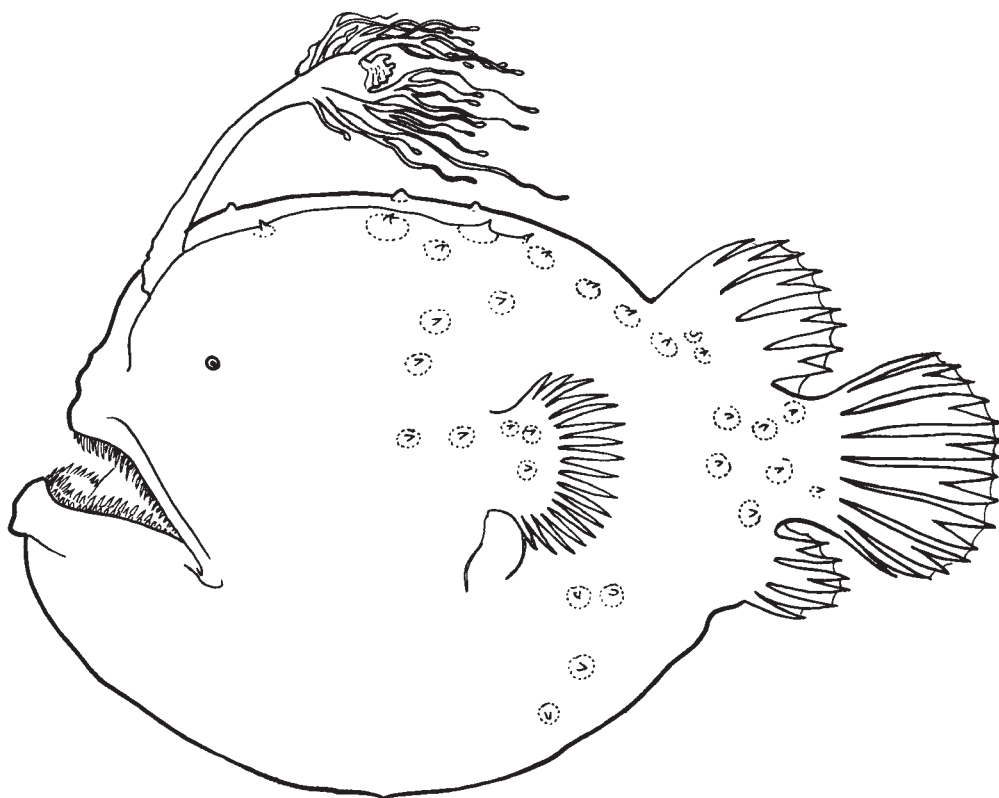
Pietsch, T.W. and J.P. Van Duzer. 1980. Systematics and distribution of ceratioid anglerfishes of the family Melanocetidae, with the description of a new species from the Eastern North Pacific Ocean. *Fish. Bull.*, 78(1):59-87.

HIMANTOLOPHIDAE

Footballfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 46.5 cm, males 4 cm. Soft dorsal fin with 5 or 6 rays; anal fin with 4 or 5 soft rays; **pelvic fins absent**. Females with body short, deep, globose; **first dorsal-fin spine (illicium) stout, short, less than head length to nearly equal to length of head and body, bearing a conspicuous terminal bioluminescent bait (esca)**; snout and chin blunt, usually covered with small rounded papillae; sphenotic spines present; **skin of head and body with widely spaced, bony plates, each bearing a median spine**. **Males free-living, not becoming parasitic on females**; eyes large, directed laterally; olfactory organs large, skin spinulose; denticular teeth on upper and lower jaw in 2 to 4 transverse series, fused at base. **Colour:** dark brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity; irregular, white or faintly pigmented patches sometimes present on the snout, chin, and upper surface of head and body.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: himantolophids are distinguished by a combination of characters including a short, deep, globose body; blunt snout and chin, usually covered with small rounded papillae; sphenotic spines present; and skin of the head and body with widely spaced, bony plates, each bearing a median spine.

List of species occurring in the area

- Himantolophus albinares* Maul, 1961. Females to 19 cm SL, males unknown. Tropical and subtropical Atlantic.
- Himantolophus brevisrostris* group (males only). Males to 3.8 cm SL, females unknown. Worldwide.
- Himantolophus cornifer* Bertelsen and Krefft, 1988. Females to 9 cm SL, males unknown. Tropical Atlantic and Pacific.
- Himantolophus groenlandicus* Reinhardt, 1837. Females to 46.5 cm SL, males unknown. Atlantic and possibly E Indian Ocean.
- Himantolophus maui* Bertelsen and Krefft, 1988. Females to 15.5 cm SL, males unknown. N Atlantic.
- Himantolophus melanolophus* Bertelsen and Krefft, 1988. Females to 9.4 cm SL, males unknown. Tropical N Atlantic.
- Himantolophus multifurcatus* Bertelsen and Krefft, 1988. Females to 12.2 cm SL, males unknown. Tropical N Atlantic.
- Himantolophus paucifilosus* Bertelsen and Krefft, 1988. Females to 16.3 cm SL, males unknown. Tropical Atlantic.
- Himantolophus rostratus* group (males only). Males to 3.9 cm SL, females unknown. Tropical and subtropical Atlantic and Pacific.

Reference

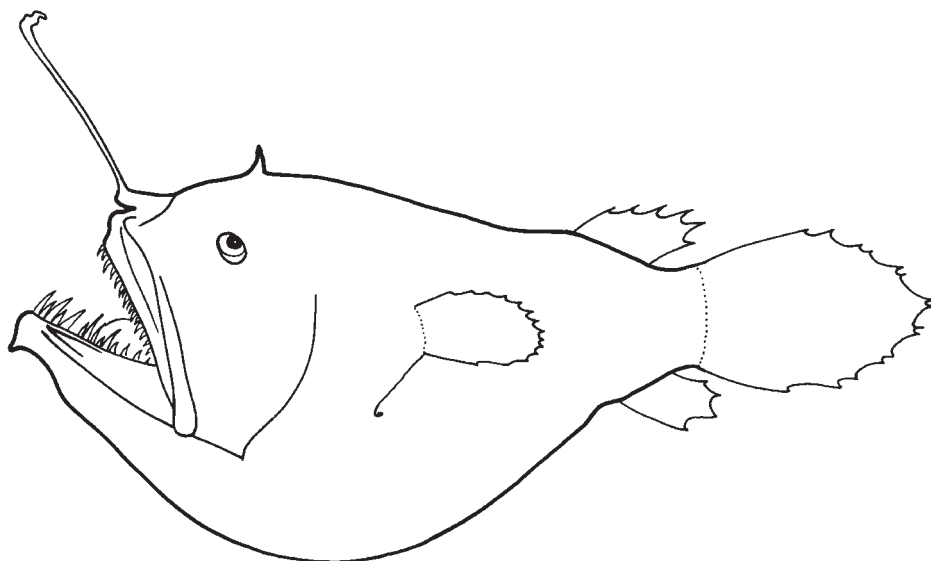
Bertelsen, E. and G. Krefft. 1988. The ceratioid family Himantolophidae (Pisces, Lophiiformes). *Steenstrupia*, 14(2):9-89.

DICERATIIDAE

Diceratid anglerfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 23.5 cm, males 1.4 cm. Soft dorsal fin with 5 to 7 rays; anal fin with 4 soft rays; **pelvic fins absent**. Females with body short, globose; **first dorsal-fin spine (illicium) less than 1/2 length of head and body to more than twice this length, bearing a conspicuous terminal bioluminescent bait (esca); a short, exposed second dorsal-fin spine present just behind base of first spine, bearing a terminal light organ (conspicuous in adolescents, but difficult to find in adults); strong sphenotic spines present; no caruncles (modified dorsal-fin rays, each bearing a bioluminescent gland) on back; skin rough, everywhere covered with minute, close-set spinules. Males free-living, not becoming parasitic on females; eyes large; olfactory organs small, well separated from eye; a pair of slender, curved denticular teeth on snout, 9 similar denticular teeth on tip of lower jaw, all teeth mutually free without expanded connecting bases; skin spinulose. Colour:** dark brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes. Widely distributed in Atlantic, Indian, and western Pacific waters. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: diceratiids are distinguished by having a combination of characters that includes a short, globose body; an exposed second dorsal-fin spine situated just behind the base of the first spine, bearing a terminal light organ; strong sphenotic spines; and the skin everywhere covered with minute, close-set spinules.

List of species occurring in the area

Bufoceratias wedli (Pietschmann, 1926). Females to 23.5 cm SL, males unknown. Tropical and subtropical N Atlantic.

Diceratias pileatus Uwate, 1979. Females to 17.8 cm SL, males unknown. Tropical and subtropical N Atlantic.

Reference

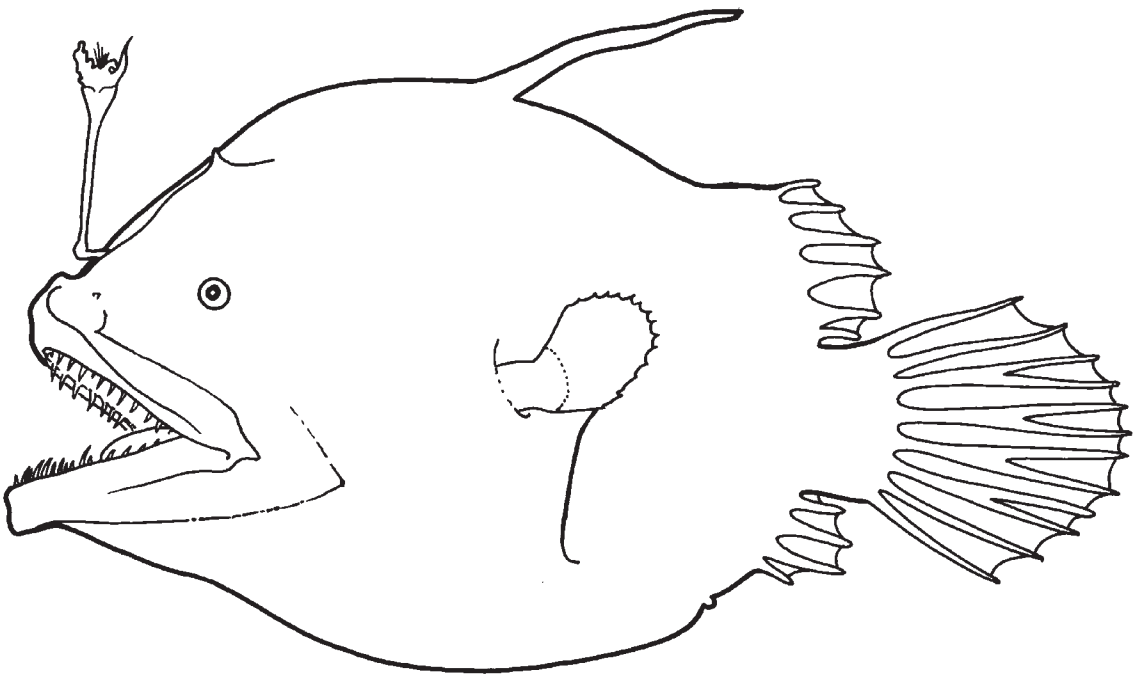
Uwate, K.R. 1979. Revision of the anglerfish family Diceratiidae, with description of two new species. *Copeia*, 1979(1):129-144.

ONEIRODIDAE

Dreamers (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a total length of 28 cm, males 1.8 cm. **Soft dorsal fin with 4 to 8 rays; anal fin with 4 to 7 soft rays; pelvic fins absent.** Females highly variable in shape, with body short, globose to elongate, slender, and compressed; first dorsal-fin spine (illicium) extremely short (bait nearly sessile on snout) to longer than total length of fish, bearing a conspicuous terminal bioluminescent bait (esca); **second dorsal-fin spine not exposed, embedded beneath skin of head;** strong sphenotic spines usually present (absent in *Chaenophryne*); **no caruncles** (modified dorsal-fin soft rays, each bearing a bioluminescent gland) **on back;** skin usually smooth, appearing naked (rough, everywhere covered with minute, close-set spinules in *Spiniphryne*). Males free-living, not becoming parasitic on females (except those of *Leptacanthichthys*); eyes large, directed laterally; olfactory organs large, anterior nostrils close together, directed anteriorly; skin naked. **Colour:** dark brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic (except for those of *Leptacanthichthys*). They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: the numerous and highly diverse genera of the Oneirodidae are distinguished by a combination of features including first dorsal-fin spine emerging well behind the tip of the snout and bearing a well developed bioluminescent bait; second dorsal-fin spine greatly reduced, embedded beneath skin of the head; no caruncles (modified dorsal-fin soft rays, each bearing a bioluminescent gland) on back; no hyoid barbel; snout and chin smooth, not covered with close-set cutaneous papillae; soft dorsal and anal fins with 4 to 8 rays; and skin without conical bony plates.

List of species occurring in the area

- Chaenophryne draco* Beebe, 1932. Females to 4.2 cm SL, males unknown. Worldwide.
- Chaenophryne longiceps* Regan, 1925. Females to 17 cm SL, males unknown. Worldwide.
- Danaphryne nigrifilis* (Regan and Trewavas, 1932). Females to 8.2 cm SL, males unknown. N Atlantic and W Pacific.
- Dolopichthys allector* Garman, 1899. Females to 15.4 cm SL, males unknown. Atlantic and E Pacific.
- Dolopichthys danae* Regan, 1926. Females to 11.5 cm SL, males unknown. Tropical E Atlantic.
- Dolopichthys karsteni* Leipertz and Pietsch, 1987. Females to 9.9 cm SL, males unknown. NW Atlantic.
- Dolopichthys longicornis* Parr, 1927. Females to 15.9 cm, males unknown. Worldwide.
- Dolopichthys pullatus* Regan and Trewavas, 1932. Females to 11.5 cm SL, males unknown. Worldwide.
- Leptacanthichthys gracilispinis* (Regan, 1925). Females to 5.6 cm SL, males to 0.8 cm. NW Atlantic and Pacific.
- Lophodolos acanthognathus* Regan, 1925. Females to 7 cm SL, males unknown. Worldwide.
- Microlophichthys microlophus* (Regan, 1925). Females to 10.6 cm SL, males to 1.8 cm. Worldwide.
- Oneirodes anisacanthus* (Regan, 1925). Females to 17.3 cm SL, males unknown. N Atlantic.
- Oneirodes bradburyae* Grey, 1956. Females to 2.4 cm SL, males unknown. Gulf of Mexico.
- Oneirodes carlsbergi* (Regan and Trewavas, 1932). Females 15.9 cm SL, males unknown. Tropical Atlantic and Pacific.
- Oneirodes eschrichtii* Lütken, 1871. Females to 21.3 cm SL, males unknown. Worldwide.
- Oneirodes macronema* (Regan and Trewavas, 1932). Females to 2.7 cm SL, males unknown. Caribbean Sea.
- Oneirodes macrosteus* Pietsch, 1974. Females to 18.5 cm SL, males unknown. Atlantic.
- Oneirodes melanocauda* Bertelsen, 1951. Female larvae to 1.6 cm SL, male larvae to 0.5 cm. Caribbean Sea and E Indies.
- Phyllorhinichthys micractis* Pietsch, 1969. Females to 11.8 cm SL, males unknown. Worldwide.
- Spiniphryne gladisfenae* (Beebe, 1932). Females to 6.3 cm SL, males unknown. Atlantic.

References

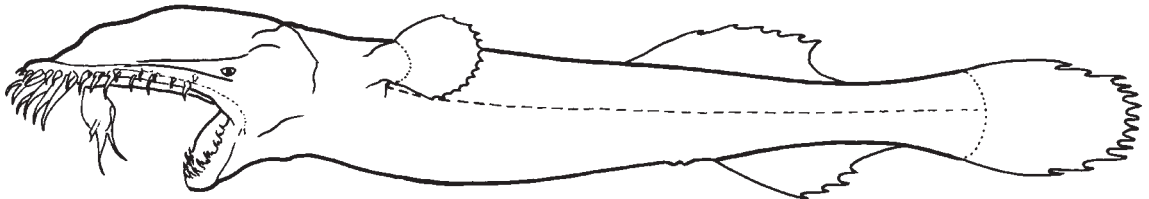
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- Bertelsen, E. and T.W. Pietsch. 1977. Results of the research cruises of the FRV "Walther Herwig" to South America. XLVII. Ceratioid anglerfishes of the family Oneirodidae collected by the FRV "Walther Herwig." *Arch. Fisch Wiss.*, 27(3):171-189.

THAUMATICHTHYIDAE

Wonderfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 30 cm, males 3.2 cm. Soft dorsal fin with 5 to 7 rays; anal fin with 4 or 5 soft rays; **pelvic fins absent**. Females with body slender, elongate; head narrow (*Lasiognathus*) or conspicuously depressed and broad (*Thaumaticthys*); **upper jaw extending anteriorly far beyond lower jaw**; first dorsal-fin spine (illicium) long, with terminal bioluminescent bait (esca), emerging from dorsal surface of head (*Lasiognathus*), or extremely short, embedded in skin of snout, bait hanging from roof of mouth (*Thaumaticthys*); **bait with 1 to 3 bony hook-like denticles**; skin naked (*Lasiognathus*), or spinulose on lower part of head and body (*Thaumaticthys*). **Males free-living, not becoming parasitic on females**; body elongate, slender; eyes large; olfactory organs very large; jaw teeth absent; snout with 4 separate denticles arranged in 2 pairs, one above the other; tip of lower jaw with 7 denticles, a lower transverse series of 4 and an upper transverse series of 3, all fused at base. **Colour:** dark red-brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic (*Lasiognathus*) and benthic (*Thaumaticthys*) anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. Adults collected in midwater trawls at depths of about 800 to 1 800 m (*Lasiognathus*) or in bottom trawls at depths of 1 100 to 3 200 m (*Thaumaticthys*). They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: thaumaticthyids are easily distinguished by having a slender, elongate body; upper jaw extending anteriorly far beyond lower; and bait (either situated at the tip of an elongate first dorsal-fin spine, emerging from the dorsal surface of the head, or hanging from the roof of the mouth) with 1 to 3 bony hook-like denticles.

List of species occurring in the area

- Lasiognathus beebei* Regan and Trewavas, 1932. Females to 11.2 cm SL, males unknown. N Atlantic and NE Pacific.
- Lasiognathus intermedius* Bertelsen and Pietsch, 1996. Females to 12.9 cm SL, males unknown. Atlantic and NE Pacific.
- Lasiognathus saccostoma* Regan, 1925. Females to 7.7 cm SL, males unknown. N Atlantic and NE Pacific.
- Thaumaticthys binghami* Parr, 1927. Females to 29.4 cm SL, males unknown. NW Atlantic.

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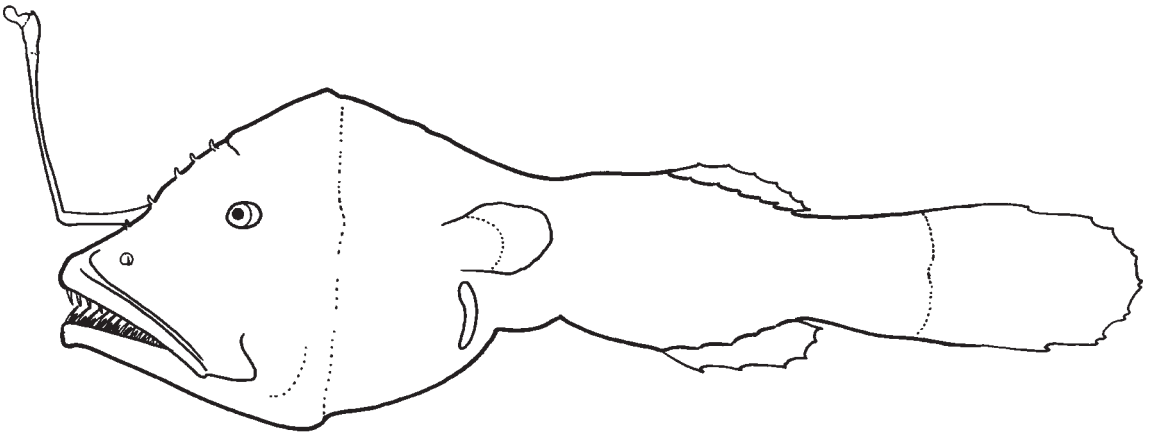
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CENTROPHRYNIDAE

Deepsea anglerfishes

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 23 cm, males 1.3 cm. Soft dorsal fin with 6 or 7 rays; anal fin with 5 or 6 soft rays; **pelvic fins absent. Females with body elongate, compressed; first dorsal-fin spine (illicium) shorter than standard length, bearing a conspicuous terminal bioluminescent bait (esca);** sphenotic spines absent; **no caruncles** (modified dorsal-fin rays, each bearing a bioluminescent gland) **on back;** skin rough, everywhere covered with small, close-set spinules. **Males free-living, not becoming parasitic on females;** eyes small; olfactory organs large, directed laterally; 3 upper and 4 lower denticular teeth, fused at base; skin naked. **Males and juvenile females with a simple papilliform hyoid barbel. Colour:** dark red-brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: centrophrynids distinguished by combination of characters including an elongate, slender, laterally compressed body; sphenotic spines absent; first dorsal-fin spine emerging from behind tip of snout; no caruncles (modified dorsal-fin rays, each bearing a bioluminescent gland) on back; skin rough, everywhere covered with small, close-set spinules.

List of species occurring in the area

Centrophryne spinulosa Regan and Trewavas, 1932. Females to 23 cm, males to 1.3 cm. Worldwide.

Reference

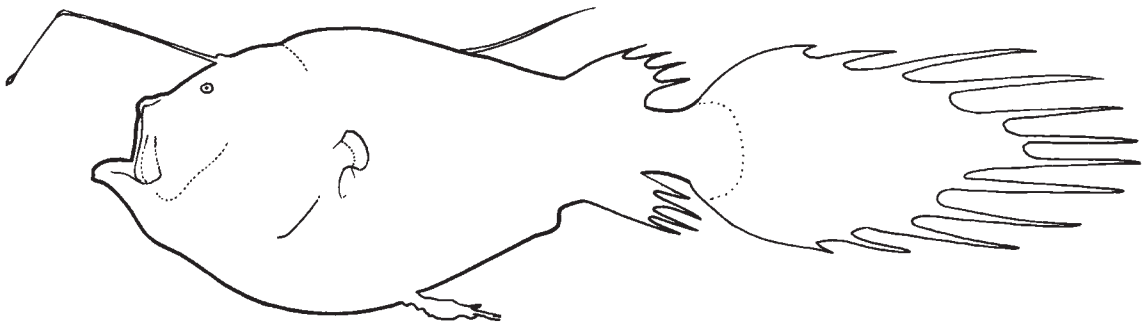
Pietsch, T.W. 1972. A review of the monotypic deep-sea anglerfish family Centrophrynidae: Taxonomy, distribution, and osteology. *Copeia*, 1972(1):17-47.

CERATIIDAE

Sea devils (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 77 cm, males 1.6 cm. Soft dorsal fin with 3 to 5 rays; anal fin with 4 soft rays; **pelvic fins absent**; caudal soft rays 8 or 9. Females with body elongate, compressed; **first dorsal-fin spine (illicium) shorter than standard length, bearing a terminal bioluminescent bait (esca)**; **2 or 3 caruncles** (modified dorsal-fin soft rays, each bearing a bioluminescent gland) **on the dorsal midline of the trunk just anterior to the origin of the soft dorsal fin** (often inconspicuous in large adult females); skin covered with numerous close-set dermal spines. **Adult males parasitic on females; eyes large, bowl-shaped, directed laterally**; a pair of large denticular teeth on snout, 2 pairs of denticular teeth on tip of lower jaw; skin naked and unpigmented in adolescent stages, spinulose and darkly pigmented in parasitic stages. **Colour:** dark red-brown to black over entire surface of head, body, fins (except for the distal portion of the bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws and becoming parasitic through fusion of tissue and apparently blood vessels. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: ceratiids are distinguished by having a combination of characters that includes an elongate, compressed body; 2 or 3 caruncles (modified dorsal-fin rays, each bearing a bioluminescent gland) on the dorsal midline of the trunk just anterior to the origin of the soft dorsal fin; and skin covered with numerous close-set dermal spines.

List of species occurring in the area

Ceratias holboelli Krøyer, 1845. Females to 77 cm, males unknown. Worldwide.

Ceratias uranoscopus Murray, in Thomson, 1877. Females to 24 cm, males to 11.8 cm. Worldwide.

Cryptosaras couesii Gill, 1883. Females to 29 cm, males to 7.3 cm. Worldwide.

Reference

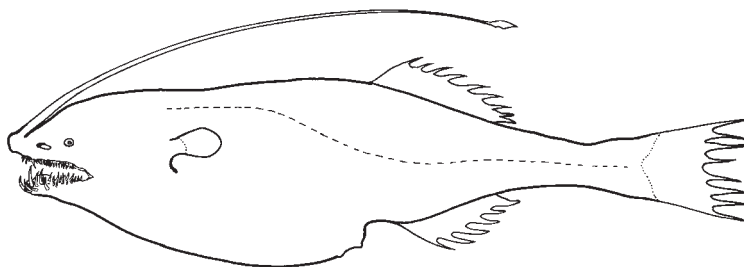
Pietsch, T.W. 1986. Systematics and distribution of bathypelagic anglerfishes of the family Ceratiidae (order: Lophiiformes). *Copeia*, 1986(2):479-493.

GIGANTACTINIDAE

Whipnose anglerfishes (deepsea anglerfishes)

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 40 cm, males 2.2 cm. Soft dorsal fin with 4 to 10 soft rays; anal fin with 4 to 8 soft rays; **pelvic fins absent. Females with body slender, elongate, compressed**, head less than 35% length of head and body, **base of tail-fin long, greater than 20% length of head and body. First dorsal-fin spine (illicium) greater than 1/2 length of head and body, emerging from extreme tip of snout, and bearing a conspicuous terminal bioluminescent bait (esca).** Upper jaw extending slightly beyond lower jaw; sphenotic spines absent; **no caruncles** (modified dorsal-fin rays, each bearing a bioluminescent gland) **on back**; skin rough, everywhere covered with small, close-set spinules. **Males free-living, not becoming parasitic on females**, with eyes minute, olfactory organs large, jaw teeth absent, denticular teeth all or nearly mutually free, not fused at base. **Colour:** dark red-brown to black over entire surface of head, body, fins (except for distal portion of bait), and oral cavity.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, apparently attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws, but not becoming parasitic. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: female gigantactinids distinguished by having a combination of characters including an elongate, slender laterally compressed body; the first dorsal-fin spine length greater than half the body length and emerging from the extreme tip of the snout; the upper jaw extending slightly beyond the lower jaw; no caruncles (modified dorsal-fin soft rays, each bearing a bioluminescent gland) on the back; and the skin rough, everywhere covered with small, close-set spinules.

List of species occurring in the area

Gigantactis gibbsi Bertelsen, Pietsch, and Lavenberg, 1981. Females to 5 cm SL, males unknown. Tropical and subtropical N Atlantic.

Gigantactis gracilicauda Regan, 1925. Females to 8.2 cm SL, males unknown. Tropical N Atlantic.

Gigantactis longicirra Waterman, 1939. Females to 22.1 cm SL, males to 1.5 cm. Tropical Atlantic and tropical E Pacific.

Gigantactis macronema Regan, 1925. Females to 35.4 cm SL, males unknown. Atlantic and Pacific.

Gigantactis perlatus Beebe and Crane, 1947. Females to 22.3 cm SL, males unknown. Worldwide.

Gigantactis vanhoeffeni Brauer, 1902. Females to 34 cm SL, males unknown. Worldwide.

Rhynchactis leptonema Regan, 1925. Females to 11.8 cm SL, males unknown. W Atlantic and E Pacific.

Rhynchactis macrothrix Bertelsen and Pietsch, 1998. Females to 13 cm SL, males unknown. Atlantic and W Indian oceans.

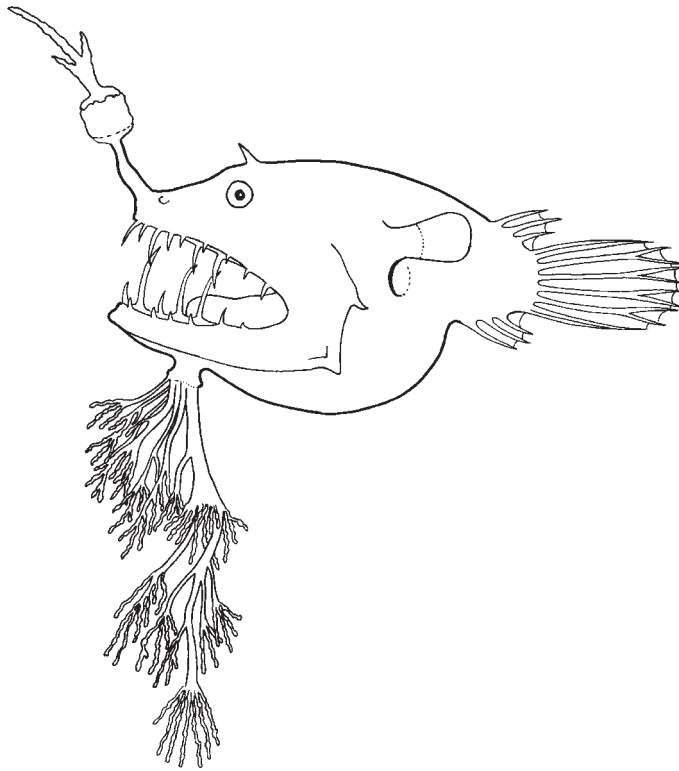
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- Bertelsen, E. and T.W. Pietsch. 1998. Revision of the deepsea anglerfish genus *Rhynchactis* Regan (Lophiiformes: Gigantactinidae), with descriptions of two new species. *Copeia*, 1998(3):583-590.

LINOPHRYNIDAE**Netdevils (deepsea anglerfishes)**

by T.W. Pietsch, University of Washington, USA

Diagnostic characters: Characterized by extreme sexual dimorphism in which males are dwarfed and reach only a fraction of the size of females. Females attaining a length of 23 cm, males 2.9 cm. **Soft dorsal fin with 3 rays (rarely 2 or 4); anal fin with 3 soft rays (rarely 2 or 4); pelvic fins absent.** Females with body short, globose; **first dorsal-fin spine (illicium) short, less than length of head and body in most specimens, bearing a conspicuous terminal bioluminescent bait (esca); an elongate hyoid barbel** (absent in *Haplophryne* and *Photocorynus*), bearing numerous, small, globular light organs; sphenotic spines present; skin naked. **Adult males parasitic on females;** eyes large, slightly tubular, directed anteriorly; olfactory organs large; skin naked. **Colour:** dark brown to black over entire surface of head, body, fins (except for the distal portion of the bait) in *Linophryne* and *Photocorynus*; skin unpigmented in *Haplophryne*.



Habitat, biology, and fisheries: Solitary, meso- and bathypelagic anglerfishes, found worldwide. Females passively attracting prey by means of a first dorsal-fin spine modified to serve as a luring device; males actively seeking mates by means of highly developed sense organs, attaching themselves to the females by means of specialized tooth-bearing denticles born on the tips of the jaws and becoming parasitic through fusion of tissue and apparently blood vessels. They are of no economic interest.

Similar families occurring in the area

Other meso- and bathypelagic anglerfish families: linophrynids distinguished by a combination of characters including a short, globose body; short soft dorsal and anal fins, consisting of only 3 soft rays (rarely 2 or 4); an elongate hyoid barbel (absent in *Haplophryne* and *Photocorynus*), bearing numerous, small, globular light organs; sphenotic spines present; and skin naked.

List of species occurring in the area

- Haplophryne mollis* (Brauer, 1902). Females to 7 cm SL, males to 1.5 cm. Worldwide.
- Linophryne algibarbata* Waterman, 1939. Females to 18.2 cm SL, males to 2.9 cm. N Atlantic.
- Linophryne arborifera* Regan and Trewavas, 1932. Females to 7.7 cm SL, males to 1.5 cm. Atlantic.
- Linophryne bicornis* Parr, 1927. Females to 18.5 cm SL, males to 3 cm. NW Atlantic and SE Indian.
- Linophryne brevibarbata* Beebe, 1932. Females to 10 cm SL, males to 1.9 cm. N Atlantic.
- Linophryne coronata* Parr, 1927. Females to 22.5 cm SL, males to 2.6 cm. Atlantic and NE Pacific.
- Linophryne densiramus* Imai, 1941. Females to 6.7 cm SL, males to 0.9 cm. NW Atlantic and Pacific.
- Linophryne macrodon* Regan, 1925. Females to 9.1 cm SL, males to 2.2 cm. NW Atlantic and tropical NE Pacific.
- Linophryne pennibarbata* Bertelsen, 1980. Females to 4.7 cm SL, males unknown. N Atlantic and N Pacific.
- Linophryne racemifera* Regan and Trewavas, 1932. Females to 8.1 cm, males unknown. Atlantic and E Pacific.
- Photocorynus spiniceps* Regan, 1925. Females to 6.9 cm SL, males to 1.0 cm. Atlantic, Indian, and E Pacific.

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- Bertelsen, E. 1980. Notes on Linophrynidae V: A revision of the deep-sea anglerfishes of the *Linophryne arborifera*-group (Pisces, Ceratioidei). *Steenstrupia*, 6(6):29-70.
- Bertelsen, E. 1982. Notes on Linophrynidae VIII: A review of the genus *Linophryne*, with new records and descriptions of two new species. *Steenstrupia*, 8(3):49-104.