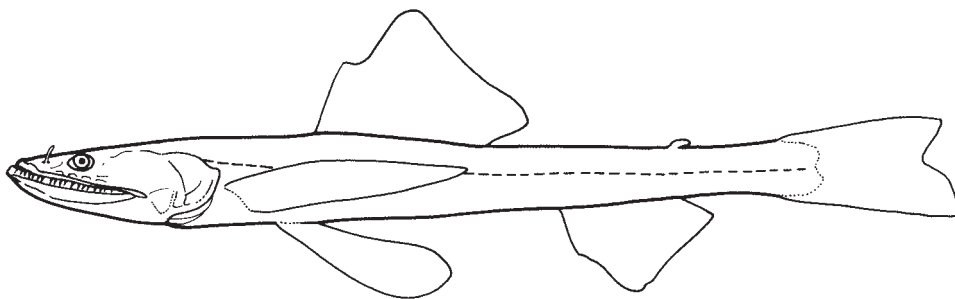


BATHYSAURIDAE**Deepsea lizardfishes**

by B.C. Russell

Diagnostic characters: Head very depressed. Eyes small, set well back from snout. **Mouth very large, upper jaw extending well beyond rear end of eye.** Teeth present on vomer. **Gill rakers reduced to patches of spines on the arches.** Branchiostegal rays 8 to 13. **Dorsal fin about equal to head length, inserted shortly behind pelvic-fin insertion,** with 15 to 18 rays. Anal fin posterior, with 11 to 14 rays. Pectoral fins with 15 to 17 rays, **central ray or rays of pectoral fins usually prolonged.** Pelvic fins with 8 rays, inner rays slightly shorter than outer rays. Dorsal adipose fin present or absent. Procurrent and principle rays of caudal fin with a row of scales.



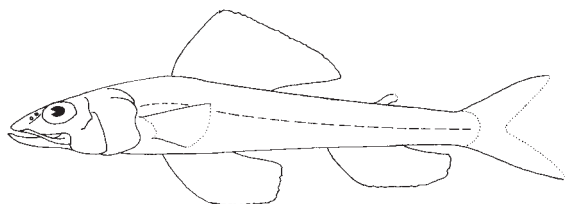
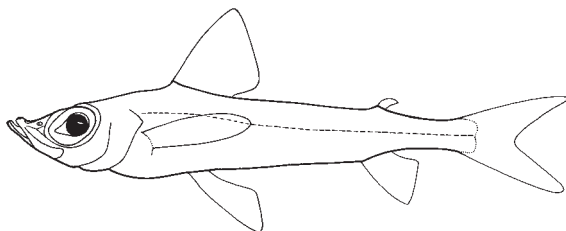
Habitat, biology, and fisheries: Bottom-dwelling deep-sea fishes of slope and abyss at depths below 1 000 m. Predominantly piscivorous, feeding on demersal and bathypelagic fishes, and occasional large benthic or nektonic crustacea. Synchronous hermaphrodites; post-larvae are pelagic. Typical deep-sea fishes of no commercial importance.

Remarks: A single genus with 2 species, circumglobal in tropical and temperate latitudes (65° N to 40° S). Sulak et al. (1985) provided a key to the genera and entry to the literature.

Similar families occurring in the area

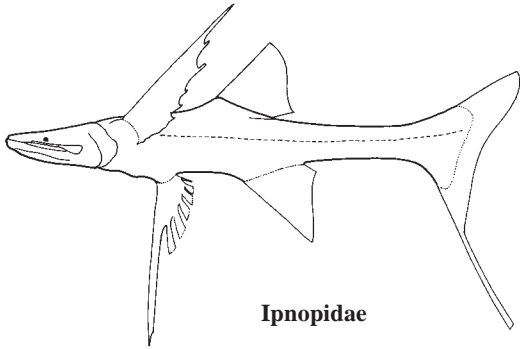
Aulopidae: mouth moderate, upper jaw mostly not reaching rear end of eye; dorsal adipose fin present; pectoral fins with 11 to 14 rays, uppermost rays usually longest; pelvic fins with 9 rays; procurrent and principle rays of caudal fin without scales; branchiostegal rays about 16; gill rakers normal, lath-like shape; well-developed bony fulcral scale in front of caudal fin.

Chlorophthalmidae: eye large, with teardrop-shaped pupil, tapetum of eye brilliant green in freshly caught specimens; mouth moderate, upper jaw not extending behind midpoint of eye; dorsal adipose fin present; anal fin with 7 to 11 rays; pectoral fins with 15 to 19 rays, uppermost rays usually longest; pelvic fins with 8 or 9 rays; gill rakers normal, lath-like shape.

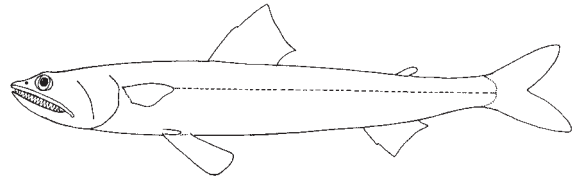
**Aulopidae****Chlorophthalmidae**

Ipnopidae: eye always specialized, either minute (*Bathymicrops*, *Bathypterois*), large (*Bathysauropsis*), or flat, directed dorsally, and lenseless (*Ipnops*); mouth large, upper jaw extending far behind eye; dorsal fin large, placed over or before middle of body, inserted before pelvic-fin insertion, with 8 to 16 rays; dorsal adipose fin present or absent; anal fin under to far behind dorsal fin, with 7 to 19 rays; pelvic fins in anterior half of body, often elongate, with 7 to 9 rays, pectoral fins with 9 to 24 rays; caudal fin and paired fins with elongate specialized rays in *Bathypterois*; gill rakers normal, lath-like or reduced to low rugose knobs.

Synodontidae: eye moderate, unspecialized; mouth large, upper jaw extending beyond rear end of eye; dorsal fin inserted in anterior half of body, behind pelvic-fin insertion, with 10 to 14 rays; dorsal adipose fin usually present; pelvic-fin rays 8 (*Synodus*, *Trachinocephalus*) or 9 (*Saurida*, *Harpadon*), inner rays subequal or slightly longer than outer rays (*Saurida*, *Harpadon*), or about 2 to 3 times longer than outermost rays (*Synodus*, *Trachinocephalus*); procurrent and principle rays of caudal fin with a row of scales (*Saurida*, *Harpadon*) or caudal fin without scales (*Synodus*, *Trachinocephalus*); branchiostegal rays 12 (*Trachinocephalus*) 13 (*Saurida*) or 15 to 18 (*Synodus*); or 17 (*Harpadon*); gill rakers rudimentary or minute, spine-like.



Ipnopidae



Synodontidae

List of species occurring in the area

- Bathysaurus ferox* Günther, 1878
- Bathysaurus mollis* Günther, 1878

Reference

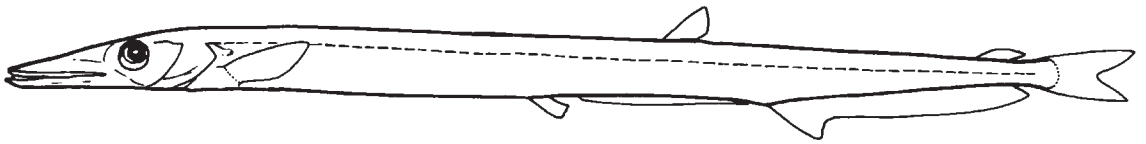
- Sulak, K.J., C.A. Wenner, G.R. Sedberry, and L. Van Guelpen. 1985. The life history and systematics of deep-sea lizard fishes, genus *Bathysaurus* (Synodontidae). *Can. J. Zool.*, 63:623-642.

PARALEPIDIDAE

Barracudinas

by J.R. Paxton and V.H. Niem

Diagnostic characters: Small to large (to 100 cm) aulopiform fishes; body slender, moderately compressed, **moderately to very elongate**. Head moderate. Eye small to moderate, round, lateral. **Snout large, much longer than eye diameter. Mouth large, but jaws rarely reaching anterior margin of eye, never to middle of eye;** 1 supramaxilla; lower jaw terminal, with or without fleshy tip. **Teeth slender canines, usually enlarged, fang-like in lower jaw;** jaw and palatine teeth in 1 or 2 rows, both fixed and depressible teeth present; vomer toothless or with 1 to 6 minute teeth; tongue with or without teeth. **Gill rakers reduced to short gill teeth or spines.** No spines in fins; **dorsal fin short based and low, somewhat behind middle of body,** inserted before, over or behind pelvic fins, with 7 to 16 rays; anal fin far posterior, with 20 to 50 rays; caudal fin with 18 to 20 principal rays; pelvic fins small, before, under or behind dorsal fin, with 8 to 12 rays; **pectoral fins low on body, moderate or very long** (*Sudis* only), with 9 to 17 rays; 1 dorsal adipose fin over last anal-fin rays, **ventral adipose fin present or absent.** Lateral dermal keels absent on caudal peduncle. Lateral line present, as single embedded tube. Scales absent or cycloid when present. **Photophores absent, luminescent organs absent or present** (*Lestidium*, *Lestrolepis*) as 1 or 2 internal ducts, situated along ventral midline. Total vertebrae 52 to 121. **Colour:** iridescent silvery, sometimes with spotted colour patterns.



Habitat, biology, and fisheries: Meso- and bathypelagic; rapid swimmers, mostly known from juveniles, with few adults taken. Feed as carnivores on fishes and crustaceans. Synchronous hermaphrodites. Moderately common deep-sea fishes, rarely found in commercial markets.

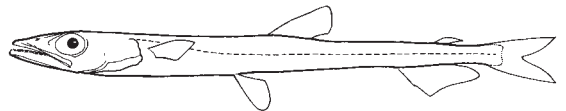
Remarks: Twelve genera with some 55 species, throughout the world ocean from the Arctic to the Antarctic. A number of new species have been described since the last family revision and detailed study of the Pacific species is needed. Additional records in and new species from the Western Central Pacific can be expected.

Similar families occurring in the area

Notosudidae: dorsal fin over middle of body; teeth small, not caniniform; gill rakers long, lath-like.

Omosudidae: jaws extending well beyond eye; lower jaw very deep; lower jaw and palatine with large fangs; lateral dermal keel on caudal peduncle.

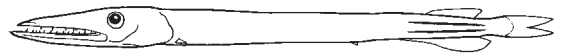
Anotopteridae: dorsal fin absent; no gill rakers; lateral dermal keels on caudal peduncle.



Notosudidae



Omosudidae



Anotopteridae

List of species occurring in the area

- Arctozenus rissoi* (Bonaparte, 1840)
Lestidiops extrema (Ege, 1953)
Lestidiops indopacifica (Ege, 1953)
Lestidiops jayakari (Boulenger, 1889)
Lestidiops mirabilis (Ege, 1933)
Lestidium atlanticum Borodin, 1928
Lestidium nudum Gilbert, 1905
Lestrolepis intermedia (Poey, 1868)
Lestrolepis japonica (Tanaka, 1908)
Lestrolepis luetkeni (Ege, 1953)
Macroparalepis affinis Ege, 1933
Macroparalepis danae Ege, 1933
Magnisudis atlantica (Krøyer, 1868)
Magnisudis indica (Ege, 1953)
Magnisudis prionosa (Rofen, 1963)
Paralepis brevirostris (Parr, 1928)
Stemonosudis distans (Ege, 1957)
Stemonosudis elegans (Ege, 1933)
Stemonosudis gracilis (Ege, 1933)
Stemonosudis macrura (Ege, 1933)
Stemonosudis rothschildi Richards, 1967
Stemonosudis siliquiventer Post, 1970
Sudis atrox Rofen, 1963
Uncisudis longirostra Maul, 1956

Reference

- Post, A. 1986. Family Paralepididae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, pp. 274-278.

ANOPTERIDAE

Daggertooth

by J.R. Paxton and V.H. Niem

Diagnostic characters: Large (to 90 cm) aulopiform fishes; body slender, moderately compressed, **very elongate**. Head moderate to large. Eye moderate, round, lateral. **Snout very large, much longer than eye diameter. Mouth very large, but jaws not extending behind eye;** 1 supramaxilla; **lower jaw prolonged, with fleshy tip.** Teeth never barbed or serrated; **jaw teeth tiny (upper jaw) or slender canines (lower jaw),** both fixed and depressible teeth present, in 1 to 3 rows; palatine with broadly triangular canines in 1 row; vomer and tongue toothless. **No gill rakers or gill teeth.** No spines in fins; **no dorsal fin;** anal fin far posterior, with 14 to 16 rays; caudal fin with 19 principal rays; **pelvic fins minute, in posterior half of body** with 9 to 11 rays; **pectoral fins ventral,** with 12 to 15 rays; **1 dorsal adipose fin, almost as long-based as anal fin. Two lateral dermal keels on caudal peduncle in adults. Lateral line absent or obscure in juveniles, poorly developed in adults,** as superficial, segmented tube. No scales. No photophores or other luminescent organs. Total vertebrae 76 to 83. **Colour:** silvery to black.



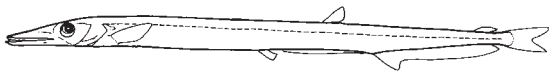
Habitat, biology, and fisheries: Epi- and mesopelagic; few captures and little known of biology. Feeding mode as carnivores on fishes. Synchronous hermaphrodites. Very rare oceanic fishes of no commercial importance.

Remarks: One genus and species found worldwide in subpolar and temperate seas; the only tropical records are from stomach contents of New Caledonia scombrids and may not represent this species living within the area.

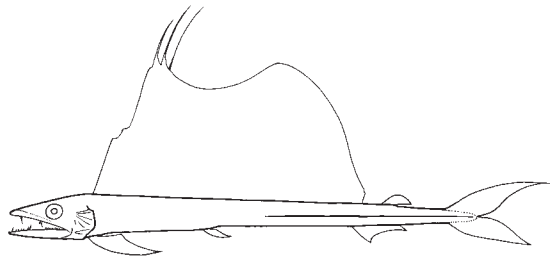
Similar families occurring in the area

Paralepididae: dorsal fin present; anal fin with 20 or more rays; gill teeth or spines present; no lateral keels on caudal peduncle.

Alepisauridae: dorsal fin present; jaws extending behind eye; gill rakers present.



Paralepididae



Alepisauridae

A single species occurring in the area

Anopterus pharao Zugmayer, 1911

References

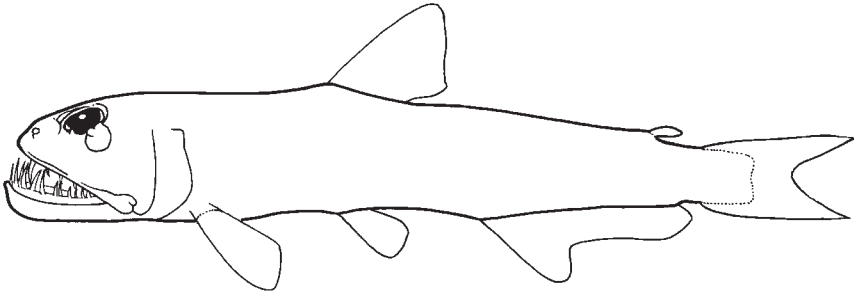
- Baldwin, C.C. and G.D. Johnson. 1996. Interrelationships of Aulopiformes. *In* *Interrelationships of fishes*, edited by M.L.J. Stiassny, L.R. Parenti, and G.D. Johnson. San Diego, Academic Press, pp. 355-404.
- Rofen, R.R. 1966. Family Anopteridae. *In* *Fishes of the Western North Atlantic*, edited by W.W. Anderson et al. *Mem. Sears Fndn. Mar. Res.*, 1(5):498-510.

EVERMANNELLIDAE

Sabertooth fishes

by J.R. Paxton and V.H. Niem

Diagnostic characters: Small (to 19 cm) aulopiform fishes; **body** moderately slender, very compressed, moderately elongate. **Head** moderate to small, **deep**. **Eye** small, lateral and non-tubular (*Odontostomops*) to moderate, **semi-tubular or tubular and directed dorsolaterally or dorsally** (*Coccorella*, *Evermannella*). Snout short to moderate, blunt to steep, longer to much longer than eye diameter. **Mouth very large, jaws extending far behind eye;** 1 supramaxilla. **Some teeth as enormous fangs**, either barbed or unbarbed; upper jaw teeth small, numerous, in 1 row; lower jaw teeth in 1 or 2 series, including some large fangs; **vomer with 1 or 2 small teeth;** palatine teeth in 1 row, decreasing in size posteriorly, first tooth largest fang in mouth; tongue toothless. **Gill rakers only on lower second arch, as gill teeth.** No spines in fins; **dorsal fin short based and moderately high, somewhat before middle of body**, inserted before pelvic-fin origin, with 10 to 13 soft rays; anal fin long, posterior, with 26 to 37 rays; caudal fin with 19 principal rays; pelvic fins under dorsal fin, with 9 rays; **pectoral fins ventral**, with 11 to 13 rays; 1 dorsal adipose fin over last anal-fin rays. Lateral dermal keel absent on caudal peduncle. **Lateral line absent or obscure in juveniles, poorly developed in adults**, as superficial, segmented tube. **No body scales.** No photophores; **internal luminous organ as part of digestive tract present in a few.** Total vertebrae 45 to 54. **Colour:** variable, nearly white with few melanophores, to brownish black, to brassy.



Habitat, biology, and fisheries: Mesopelagic, with most adults from 400 to 800 m and probable vertical migrators. Adults feed as carnivores on mesopelagic fishes and squids. Synchronous hermaphrodites. Uncommon deep-sea fishes of no commercial importance.

Remarks: Three genera and 7 species found worldwide except the Arctic and Mediterranean Seas. More midwater trawling in the area should result in range extensions.

Similar families occurring in the area

Scopelarchidae: large teeth on tongue; body scales present; lateral line distinct, with large pored scales.

Synodontidae: no large fangs in jaws; lateral line always present; body scales present.

Omosudidae: lower jaw very deep, truncated; dorsal fin somewhat behind middle of body; lateral dermal keel on caudal peduncle.

List of species occurring in the area

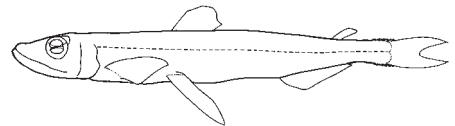
Coccorella atlantica (Parr, 1928)

Coccorella atrata (Alcock, 1893)

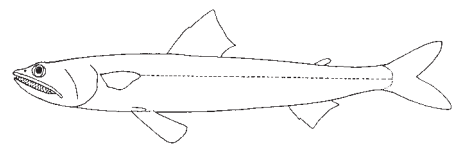
Evermannella indica Brauer, 1906

Evermannella megalops Johnson and Glodek, 1975

Odontostomops normalops (Parr, 1928)



Scopelarchidae



Synodontidae



Omosudidae

Reference

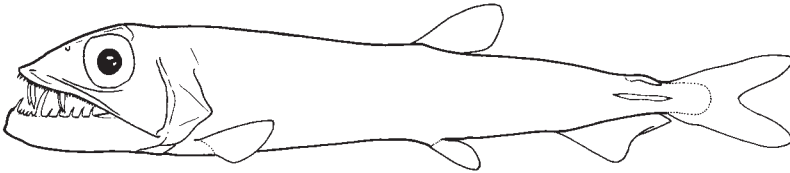
Johnson, R.K. 1982. Fishes of the families Evermannellidae and Scopelarchidae: systematics, morphology, interrelationships, and zoogeography. *Fieldiana Zool.* (n.s.), (12):252 p.

OMOSUDIDAE

Omosudid

by J.R. Paxton and V.H. Niem

Diagnostic characters: Medium (to 30 cm) aulopiform fishes; **body strongly compressed, moderately elongate. Head moderately long, deep.** Eye moderate, round, lateral; **adipose cover with dorsolateral opening.** Snout large, longer than eye diameter. **Mouth very large, jaws extending well beyond eye;** 1 supramaxilla; **lower jaw deep, truncated,** without fleshy tip. Jaws with fixed teeth in 1 row; upper jaw teeth small, **lower jaw with at least 1 enormous fang and other variously enlarged canines;** **palatine teeth 1 to 4 enormous fangs, in 1 row;** vomer and tongue toothless. **Gill rakers reduced to short gill teeth.** No spines in fins; **dorsal fin short based and low, somewhat behind middle of body,** inserted slightly before pelvic-fin origin, with 9 to 12 rays; anal fin far posterior, with 13 to 16 rays; caudal fin with 19 principal rays; pelvic fins somewhat behind middle of body, with 8 rays; **pectoral fins ventral,** with 11 to 13 rays; 1 dorsal adipose fin over last anal-fin rays. **Lateral dermal keel present on caudal peduncle.** Lateral line visible only in specimens less than 4 to 5 cm standard length. **No body or lateral-line scales.** No photophores or other luminescent organs. Total vertebrae 39 to 41. **Colour:** silvery, iridescent, covered with melanophores, fused as dark band dorsally.



Habitat, biology, and fisheries: Meso- and bathypelagic. Feed as carnivores on midwater fishes and squids. The very rare mature specimens are synchronous hermaphrodites (Nielsen and Jespersen, 1986). Uncommon deep-sea fishes of no commercial importance.

Remarks: One genus and species, throughout the world ocean in tropical and temperate latitudes. Baldwin and Johnson (1996) placed this species in the family Alepisauridae.

Similar families occurring in the area

Alepisauridae: dorsal fin sail-like, with 29 to 49 rays.

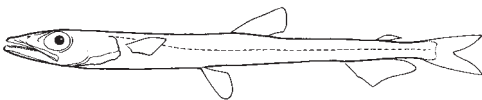
Evermannellidae: lower jaw not very deep; dorsal fin somewhat before middle of body; no lateral dermal keel on caudal peduncle.

Notosudidae: lower jaw not very deep; no fangs in jaws; gill rakers lath-like; dorsal fin before middle of body; no lateral dermal keel on caudal peduncle; scales present.

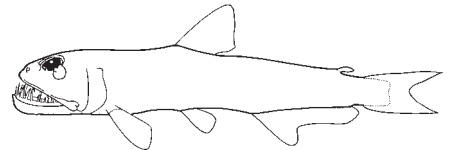
Paralepididae: jaws not extending behind eye; lower jaw not very deep; lateral line present in adults; no lateral dermal keel on caudal peduncle.



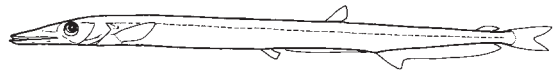
Alepisauridae



Notosudidae



Evermannellidae



Paralepididae

A single species occurring in the area

Omosudis lowei Günther, 1887

References

- Baldwin, C.C. and G.D. Johnson. 1996. Interrelationships of Aulopiformes. In *Interrelationships of fishes*, edited by M.L.J. Stiassny, L.R. Parenti, and G.D. Johnson. San Diego, Academic Press, pp. 355-404.
- Nielsen, J.G. and A. Jespersen. 1986. Morphometric changes in ripening *Omosudis lowei* (Pisces, Omosudidae). *Arch. Fish. Wiss.*, 37(1/2):59-67.
- Rofen, R.R. 1966. Family Omosudidae. In *Fishes of the Western North Atlantic*, edited by W.W. Anderson et al. *Mem. Sears Fndn. Mar. Res.*, 1(5):462-481.

ALEPISAUROIDAE

Lancetfishes

by J.R. Paxton and V.H. Niem

Diagnostic characters: Large (to 210 cm) aulopiform fishes; body slender, moderately compressed, **very elongate**. Head small. Eye moderate, round, lateral. Snout large, longer than eye diameter. **Mouth very large, jaws extending beyond eye; supramaxilla absent;** lower jaw without fleshy tip. **Jaw teeth mostly small,** in 1 row, both fixed and depressible teeth present, **lower jaw with at least 1 fang; palatine with moderate teeth and 2 fangs in 1 row;** vomer and tongue toothless. **Gill rakers reduced to gill teeth.** No spines in fins; **dorsal fin extraordinarily high and long, sail-like, extending from head to over anal fin,** with 29 to 49 rays; anal fin posterior, with 11 to 19 rays; caudal fin with 19 principal rays; pelvic fins at or somewhat before middle of body, with 7 to 10 rays; **pectoral fins ventral, long,** with 12 to 16 rays; 1 dorsal adipose fin over last anal-fin rays. **Lateral dermal keel present, long, from about middle of body to end of caudal peduncle.** Lateral line present, consisting of small pores. **No body or lateral-line scales, body covered with pores.** No photophores or other luminescent organs. Total vertebrae 47 to 51. **Colour:** iridescent bluish black dorsally, silvery grey below; dorsal fin dark metallic blue-black.



Habitat, biology, and fisheries: Epi- and mesopelagic; lancetfishes have been recorded from surface and shallow waters, but have attributes of deep-sea fishes and have been considered bathypelagic by some; longline capture to at least 325 m. Feed as carnivores on fishes, cephalopods, tunicates, and crustaceans. Synchronous hermaphrodites. Uncommon oceanic fishes taken on tuna longlines, but of no commercial importance.

Remarks: One genus with 2 species, throughout the world ocean from subarctic to subantarctic latitudes.

Similar families occurring in the area

None. The conspicuous sail-like dorsal fin distinguishes the Alepisauridae from all other aulopiform families and deep-sea fishes.

List of species occurring in the area

Alepisaurus brevirostris Gibbs, 1960

Alepisaurus ferox Lowe, 1833

References

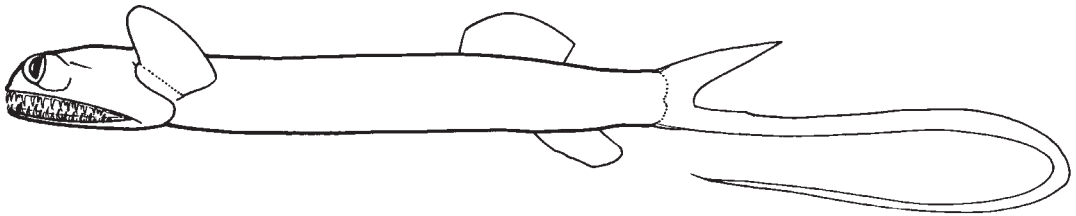
- Francis, M.P. 1981. Meristic and morphometric variation in the lancet fish, *Alepisaurus*, with notes on the distribution of *A. ferox* and *A. brevirostris*. *New Zeal. Jour. Zool.*, 8:403-408.
- Gibbs, R.H. and N.J. Wilimovsky. 1966. Family Alepisauridae. In *Fishes of the Western North Atlantic*, edited by W.W. Anderson et al. *Mem. Sears Fndn. Mar. Res.*, 1(5):482-497.

GIGANTURIDAE

Telescope fishes

by J.R. Paxton and V.H. Niem

Diagnostic characters: Small (to 22 cm) aulopiform fishes; body **very slender, moderately to strongly compressed, very elongate**. Head small. **Eye large, tubular, directed anteriorly. Snout small, much shorter than eye diameter. Mouth very large, jaws extending far behind eye; no supramaxillae;** lower jaw without fleshy tip. **Jaw teeth numerous, pointed, depressible**, in 2 or 3 rows, teeth of medial rows enlarged, fang-like; vomer, palatines, and tongue toothless. **No gill rakers or gill teeth.** No spines in fins; **dorsal fin above middle or in posterior half of body**, with 16 to 19 rays; anal-fin origin under end of dorsal fin, with 8 to 14 rays; caudal fin with 10 upper and 6 or 7 lower principal rays, some rays of **lower lobe extraordinarily prolonged; pelvic fins absent in adults; pectoral fins high on body, above gill opening**, with 30 to 42 rays; **dorsal adipose fin absent. Lateral dermal keel absent on caudal peduncle. Lateral line absent. Scales absent, skin loose.** No photophores or luminescent organs. Total vertebrae 29 to 31. **Colour:** bright silvery in freshly caught specimen, uniformly brownish black in preserved specimen.



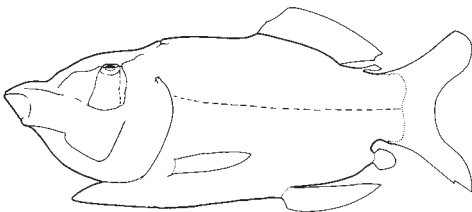
Habitat, biology, and fisheries: Meso- and bathypelagic, with adults from 700 to 2 000 m and no evidence of vertical migration. Feed as carnivores on mesopelagic fishes. Synchronous hermaphrodites; distinctive rosaura larval stage in epipelagic waters. Rare deep-sea fishes of no commercial importance.

Remarks: Two species in 1 genus, both in tropical and subtropical waters worldwide.

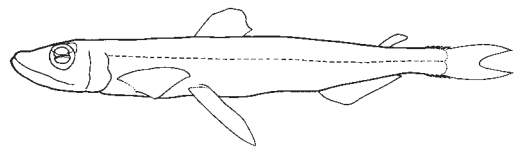
Similar families occurring in the area

Opisthoproctidae: also with tubular eyes, but snout pointed, equal or longer than eye diameter; pelvic fin present; lower caudal-fin lobe not prolonged; lateral line present; body with scales; light organ usually present.

Scopelarchidae: also with tubular eyes, but with large teeth on tongue; lower caudal-fin lobe not prolonged; lateral line present; body with scales.



Opisthoproctidae



Scopelarchidae

List of species occurring in the area

Gigantura chuni Brauer, 1901

Gigantura indica Brauer, 1901

Reference

Johnson, R.K. and E. Bertelsen. 1991. The fishes of the family Giganturidae: systematics, development, distribution and aspects of biology. *Dana Rept.*, (91):45 p.