

Order AULOPIFORMES

AULOPIDAE

Aulopus (flagfins)

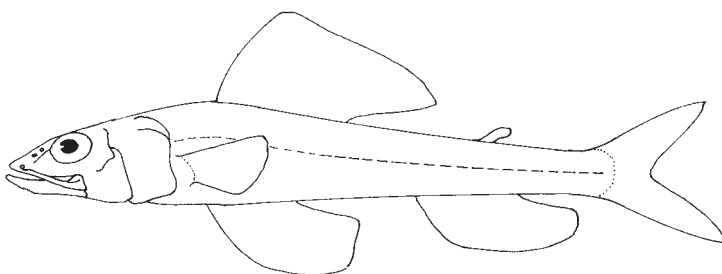
by B. A. Thompson, Louisiana State University, USA

Diagnostic characters (Atlantic only): Medium-sized (30 to 45 cm) aulopiform fishes, elongate; body oval in cross-section. Head 30% standard length; mouth large, extends to rear of eye; **maxilla expanded posteriorly with 2 supramaxillae**. **Dorsal fin located on anterior 1/3 of body**; dorsal fin with more rays than anal fin; small adipose fin located above midpoint of anal fin; pectoral fin insertion just below lateral line on midbody slightly anterior to both dorsal- and pelvic-fin insertions; pelvic-fin insertion slightly behind dorsal-fin insertion; **pelvic fin longer than pectoral fin with outer 4 rays having thickened epidermis**; dorsal-fin rays 14 to 16, anal-fin rays 10 to 13, pectoral-fin rays 13, pelvic-fin rays 9; all fins lack spines. Scales on head and body spinoid, cycloid on breast and belly; complete lateral line that extends 2 scales onto base of caudal fin; **furcal scales (small bony scutes) preceding caudal rays**; lateral line scales 48 to 53. **Colour**: males with red, orange, and yellow markings on fins; body with several saddles and lateral blotches.

Habitat, biology, and fisheries:

Flagfins are uncommon benthic fishes of the continental shelf between 130 to 550 m depth. They are predators on small fish and shrimp. Separate sexes; sexual dimorphism in body, and fin colour, and shape of dorsal, anal, and pelvic fins. Little is known of their biology. No fishery.

Remarks: Thompson (1998) recognized 10 species in 2 genera (*Aulopus* and *Hime*).

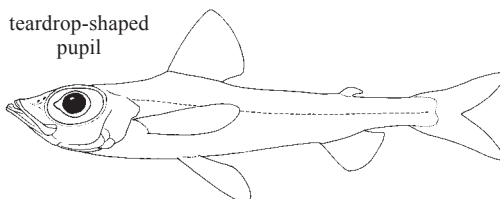
**Similar families occurring in the area**

Chlorophthalmidae: eye with teardrop-shaped pupil; lower jaw with bony tip; only 1 supramaxilla present; dorsal fin inserted before pelvic-fin insertion; tongue toothless.

Ipnopidae: lower jaw with fleshy tip; only 1 supramaxilla; dorsal fin inserted before pelvic-fin insertion; tongue toothless.

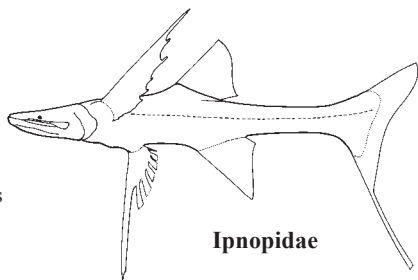
Synodontidae: jaws extending well behind eyes; gill rakers reduced to gill teeth or spines.

teardrop-shaped pupil



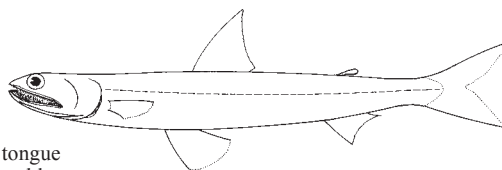
Chlorophthalmidae

tongue toothless



Ipnopidae

tongue toothless



Synodontidae

List of species occurring in the area

Aulopus nanae Mead, 1958. To about 35 cm TL. Widespread in Area 31.

References

Mead, G.W. 1958. A new species of iniomous fish from the Gulf of Mexico. *J. Wash. Acad. Sci.*, 48:188-191.

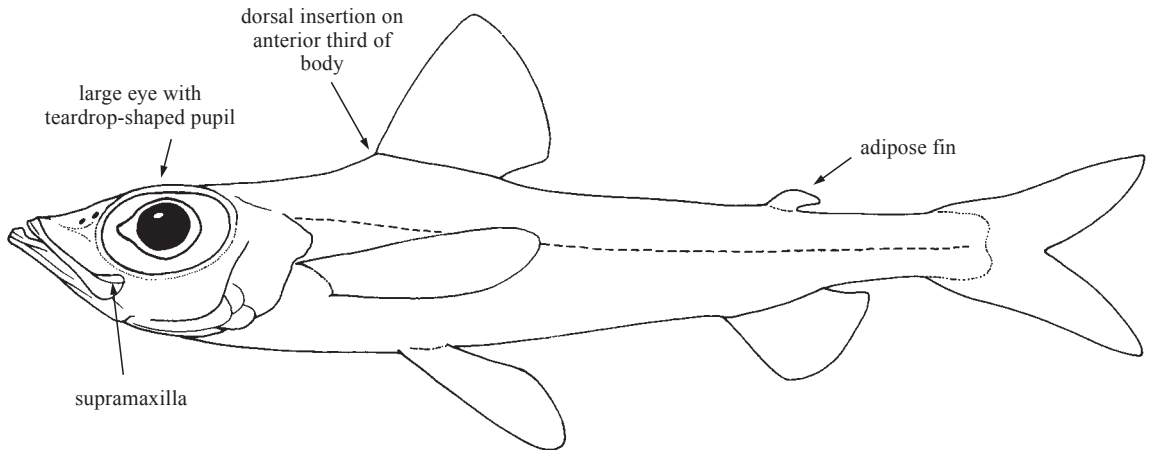
Mead, G.W. 1966. Family Aulopidae. In *Fishes of the Western North Atlantic. Sears Found. Mar. Res. Mem.* 1, Pt. 5. New Haven, Connecticut, Yale University, pp. 19-29.

CHLOROPHTHALMIDAE

Greeneyes

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Small (20 to 23 cm), slender aulopiform fishes, nearly oval in cross-section. Head about 30% standard length; **large eye with teardrop-shaped pupil and distinctive lensless space anteriorly**; snout is moderately long, somewhat depressed; lower jaw protrudes beyond upper jaw and ends in symphyseal knob; **maxilla is slightly expanded posteriorly, possessing a single supramaxilla, and extends to just behind front of eye**; **dorsal insertion on anterior third of body**. Dorsal fin with more rays than anal fin; dorsal-fin rays 10 or 11, anal-fin rays 7 to 9; **adipose fin located over middle of anal fin**; pectoral fin inserted below midflank anterior to both dorsal and pelvic fins, longer than pelvic fin, pectoral-fin rays 15 to 17; pelvic fins subthoracic, pelvic-fin rays 8 or 9; all fins lack spines. **Anus located closer to pelvic fins than to anal fin**; lateral line complete; scales either ctenoid or cycloid. **Colour:** body light brown to greenish sometimes with blotches; eye is green in live specimens.



Habitat, biology, and fisheries: Family benthic, captured at depths from 50 to 1 000 m. They are predators eating both fish and crustaceans. All are thought to be hermaphroditic. No fishery.

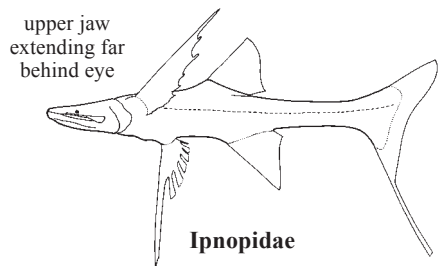
Remarks: Sulak (1977) recognizes an expanded family concept to include the nominal families Bathypetrolidae and Ipnopidae as a subfamily, Ipnopinae, within the Chlorophthalmidae. There is debate on limits and relationships within this family (Baldwin and Johnson, 1996). Sato and Nakabo (2002) removed 4 species, placing them in family Paraulopidae and placed *Bathysauropsis* in a monotypic family. A review of world literature suggests there are 3 genera and approximately 25 species.

Similar families occurring in the area

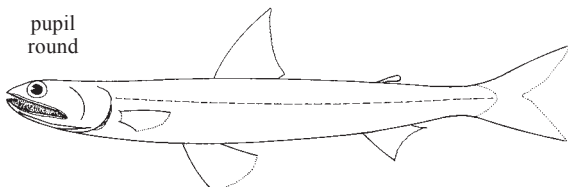
Ipnopidae: upper jaw extending far behind eye; dorsal fin inserted over or behind pelvic fins.

Synodontidae: pupil round; teeth present on tongue; gill rakers reduced to gill teeth or spines.

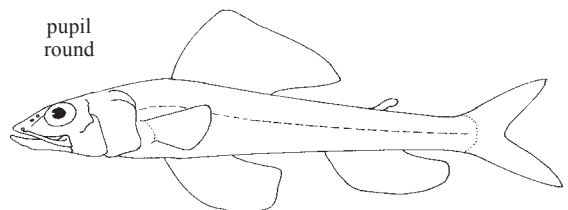
Aulopidae: pupil round; lower jaw without bony or fleshy tip; 2 supramaxillae; dorsal fin inserted behind pelvic fin insertion; teeth present on tongue.



Ipnopidae



Synodontidae



Aulopidae

Key to the genera of Chlorophthalmidae occurring in the area

- 1a. Anus closer to base of anal fin to base of pectoral fin; maxilla extends past rear of eye; dorsal-fin origin posterior to pelvic-fin origin *Bathysauropsis*
- 1b. Anus closer to pelvic-fin base than to anal-fin base; maxilla extends to front half of eye; dorsal-fin origin anterior to pelvic-fin origin → 2
- 2a. Eye diameter less than 1.25 in snout; anus close to base of inner pelvic-fin rays (Fig. 1), separated by 2 or 3 scales; vomerine teeth all small *Chlorophthalmus*
- 2b. Eye diameter greater than 1.25 in snout; anus well behind base of inner pelvic-fin rays (Fig. 2), separated by 8 to 10 scales; vomer with several large fang-like teeth *Parasudis*

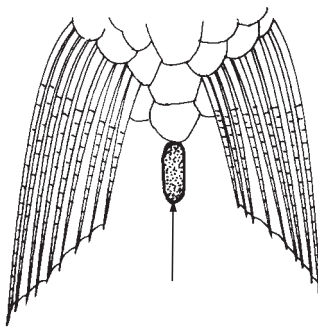


Fig. 1 *Chlorophthalmus*

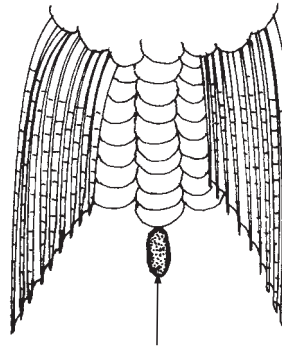


Fig. 2 *Parasudis*

List of species occurring in the area

Chlorophthalmus agassizi Bonaparte, 1840. To about 23 cm. Widespread in tropical to warm-temperate Atlantic.

Chlorophthalmus brasiliensis Mead, 1958. To about 20 cm. Widespread in tropical W Atlantic.

Parasudis truculenta (Goode and Bean, 1896). To about 25 cm. Widespread in temperate to tropical W Atlantic.

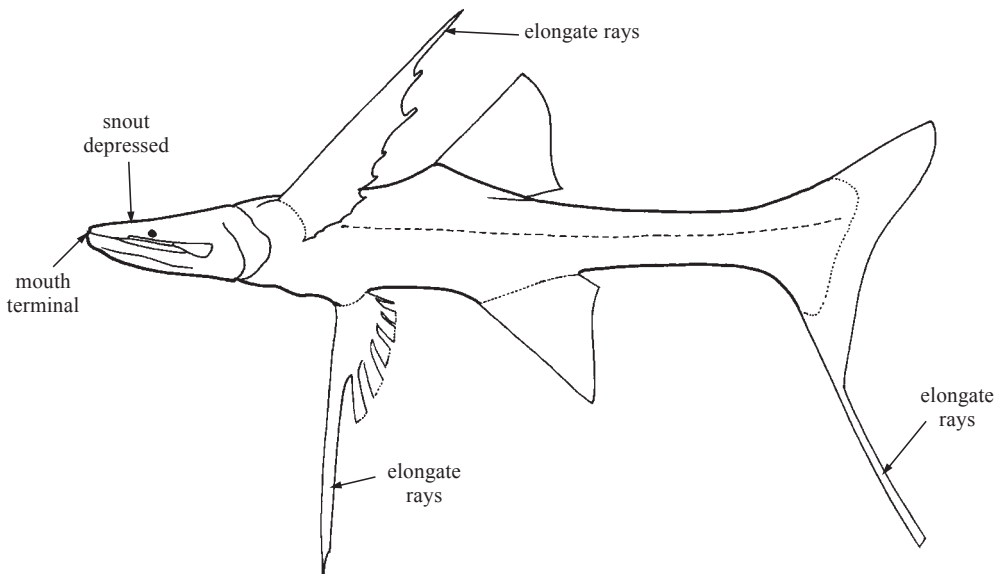
References

- Hartel, K.E. and M.L.J. Stiassny. 1986. The identification of larval *Parasudis* (Teleostei, Chlorophthalmidae); with notes on the anatomy and relationships of aulopiform fishes. *Breviora*, 487:1-23.
- McEachran, J.D. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico*, Vol. 1. Austin, University of Texas, pp. 555-557.
- Mead, G.W. 1958. Three new species of archibenthic inionomous fishes from the western north Atlantic. *J. Wash. Acad. Sci.*, 48:362-372.
- Mead, G.W. 1966. Family Chlorophthalmidae. In *Fishes of the Western North Atlantic. Sears Found. Mar. Res. Mem.* 1, Pt. 5. New Haven, Connecticut, Yale University, pp. 162-189.
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IPNOPIDAE**Tripod fishes**

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Small (13 to 30 cm), slender aulopiform fishes; body oval in cross-section, but snout is depressed, sometimes spatulate; mouth terminal, maxilla expanded posteriorly with a single supramaxilla; eye variously modified and reduced, often very small or vestigial, sometimes covered by skin and scales; broad, concave interorbit. Dorsal fin located on anterior third to half of body; dorsal fin may have more rays, fewer rays, or have the same number of rays as the anal fin; dorsal-fin rays not modified or elongate; adipose fin, when present, located posterior to anal-fin base; caudal fin forked, usually with lower lobe longer than upper lobe and may have elongate rays; pectoral fin variously modified, often with elongate rays; pelvic fin subthoracic, anterior to dorsal-fin insertion and may possess modified elongate rays anteriorly; all fins lack spines; dorsal-fin soft rays 9 to 15, anal-fin soft rays 8 to 17, pectoral-fin soft rays 12 to 21, pelvic-fin soft rays 8 or 9. Body and head scales decidedly cycloid; lateral line complete. Lateral-line scales 48 to 70. **Colour:** variable, many species black or black with white markings, other species pale or white.

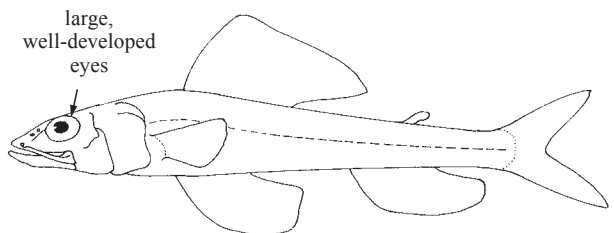


Habitat, biology, and fisheries: Found worldwide in tropical to temperate oceans, often very deep (500 to 6 000 m). Although poorly documented, reported to be benthic predators on small fishes, squids, and crustaceans. All species are thought to be synchronous hermaphrodites. No fishery.

Remarks: Twenty-eight species in 5 genera are recognized. Many species are poorly known, intra- and interspecific variation not well documented.

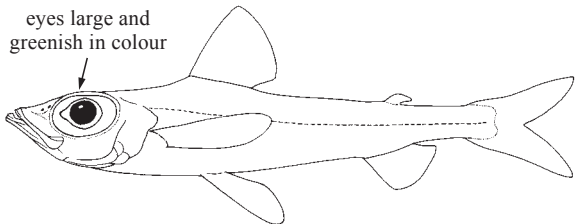
Similar families occurring in the area

Aulopidae: 2 supramaxilla present; teeth present on tongue; large well-developed eyes; dorsal-fin and pelvic-fin origin about even; many body scales spinoid; lateral line extends posterior to hypural plate; jaw extends only to posterior margin of eye.

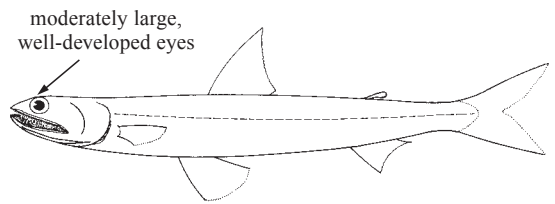
**Aulopidae**

Chlorophthalmidae: eyes large and greenish in colour with teardrop-shaped pupil; jaw at maximum extends to midpoint of eye; fins never with elongated rays.

Synodontidae: maxilla reduced; teeth present on tongue; fins never with elongated rays; usually with moderately large, well-developed eyes.



Chlorophthalmidae



Synodontidae

Key to the genera of Ipnopidae occurring in the area

- 1a. Elongate and specialized fin rays present *Bathypterois*
- 1b. Elongate and specialized fin rays absent → 2

- 2a. Top of head covered with thin, flattened bones (modified frontals and parietals) covering degenerate eyes *Ipnops*
- 2b. Top of head covered with skin, with frontals and parietals unmodified; eyes minute and laterally directed → 3

- 3a. Ten to 14 well-developed gill rakers on first arch; pectoral fins well in front of dorsal-fin origin *Bathymicrops*
- 3b. A single well-developed gill raker at junction of upper and lower arms of arch; pectoral fins just anterior to dorsal-fin origin *Bathytyphlops*

List of species occurring in the area

- Bathymicrops regis* Hjort and Koefoed, 1912. To 13 cm. Atlantic and Indo-West Pacific.
- Bathypterois bigelowi* Mead, 1959. To 15 cm. Confined to Florida, Gulf of Mexico, and Caribbean Sea.
- Bathypterois grallator* (Goode and Bean, 1886). To 40 cm. Warm-temperate Atlantic, Indian, And W Pacific oceans.
- Bathypterois longipes* Günther, 1878. To 27 cm. Widespread in Atlantic and C and E Pacific.
- Bathypterois phenax* Parr, 1928. To 20 cm. Warm-temperate to tropical Atlantic.
- Bathypterois quadrifilis* Günther, 1878. To 20 cm. Warm-temperate to tropical Atlantic.
- Bathypterois viridensis* (Roule, 1916). To 25 cm. Warm-temperate to tropical Atlantic.
- Bathytyphlops marionae* Mead, 1959. To 35 cm. Tropical Atlantic and W Indian oceans.
- Bathytyphlops sewelli* (Norman, 1939). To 32 cm. Temperate and tropical Atlantic and W Indian oceans.
- Ipnops murrayi* Günther, 1878. To 17 cm. Warm-temperate and tropical Atlantic.

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Nielson, J.G. 1966. Synopsis of the Ipnopidae (Pisces, Iniomi) with description of two new abyssal species. *Galathea Rept.*, 8:49-75.

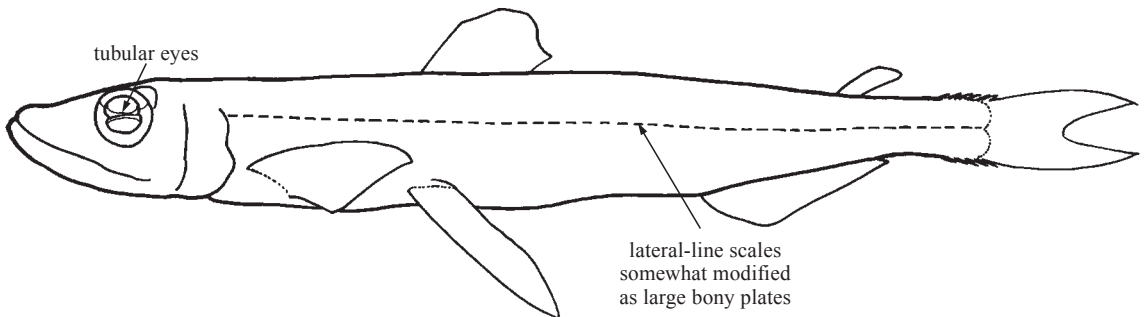
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SCOPELARCHIDAE

Pearleyes

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Small (5 to 15 cm), somewhat elongate, slender, and slightly compressed aulopiform fishes. Head about 25% standard length, snout variable in shape and length; interorbit narrow; **tubular eyes often directed dorsally**; **mouth terminal with lanceolate teeth in lower jaw and hooked teeth on tongue**; jaw extends past rear margin of eye; supramaxilla present in some species; **gill rakers modified into bony plates**. Dorsal fin inserts slightly anterior to midbody, soft dorsal-fin rays 6 to 9; adipose fin located above rear part of anal fin; anal fin with more rays than dorsal fin, soft anal-fin rays 18 to 29; caudal fin moderately forked; pectoral fins located on lower side of body anterior to both dorsal fin and pelvic fins and can be either shorter or longer than pelvic fins, soft pectoral-fin rays 18 to 28; pelvic fins located under dorsal fin, soft pelvic-fin rays 9 or 10; no modified or elongate fin rays; no spines in any fins; **body and part of head covered with cycloid scales**; **lateral-line scales somewhat modified as large bony plates with a large pore partially covered by tympanum**; swimbladder absent; several species have luminous tissue; lateral-line scales 40 to 59. **Colour:** brown, brassy to black, some iridescence, some species with dark band at or above and below lateral line.



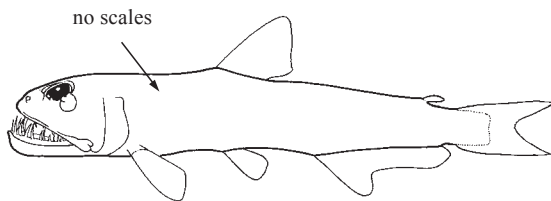
Habitat, biology, and fisheries: Found in tropical oceans, worldwide; meso- and bathypelagic at 500 to 1 000 m. Predators on a variety of pelagic fishes. The family considered to be synchronous hermaphrodites. No fishery.

Remarks: Johnson (1974a) recognized 17 species in 4 genera.

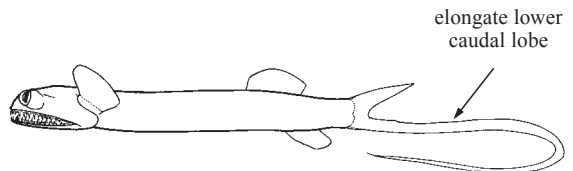
Similar families occurring in the area

Evermannellidae: tongue toothless; no body or lateral-line scales; dorsal fin with 10 to 13 rays.

Giganturidae: tongue toothless; elongate lower caudal lobe; scales and lateral line absent; pelvic fins absent in adults; pectoral fins high on body.



Evermannellidae



Giganturidae

Key to the genera (adults only) of Scopelarchidae occurring in area

(modified from Johnson, 1974a)

- 1a. Equal or subequal pigment stripes above and below lateral line extending forward from caudal peduncle; pectoral fin greater than pelvic fin in length; pectoral fin with 18 to 22 soft rays; no distinct concentration of pigment on upper caudal-fin lobe **Scopelarchus**
- 1b. No distinct pigment stripes above and below lateral line extending forward from caudal peduncle; pectoral fin less than or equal to pelvic fin in length; pectoral fin with 20 to 28 soft rays; distinct concentration of pigment on upper caudal-fin lobe → 2
- 2a. Pelvic-fin insertion distinctly anterior to dorsal-fin insertion → 3
- 2b. Pelvic-fin insertion under or posterior to dorsal-fin insertion **Scopelarchoides**
- 3a. Pectoral fin with 25 to 28 rays; pectoral fin less than pelvic fin in length; lateral-line scales 55 to 59; luminous tissue present **Benthalbella**
- 3b. Pectoral fin with 21 to 26 rays; pectoral fin equal to pelvic fin in length; lateral-line scales 47 to 53; luminous tissue absent **Rosenblattichthys**

List of species occurring in the area

- Benthalbella infans* Zugmayer, 1911. To 15 cm. Warm-temperate to tropical oceans worldwide.
- Rosenblattichthys hubbsi* Johnson, 1974. To 16 cm. Subtropical and tropical oceans worldwide.
- Scopelarchoides danae* Johnson, 1974. To 13 cm. Tropical oceans worldwide.
- Scopelarchus analis* (Brauer, 1902). To 13 cm. Warm-temperate to tropical oceans worldwide.
- Scopelarchus guentheri* Alcock, 1896. To 13 cm. Subtropical and tropical oceans worldwide.
- Scopelarchus michaelsarsi* Koefoed, 1955. To 11 cm. Subtropical and tropical oceans worldwide.

References

Johnson, R.K. 1974a. Five new species and a new genus of alepisauroid fishes of the family Scopelarchidae (Pisces: Myctophiformes). *Copeia*, 1974:449-457.

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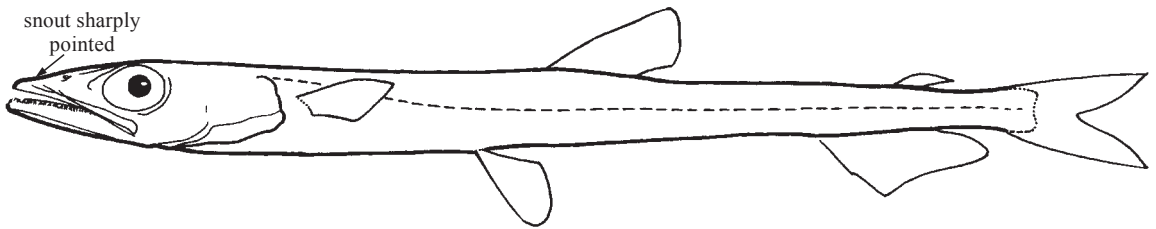
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NOTOSUDIDAE

Waryfishes

by B. A. Thompson, Louisiana State University, USA

Diagnostic characters: Small to moderately large (10 to 50 cm), slender, elongate aulopiform fishes. Head variable in length; nontubular eye large, placed laterally on head; **snout long, sharply pointed, and somewhat depressed; jaw extends close to rear of eye; jaw teeth small, no enlarged fangs.** Dorsal fin located midway on body, soft dorsal-fin rays 10 to 13; adipose fin above anal fin; anal fin placed far back on body, with more fin rays than dorsal fin, soft anal-fin rays 17 to 21; pectoral fins placed at or above midline of sides, longer than pelvic fin, soft pectoral-fin rays 10 to 15; pelvic fins found anterior to dorsal fin insertion, soft pelvic-fin rays 9. **Body and head covered with large, deciduous, cycloid scales;** photophores absent; lateral line complete; lateral-line scales 46 to 64. **Colour:** brown to black, head and opercle often black, some with silver on body.

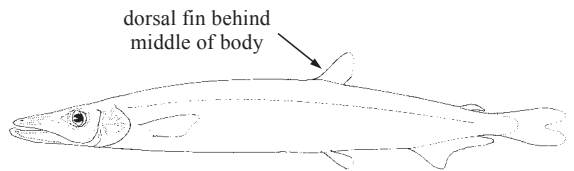


Habitat, biology, and fisheries: Found in tropical and temperate oceans, worldwide. They are usually epi- to upper-bathypelagic, some species more demersal. Larvae are epipelagic. They feed on zooplankton, small fishes, and crustaceans. With maturity, gill rakers and teeth are lost. All species thought to be synchronous hermaphrodites. No fishery.

Remarks: Formerly placed in family Scopelosauridae. Bertelsen, et al. (1976) recognized 19 species in 3 genera.

Similar families occurring in the area

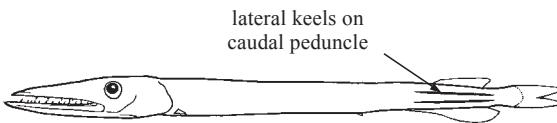
Paralepididae: dorsal fin behind middle of body; teeth slender canines; anal fin rays 20 to 50; pectoral fin set lower on body; gill rakers reduced to gill teeth or spines.



Paralepididae

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

Omosudidae: massive lower jaw; lateral keel on caudal peduncle; pectoral fins low on body; dorsal fin slightly behind middle of body.



Anoptopteridae



Omosudidae

Key to the genera of Notosudidae occurring in the area

- 1a. Pelvic fin inserts below or just in front of dorsal-fin origin; posterior infraorbital bones simple half-tubes *Ahliesaurus*
- 1b. Pelvic fin inserts distinctly in front of dorsal-fin origin; posterior infraorbital bones with posterior expansions. *Scopelosaurus*

List of species occurring in the area

Ahliesaurus berryi Bertelsen, Krefft and Marshall, 1976. to 30 cm. Subtropical and tropical Atlantic, Indian, and C Pacific oceans.

Scopelosaurus argenteus (Maul, 1954). To 24 cm. Temperate and tropical Atlantic above equator.

Scopelosaurus lepidus (Krefft and Maul, 1955). To 38 cm. N to tropical Atlantic.

Scopelosaurus maui Bertelsen, Krefft and Marshall, 1976. To 11 cm. Subtropical and tropical W Atlantic, W Indian, and W Pacific oceans.

Scopelosaurus smithii Bean, 1925. To 25 cm. Worldwide in warm-temperate to tropical waters.

References

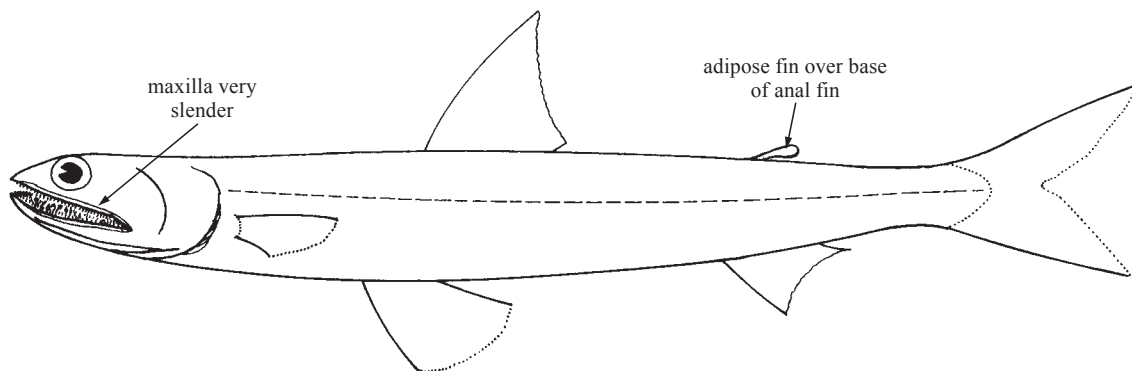
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- Krefft, G. 1986. Notosudidae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra, Johannesburg, Macmillan South Africa, pp. 268-270.
- McEachran, J.D. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico*, Vol. 1. Austin, University of Texas, pp.568-574.

SYNODONTIDAE

Lizardfishes

by B.C. Russell, Northern Territory Museum, Darwin, Australia

Diagnostic characters: Small to medium-sized (to 45 cm) fishes with **elongate cylindrical body**. Head of some compressed, others depressed; bony surfaces on top of head, little to very rugose. Eye of moderate size or small; laterally directed. **Adipose eyelid on anterior and posterior margins of eye**. Mouth large, gape tending to be oblique. Upper jaw not protractile, its entire length bordered by premaxillary, its length more than half length of head and extending well past posterior margin of orbit in adult specimens; **maxilla reduced (very slender and closely adherent to premaxilla in *Saurida*, *Synodus*, and *Trachinocephalus*); 2 small supramaxillae present (*Saurida*) or absent (*Synodus* and *Trachinocephalus*)**. Lower jaw with or without a fleshy knob at its tip. Teeth of moderate size, depressible; no distinct canines; **teeth on palatines (present in a single band in *Synodus* and *Trachinocephalus*, or 2 bands in *Saurida*) and on tongue. Vomer present (*Saurida*) or absent (*Synodus*, *Trachinocephalus*)**. Gill openings large; gill membranes free from isthmus; 4 gill arches, extending far forward into mouth, well in advance of the angle of gape. Opercular flap with free edge formed by both opercle and subopercle. Gill rakers rudimentary or minute and spine-like. **Branchiostegals 12 (*Trachinocephalus*), 13 (*Saurida*), or 15 to 18 (*Synodus*)**. **Head and body with cycloid scales. Scales present on both procurrent and primary caudal-fin soft rays (*Saurida*), present only on procurrent rays (*Trachinocephalus*), or absent (*Synodus*)**. Fins with articulated soft rays except a few anterior secondary caudal-fin rays, none greatly prolonged. **Dorsal fin about midway on back**, posterior to pelvic-fin insertion; the first 2 rays always unbranched, the others usually branched, the last ray always branched to its base. **Adipose fin over base of anal fin**. **Anal fin posterior to end of dorsal fin**; the first 2 rays always unbranched, the other rays branched or unbranched, the last ray always branched to its base. Caudal fin forked, with 19 principle rays, 17 branched rays. Pectoral fins not reaching to or extending beyond origin of pelvic fins; the first and last rays always unbranched, the other rays usually branched. **Pelvic fins with 8 (*Synodus*, *Trachinocephalus*) or 9 rays (*Saurida*)**, fins close together and inserted abdominally, posterior to pectoral-fin origin and anterior to dorsal-fin origin; the first and last rays unbranched, all other rays branched; **inner rays of pelvic fins subequal or slightly longer than outer rays (*Saurida*) or distinctly longer than outermost rays (*Synodus*, *Trachinocephalus*)**. Anus located just anterior to anal-fin origin. **Colour:** variable, but often brown, reddish, or silvery, with red, yellow, or blue markings; peritoneum either pale with 5 to 11 black spots on each side of midventral line, or black.

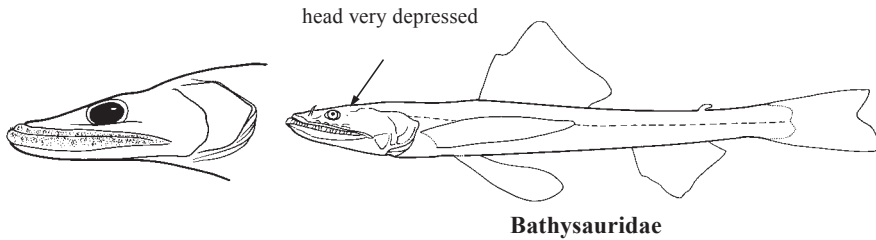
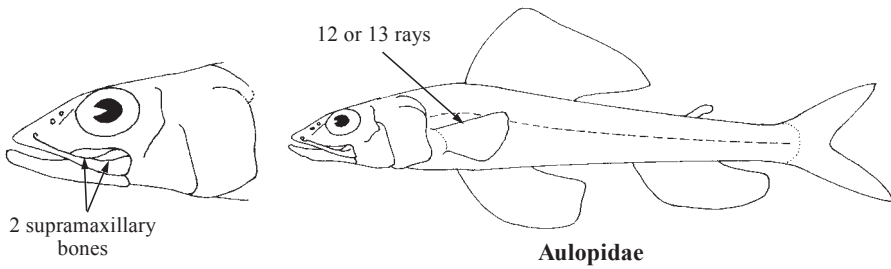


Habitat, biology, and fisheries: Marine, bottom-living fishes found on coral and rock, or mud and sand bottoms in coastal, estuarine, and offshore shelf waters. Most species occur in shallow water, but there are records to depths as great as 545 m. Voracious predators, feed mainly on other small fishes and crustaceans. Spawning and larval development is reported for *Synodus*, with release of gametes occurring in midwater up to 4 m above the substrate. Eggs are small to medium-sized (0.8 to 1.1 mm). Larvae are distinctive in possessing paired spots or patches of dark pigment in the lining of the peritoneum and along the midventral line of the anal fin and caudal peduncle. The spots persist internally in adults and are an aid to identification. Lizardfishes are of little interest to fisheries in the area, being taken mainly incidentally to other fishing operations in a few areas, and then not usually utilized. They occasionally appear as poorer foodfishes in some fish markets. Caught mainly with bottom trawls or occasionally by hook-and-line.

Similar families occurring in the area

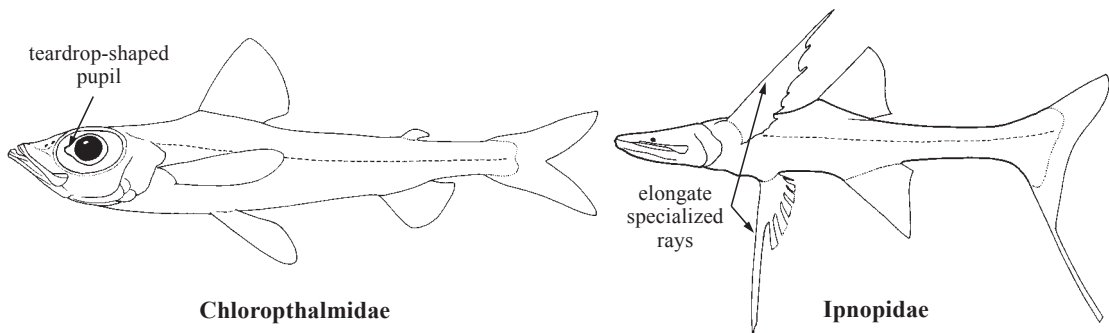
Aulopidae: mouth moderate, upper jaw reaching rear end of eye; 2 supramaxillary bones; adipose fin present; pectoral fins with 12 or 13 rays, the uppermost rays usually longest; pelvic fins with 9 rays; procurent and principle rays of caudal fin without scales; branchiostegal rays 15 or 16; gill rakers normal, lath-like shape; well-developed bony fulcral scale in front of caudal fin.

Bathysauridae: head very depressed; eyes set well back from snout; dorsal-fin base about equal to head length; adipose fin absent; pectoral fins with 15 rays, central ray or rays prolonged; pelvic-fin rays 8, inner rays slightly shorter than outer rays; lateral-line scales enlarged; procurent and principle rays of caudal fin with a row of scales; branchiostegal rays about 12; teeth present on vomer; gill rakers reduced to patches of spines.



Chlorophthalmidae: eyes large, with teardrop-shaped pupil, tapetum of eye brilliant green in freshly caught specimens; mouth moderate, upper jaw not extending behind midpoint of eye; 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.

Ipnopidae: eyes always specialized, either minute (*Bathymicrops*, *Bathypterois*, *Bathytyphlops*), large (*Bathysauropsis*), or flat, directed dorsally, and lensless (*Ipnops*); mouth large, the 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; adipose fin present or absent; anal fin inserted under or well behind level of dorsal fin, with 7 to 19 rays; pelvic fins in anterior half of body, often elongate, with 7 to 9 rays; pectoral fin with 9 to 24 rays; caudal fin and paired fins with elongate specialised rays in *Bathypterois*; gill rakers normal, lath-like, or reduced to low rugose knobs.



Key to the species of Synodontidae occurring in the area

Note: The Atlantic species of *Synodus* and *Saurida* are in urgent need of revision and the key to species and nomenclature of these genera should be regarded as provisional.

- 1a. Pelvic fin rays 8, the inner rays distinctly longer than outermost rays (Fig. 1a) → 2
- 1b. Pelvic fin rays 9, the inner rays subequal or slightly longer than outer rays (Fig. 1b) → 7

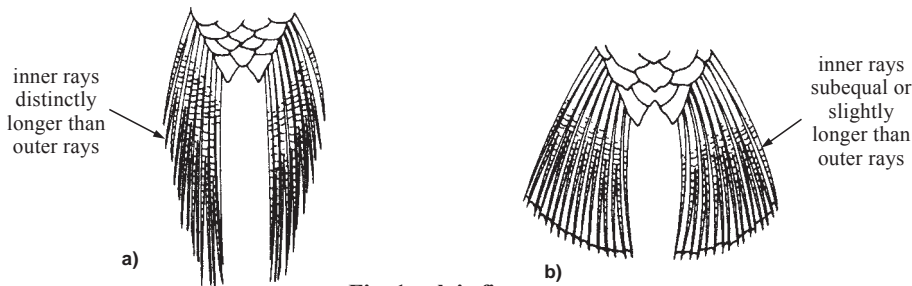


Fig. 1 pelvic fins

- 2a. Anal-fin rays 15 to 17; length of anal-fin base longer than dorsal-fin base (Fig. 2a); scales present on procurrent caudal-fin rays (Fig. 3a) *Trachinocephalus myops*
- 2b. Anal-fin rays 8 to 11; length of anal-fin base shorter than dorsal-fin base (Fig. 2b); no scales on procurrent caudal-fin rays (Fig. 3b) → 3

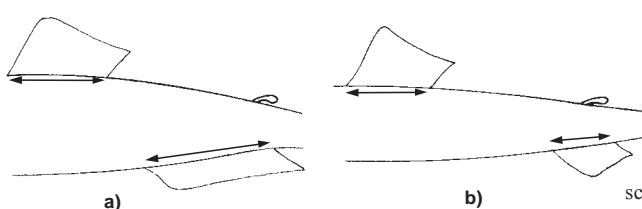


Fig. 2 lateral view of body

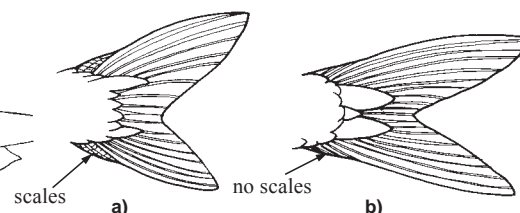


Fig. 3 caudal fin

- 3a. Scales in lateral line 43 to 50 (rarely 51 or 52) → 4
- 3b. Scales in lateral line 55 to 64 (rarely 54 or 65) → 5

- 4a. Dorsal fin with anterior rays not extending beyond, but occasionally extending to, tips of the succeeding rays when laid back; lower jaw rounded anteriorly, without fleshy knob; black patch on shoulder girdle under gill cover *Synodus intermedius*
- 4b. Dorsal fin with anterior rays extending to or usually beyond tips of succeeding rays when laid back; lower jaw ending in fleshy knob; no black patch on shoulder girdle under gill cover *Synodus poeyi*

- 5a. Three rows of complete scales between lateral line and base of dorsal fin *Synodus saurus*
- 5b. Four to six rows of complete scales between lateral line and base of dorsal fin → 6

- 6a. Snout triangular and sharply pointed, its length greater than diameter of eye; length of anal-fin base about equal to or usually longer than dorsal-fin base (rarely shorter); tip of pectoral fin falling short of or just reaching of pelvic-fin base; predorsal scales 20 to 30 *Synodus foetens*
- 6b. Snout rounded and blunt, its length less than diameter of eye; length of anal-fin base much shorter than dorsal-fin base; tip pectoral fin extending well beyond base of pelvic fin; predorsal scales 15 to 18 *Synodus synodus*





- 7a. Lower jaw shorter than upper jaw, not visible from above when mouth is closed. . . . *Saurida normani*
- 7b. Lower jaw longer than upper jaw, distinctly visible from above when mouth is closed → 8






- 8a. Scales in lateral line 40 to 50 *Saurida brasiliensis*
- 8b. Scales in lateral line 51 to 60 → 9


- 9a. Three rows of complete scales between lateral line and base of dorsal fin; pectoral fin with tip reaching to or barely past origin of pelvic fin, its length 10.9 to 12.8% of standard length *Saurida suspicio*
- 9b. Four rows of complete scales between lateral line and base of dorsal fin; pectoral fin with tip reaching much beyond origin of pelvic fin, its length 17.5 to 20.0% of standard length *Saurida caribbaea*

List of species occurring in the area

The symbol  is given when species accounts are included.

-  *Saurida brasiliensis* Norman, 1935.
-  *Saurida caribbaea* Breder, 1927.
-  *Saurida normani* Longley, 1935.
-  *Saurida suspicio* Breder, 1927.

-  *Synodus foetens* (Linnaeus, 1758).
-  *Synodus intermedius* (Spix, 1829).
-  *Synodus poeyi* Jordan, 1887.
-  *Synodus saurus* (Linnaeus, 1758).
-  *Synodus synodus* (Linnaeus, 1758).

-  *Trachinocephalus myops* (Forster, 1801).

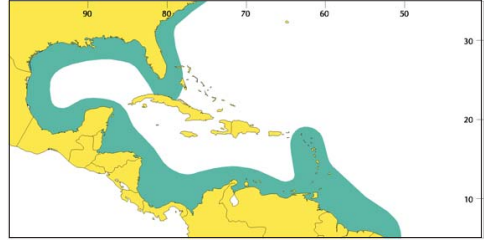
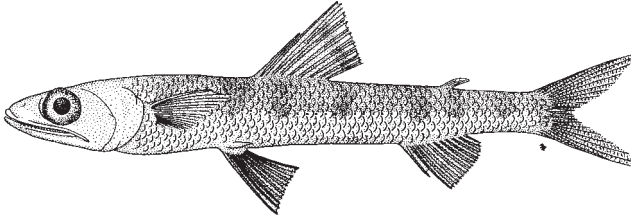
Reference

Anderson, W.W., Gehringer, J.W., and F.H. Berry. 1966. Family Synodontidae. In *Fishes of the Western North Atlantic. Mem. Sears Found. Mar. Res.*, 1(5):30-102.

Saurida brasiliensis Norman, 1935

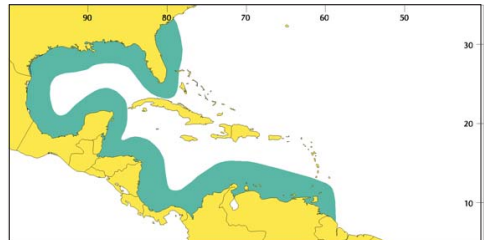
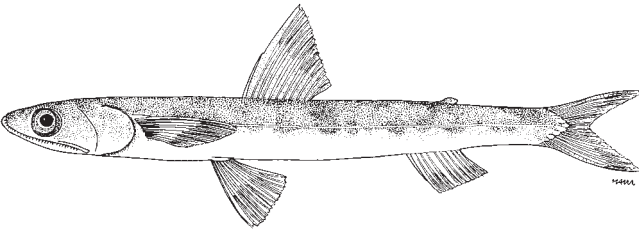
En - Brazilian lizardfish (AFS: Largescale lizardfish); **Fr** - Anoli brasil; **Sp** - Lagarto Brasil.

Maximum size to 17 cm; commonly to 12 cm. Inhabits offshore bottom areas of open ocean in depths of 18 to 400 m, not found inshore at any size. Of no importance to fisheries. Occurs from North Carolina to northern Brazil (about 5°N), including the Gulf of Mexico and Caribbean Sea. Also recorded from off West Africa.

***Saurida caribbaea*** Breder, 1927

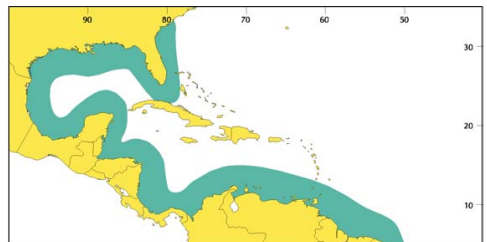
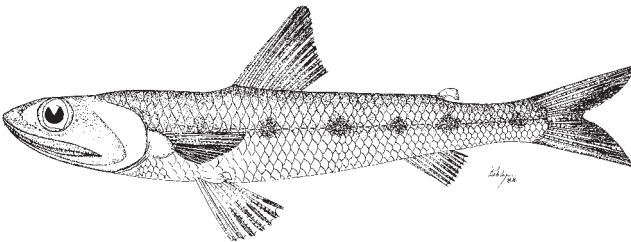
En - Caribbean lizardfish (AFS: Smallscale lizardfish); **Fr** - Anoli des Caraïbes; **Sp** - Lagarto Caribeño.

Maximum size to 13 cm; commonly to 10 cm. Inhabits offshore bottom areas of the continental shelf and slope in depths of 10 to 450 m; occasionally occurs in shallow inshore waters. Of no importance to fisheries. Occurs from northeastern Florida to Venezuela (about 9°N), including the Gulf of Mexico and West Indies.

***Saurida normani*** Longley, 1935

En - Shortjaw lizardfish; **Fr** - Anoli Norman; **Sp** - Lagarto dientón.

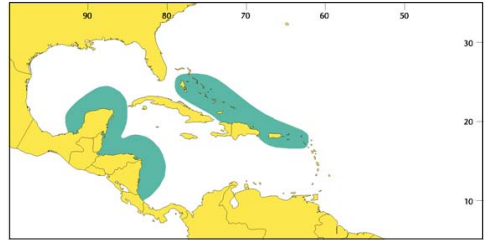
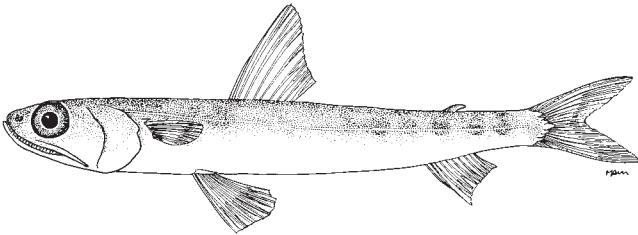
Maximum size to 33 cm; commonly to 30 cm. Inhabits offshore bottom areas of the continental shelf and slope in depths of 40 to 545 m; not found inshore at any size. Of minor importance to fisheries. Occurs from South Carolina to Suriname (about 7°N), including the Gulf of Mexico and Caribbean Sea.



***Saurida suspicio* Breder, 1927**

En - Doubtful lizardfish.

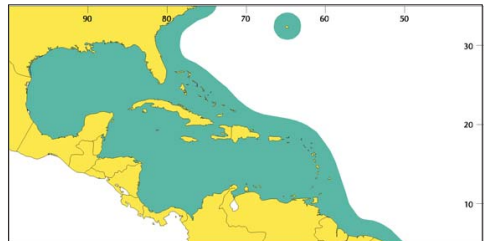
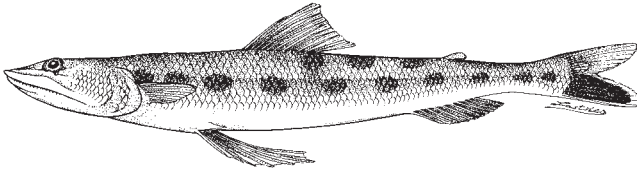
Maximum size to 7 cm. This rare species has only been taken near the surface or in shallow water near shore or over reefs. Of no importance to fisheries. Known only from the Bahamas and Caribbean Sea.



***Synodus foetens* (Linnaeus, 1758)**

En - Inshore lizardfish; **Fr** - Anoli des plages; **Sp** - Lagarto playero.

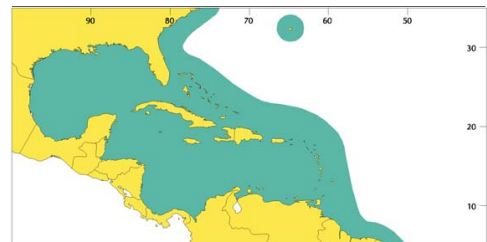
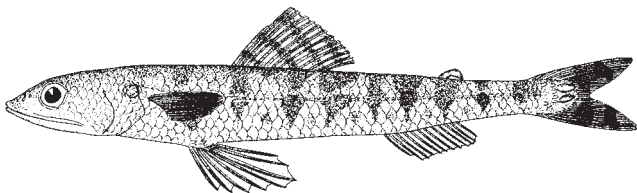
Maximum size to about 40 cm; commonly to about 30 cm; world game record 0.9 kg. Inhabits shallow inshore waters in salt-water creeks, rivers, bays, and sounds and along open beaches on mud or sand bottoms; also ranges out over the continental shelf to depths of 180 m. A voracious predator that buries itself in the sand or mud to ambush prey; feeds mainly on fishes and small mobile invertebrates. Apparently a seasonal migrant in the northern part of its range. Of little importance to fisheries; taken incidentally in shrimp trawls and seldom marketed. Widely distributed along the Atlantic coast of the American continents from the vicinity of Cape Cod to Brazil, including Bermuda and the Caribbean Sea.



***Synodus intermedius* (Spix, 1829)**

En - Sand diver; **Fr** - Anoli de sable; **Sp** - Lagarto mato.

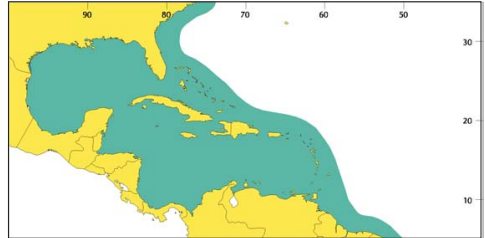
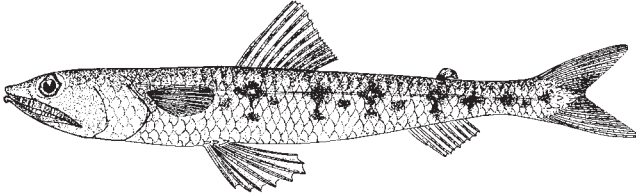
Maximum size to about 40 cm; commonly to about 25 cm. Inhabits mainly inshore bottoms usually in depths of less than 35 m, but recorded as deep as 316 m. Habits similar to *S. foetens*. Of little importance to fisheries; taken only incidentally in a few areas. Marketed in Haiti as a poor foodfish. Widely distributed along the Atlantic coast of the American continents from North Carolina to Brazil, including Bermuda and the Caribbean Sea.



Synodus poeyi Jordan, 1887

En - Poey's lizardfish (AFS: Offshore lizardfish); **Fr** - Anoli Poey; **Sp** - Lagarto Poey.

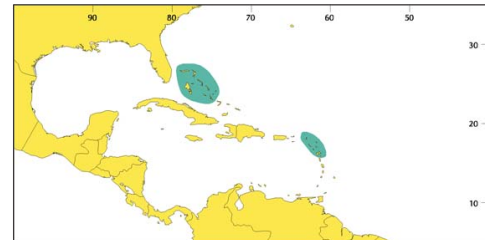
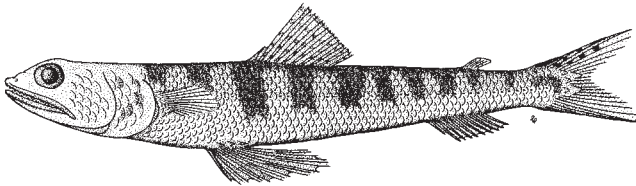
Maximum size 20 cm. Inhabits offshore bottom areas in depths down to about 315 m, but more commonly found shallower than 180 m; not found inshore at any size. Of little importance to fisheries; taken incidentally with other catches and not utilized. Occurs from North Carolina to Suriname (about 7°N), including the Gulf of Mexico and Caribbean Sea.

***Synodus saurus*** (Linnaeus, 1758)

SDR

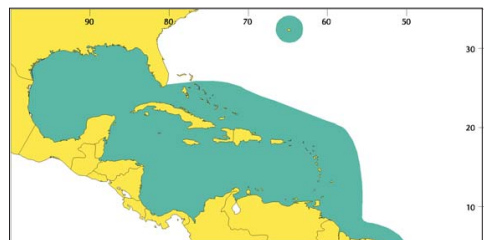
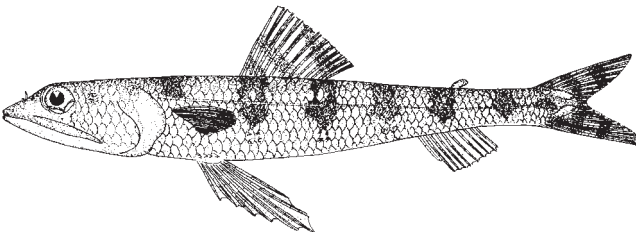
En - Atlantic lizardfish (AFS: Bluestripe lizardfish); **Fr** - Anoli saury; **Sp** - Lagarto saury.

Maximum size about 40 cm; commonly to about 12 cm. Inhabits shallow bottom areas usually in depths less than 20 m. Of no importance to fisheries. An insular species, recorded only from the Bahamas and the Leeward islands, West Indies (records from Bermuda are not substantiated). Also occurs in the eastern Atlantic and Mediterranean Sea.

***Synodus synodus*** (Linnaeus, 1758)

En - Redbarred lizardfish (AFS: Red lizardfish).

Maximum size about 30 cm; commonly 15 cm. Inhabits mainly inshore bottoms and shallower areas of the continental shelf down to about 90 m depth. Of little importance to fisheries. Occurs in Bermuda, and from the Gulf of Mexico through the West Indies, south to Uruguay. Also occurs in the eastern Atlantic.

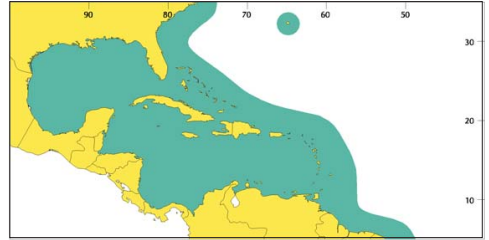
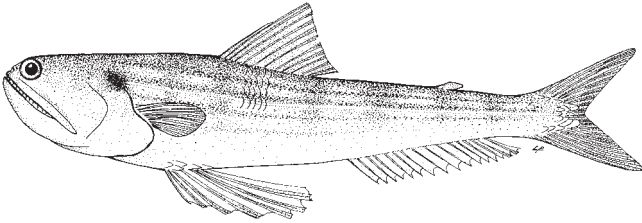


Trachinocephalus myops (Forster, 1801)

TCY

En - Snakefish (=Bluntnose lizardfish); **Fr** - Anoli serpent; **Sp** - Lagarto ñato.

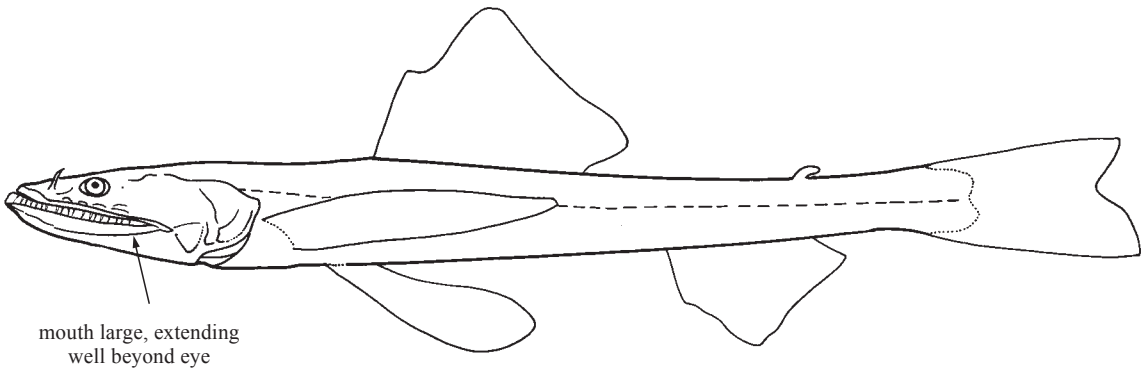
Maximum size about 25 cm. Inhabits inshore and offshore bottom areas in depths down to about 365 m, but more commonly found in midshelf areas in depths between 25 and 90 m. Of little importance to fisheries, sometimes taken incidentally with other catches. Pantropical with the exception of the eastern Pacific. In Area 31 it infrequently occurs as far north as Cape Cod, but more commonly southward from North Carolina to equatorial Brazil, including Bermuda, the Bahamas, and the Gulf of Mexico; also recorded from the mid-Atlantic islands of Ascension and St. Helena.



BATHYSAURIDAE**Deepsea lizardfishes**

by B.C. Russell, Northern Territory Museum, Darwin, Australia

Diagnostic characters: Large (to 70 cm) aulopiform fishes, **Head very depressed; eyes small**, set well back from snout; **mouth very large, upper jaw extending well beyond rear end of eye**; dorsal fin about equal to head length, inserted shortly behind pelvic-fin insertion, with 15 to 18 soft rays; dorsal adipose fin present or absent; anal fin posterior, with 11 to 14 soft rays; pectoral fin with 15 to 17 soft rays, central ray or rays of pectoral fin usually prolonged; pelvic fin with 8 soft rays, inner rays slightly shorter than outer rays; **procurent and principle rays of caudal fin with a row of scales**; branchiostegal rays 8 to 13; teeth present on vomer; **gill rakers reduced to patches of spines on the arches**. **Colour:** whitish, grey, or brown.



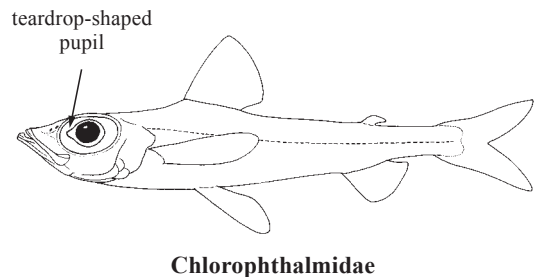
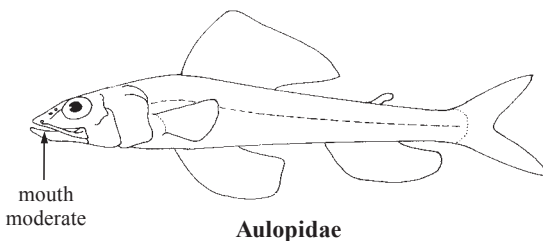
Habitat, biology, and fisheries: Bottom dwelling deep sea fishes of slope and abyss at depths below 1 000 m. Predominantly piscivorous, feeding on demersal and bathypelagic fishes, and occasional large benthic or nektonic crustacea. Synchronous hermaphrodites; post-larvae are pelagic. Typical deep sea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

Remarks: A single genus with 2 species, circumglobal in tropical and temperate latitudes (65° N to 40° S).

Similar families occurring in the area

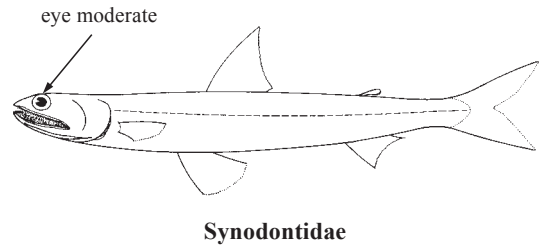
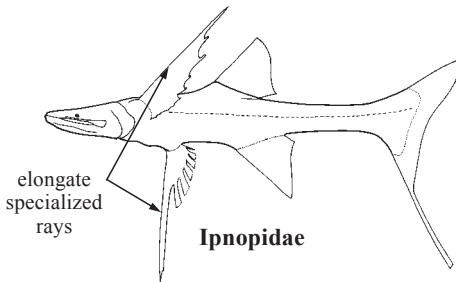
Aulopidae: mouth moderate, upper jaw mostly not reaching rear end of eye; dorsal adipose fin present; pectoral fin with 11 to 14 soft rays, uppermost rays usually longest; pelvic fin with 9 soft rays; procurent and principle rays of caudal fin without scales; branchiostegal rays about 16; gill rakers 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 soft rays; pectoral fin with 15 to 19 soft rays, uppermost rays usually longest; pelvic fin with 8 or 9 rays; gill rakers normal, lath-like shape.



Ipnopidae: eye always specialized, either minute (*Bathymicrops*, *Bathypterois*, *Bathytyphlops*), large (*Bathysauropsis*), or flat, directed dorsally, and lensless (*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 soft rays; dorsal adipose fin present or absent; anal fin under to far behind dorsal fin, with 7 to 19 soft rays; pelvic fin in anterior half of body, often elongate, with 7 to 9 soft rays, pectoral fin with 9 to 24 soft 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 soft rays; dorsal adipose fin usually present; pelvic-fin soft rays 8 (*Synodus*, *Trachinocephalus*) or 9 (*Saurida*), inner rays subequal or slightly longer than outer rays (*Saurida*), or about 2 to 3 times longer than outermost rays (*Synodus*, *Trachinocephalus*); procurent and principle rays of caudal fin with a row of scales (*Saurida*) or caudal fin without scales (*Synodus*, *Trachinocephalus*); branchiostegal rays 12 (*Trachinocephalus*) 13 (*Saurida*) or 15 to 18 (*Synodus*); gill rakers rudimentary or minute, spine-like.



List of species occurring in the area

Bathysaurus ferox Günther, 1878. To 64 cm SL. Widespread temperate and tropical.

Bathysaurus mollis Günther, 1878. To 78 cm SL. Circumglobal temperate and tropical except E Pacific.

Reference

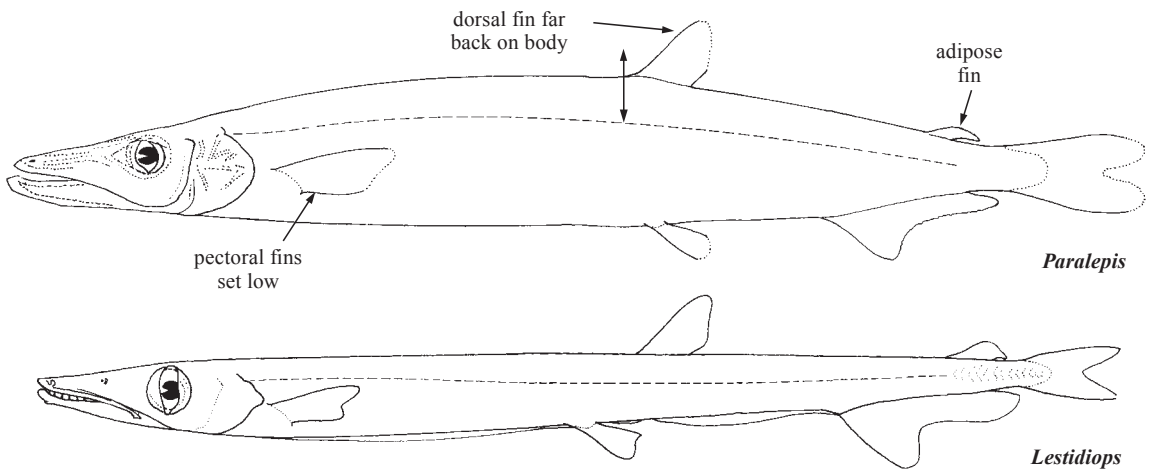
Sulak, K.J., C.A. Wenner, G.R. Sedberry, and L. Van Guelpen. 1985. The life history and systematics of deep-sea lizard fishes, genus *Bathysaurus* (Synodontidae). *Can. J. Zool.*, 63:623-642.

PARALEPIDIDAE

Barracudinas

By B.A. Thompson, Louisiana State University, USA (after Post, 1977)

Diagnostic characters: Small to medium-sized (6 to 56 cm), very elongate and slender aulopiform fishes; cross-section of body oval or compressed. Eye medium to large, nontubular, located on side of head; snout very long and pointed with terminal mouth, but lower jaw projects as fleshy process; mouth extends to front of eye or under middle of eye; teeth small; **alternately fixed and depressible fang-like teeth on lower jaw and roof of mouth**; single small supramaxilla on dorsal edge of maxilla. **Gill rakers reduced to small multiple spines set on bony plates.** Dorsal-fin origin at midpoint of body either above pelvic fins or over space between pelvic fins and anal fin; dorsal fin with 8 to 13 soft rays. Adipose fin located over rear part of anal fin and, in addition, several species possess a ventral adipose fin. Anal fin with 20 to 42 soft rays. Caudal fin deeply forked. Pectoral fins set low on body and slightly longer than or same length as pelvic fins, rarely pelvic fins are longer than pectoral fins; pectoral fin with 10 to 17 soft rays; pelvic fins with 8 or 9 soft rays. No elongate or modified fin rays. Specialized lateral-line scales covered with tympanum; usually only scales on body, but few species possess other body scales; 51 to 92 lateral-line scales when present. Swimbladder absent. **Color:** iridescent silver, some species with spotted or blotched body pattern.



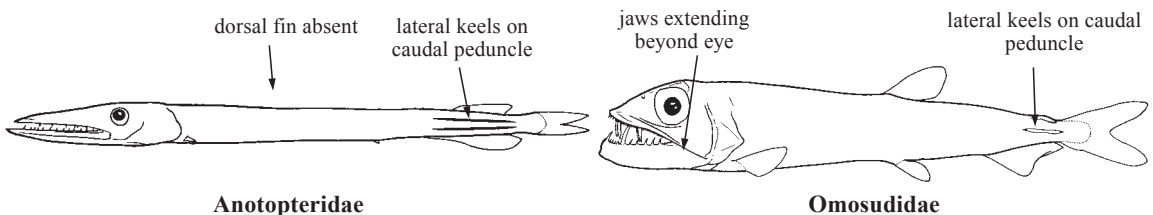
Habitat, biology, and fisheries: Found from polar regions to tropics worldwide, but most common in tropics. Generally meso- to bathypelagic, but can be found from the surface to about 800 m. Feeds on small fishes. Some species have separate sexes, others are synchronous hermaphrodites. No fishery.

Remarks: There remains some disagreement concerning the number of valid species and generic placement of members of this family, perhaps 12 genera and 50 to 55 species.

Similar families occurring in the area

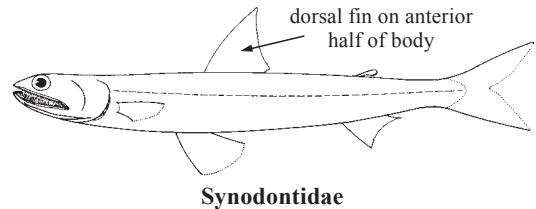
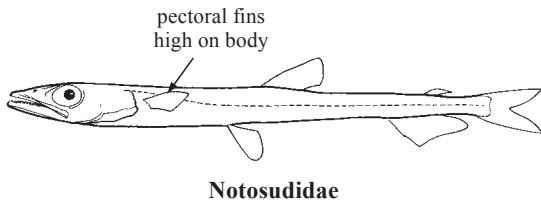
Anotopteridae: dorsal fin absent; lateral keels on caudal peduncle; no gill rakers; anal fin with 14 to 16 soft rays.

Omosudidae: jaws extending beyond eye; lateral keel on caudal peduncle; massive lower jaw; palatines with large fangs.



Notosudidae: gill rakers lath-like, not in the form of teeth or spines; pectoral fins fully lateral in position, set higher on body than in Paralepididae; anal fin moderately short, with 16 to 21 rays; branchiostegal rays 4 to 6 (8 in Paralepididae).

Chlorophthalmidae and Synodontidae: dorsal fin set on anterior half of body; anal fin short.



List of species occurring in the area

Note: All sizes are total length.

Arctozenus risso (Bonaparte, 1840). To 31 cm. Widespread in world oceans from Arctic to Antarctic.

Dolichosudis fuliginosa Post, 1969. To 40 cm. Tropical Atlantic, NE and W Pacific.

Lestidiops affinis (Ege, 1930). To 11 cm. Warm-temperate to tropical Atlantic.

Lestidiops jayakari (Boulenger, 1889). To 22 cm. Warm-temperate to tropical worldwide.

Lestidiops mirabilis (Ege, 1933). To 28 cm. Subtropical and tropical worldwide.

Lestidium atlanticum Borodin, 1928. To 21 cm. Temperate to tropical worldwide.

Lestrolepis intermedia (Poey, 1868). To 22 cm. Warm-temperate to tropical worldwide.

Macroparalepis affinis Ege, 1933. To 53 cm. Temperate N and S Atlantic, also S Pacific.

Macroparalepis brevis Ege, 1933. To 15 cm. Temperate N and S Atlantic.

Macroparalepis nigra (Maul, 1965). To 48 cm. Temperate Atlantic.

Magnisudis atlantica (Krøyer, 1868). To 48 cm. Widespread in Atlantic and Pacific oceans.

Paralepis brevirostris (Parr, 1928). To 25 cm. Temperate to tropical Atlantic.

Paralepis coregonoides Risso, 1820. To 29 cm. N Atlantic and Mediterranean.

Paralepis elongata (Brauer, 1906). To 20 cm. Warm-temperate to tropical Atlantic, Indian, and Pacific oceans.

Stemonosudis bullisi Rofen, 1963. To 7 cm. W Atlantic and Gulf of Mexico.

Stemonosudis gracilis (Ege, 1933). To 11 cm. Subtropical to tropical worldwide.

Stemonosudis intermedia (Ege, 1933). To 17 cm. W Atlantic, Gulf of Mexico, and Caribbean Sea.

Stemonosudis rothschildi Richards, 1967. To 25 cm. Atlantic, Indian, and Pacific Oceans.

Stemonosudis siliquiventer Post, 1970. To 18 cm. Tropical Atlantic.

Sudis atrox Rofen, 1963. To more than 9 cm. Temperate to tropical Atlantic and Pacific.

Sudis hyalina Rafinesque, 1810. To 42 cm. Temperate to tropical Atlantic and Mediterranean Sea.

Uncisudis advena (Rofen, 1963). To more than 7 cm. Warm-temperate W Atlantic.

Uncisudis quadrimaculata (Post, 1969). To 11 cm. Warm-temperate to tropical Atlantic.

References

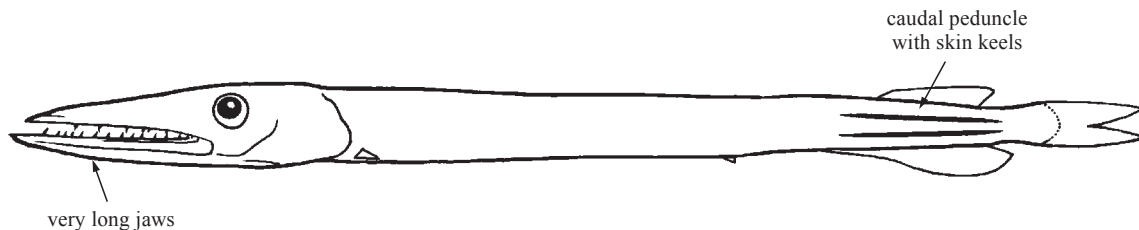
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- Post, A. 1977. Paralepididae. In *FAO Species Identification Sheets, Western Central Atlantic (Fishing Area 31), Volume III*, edited by W. Fischer. Rome, FAO (unpaginated).
- Post, A. 1984. Paralepididae (including Sudidae). In *Fishes of the North-eastern Atlantic and the Mediterranean, Vol. 1*, edited by P.J.P. Whitehead, M.L. Bauchot, J.C. Hureau, J. Nielsen and E. Tortonese. Paris, UNESCO, pp. 498-508.
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- Rofen, R.R. 1966 Family Paralepididae. In *Fishes of the Western North Atlantic*, edited by W.W. Anderson et al. *Mem. Sears Found. Mar. Res.*, 1(5):205-461.

ANOPTERIDAE

Daggertooth

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Large aulopiform fishes (to about 1 m), elongate, compressed anteriorly. **Head** about 1/4 body length with very long jaws about 1/2 to 3/4 head length; upper jaw shorter than lower jaw; gill rakers absent. **Dorsal fin absent**, small adipose fin located above anal fin; anal-fin soft rays 12 to 15; pectoral fins low on body and longer than pelvic fins which are located posterior to midline of body; pectoral-fin soft rays 13 to 15, pelvic-fin soft rays 7 to 10. Scales absent except for lateral line; **caudal peduncle with skin keels**. **Colour:** younger fish are silver turning black with maturity.



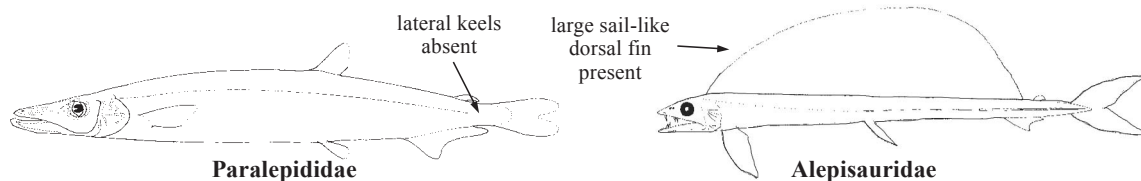
Habitat, biology, and fisheries: Found in the epipelagic and upper mesopelagic waters of the world's oceans north and south of about 20°. Piscivorous predators with distensible body wall and large stomachs. There is reduction in tooth number with growth. Thought to be synchronous hermaphrodites with semelparous reproduction. As gonads mature, stomach and intestines atrophy. No fishery.

Remarks: Included within family Paralepididae by Baldwin and Johnson (1996). Kukuev (1998) recognized 3 species in family.

Similar families occurring in the area

Paralepididae: dorsal fin present; lateral keels on caudal peduncle absent; anal fin with 20 or more rays.

Alepisauridae: large, sail-like dorsal fin present; jaws extending beyond eye.



List of species occurring in the area

Anotopterus pharao Zugmayer, 1911. To 1 m TL. N and temperate Atlantic waters.

References

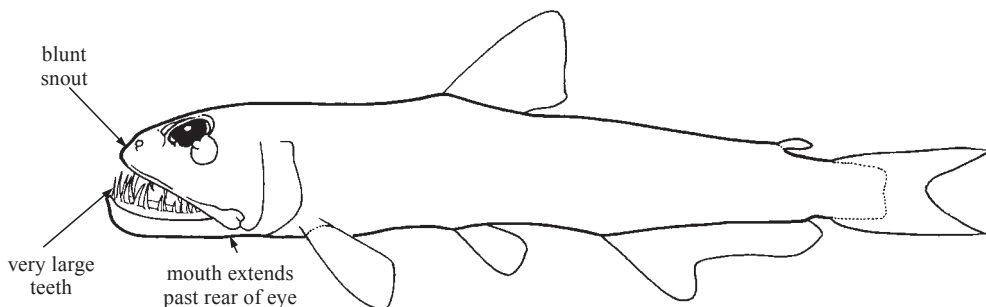
- Baldwin, C.C. and G.D. Johnson. 1996. Interrelationships of Aulopiformes. In *Interrelationships of fishes*, edited by M.L.J. Stiassny, L.R. Parenti, and G.D. Johnson. San Diego, Academic Press, pp. 355-404.
- Heemstra, P.C. 1990. Anotopteridae. In *Fishes of the Southern Ocean*, edited by O. Gon and P.C. Heemstra. Grahamstown, South Africa, J.L.B. Smith Inst. Ichthy., pp. 142-143.
- Hubbs, C.L., G.W. Mead, and N.J. Wilimovsky. 1953. The widespread, probably antitropical distribution and the relationship of the bathypelagic Iniomous fish *Anotopterus pharao*. *Bull. Scripps Inst. Oceanogr.*, 6:137-197.
- Kukuev, E.I. 1998. Systematics and distribution in the world ocean of daggertooth fishes of the genus *Anotopterus* (Anotopteridae, Aulopiformes). *J. Ichthy.*, 38:716-729.
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EVERMANNELLIDAE

Sabertooth fishes

by B.A. Thompson, Louisiana State University, USA (after Johnson, 1986)

Diagnostic characters: Small (13 to 19 cm), elongate, slender, compressed aulopiform fishes. **Short head with short, blunt snout; eye may be tubular or nontubular** and varies in size; **mouth large, extending past rear of eye; upper jaw with single supramaxilla; very large teeth**, some barbed at tip. Dorsal fin inserts on anterior third of body, soft dorsal-fin rays 11 to 13; adipose fin located above rear part of anal fin; anal fin with more rays than dorsal fin, anterior rays longest, soft anal-fin rays 26 to 37; caudal fin deeply forked; pectoral fins located very low on body, short distance anterior to pelvic fins, soft pectoral-fin rays 11 to 13; pectoral fins longer than pelvic fins, soft pelvic-fin rays 9; no modified fin rays; no spines in any fins, luminous tissues in several species. **Colour:** variable, pale grey-white, brown, to brown-black.



Habitat, biology, and fisheries: Sabertooth fishes are found worldwide in warm-temperate to tropical oceans. Adults generally occupy the upper 800 to 1 000 m. They are predators on small fishes and squid. Family is reported to be synchronous hermaphrodites. No fishery.

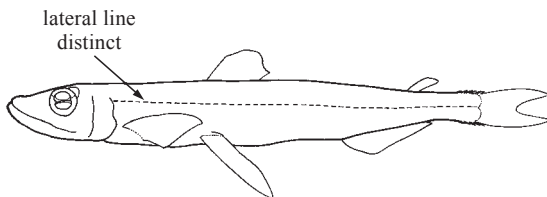
Remarks: Johnson (1982) recognized 6 species in 3 genera.

Similar families occurring in the area

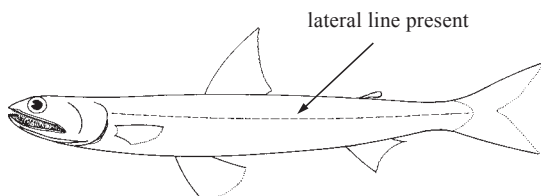
Scopelarchidae: large teeth on tongue; body scales present; lateral line distinct and made of large pored scales.

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

Omosudidae: lateral keel on caudal peduncle; massive lower jaw, somewhat truncated; dorsal fin behind mid-point of body.



Scopelarchidae



Synodontidae



Omosudidae

Key to the genera of Evermannellidae occurring in the area

- 1a. Eyes normal and lateral in position, not tubular; aperture in adipose eyelid less than lens diameter. **Odontostomops**
- 1b. Eyes tubular or semi-tubular, directed at least somewhat dorsally; aperture in adipose eyelid greater than lens diameter → 2

- 2a. Eyes semi-tubular, directed dorsolaterally; aperture in adipose eyelid slightly larger than lens diameter; jaw teeth without barbed tips *Coccorella*
- 2b. Eyes tubular, directed dorsally; aperture in adipose eyelid greatly exceeds lens diameter; at least some jaw teeth with barbed tips *Evermannella*

List of species occurring in the area

Coccorella atlantica (Parr, 1928). To 20 cm. Worldwide in warm-temperate to tropical oceans.

Evermannella balbo (Risso, 1820). To 17 cm. Worldwide in warm-temperate to tropical oceans.

Evermannella indica Brauer, 1906. To 14 cm. Worldwide in warm-temperate to tropical oceans.

Odontostomops normalops (Parr, 1928). To 14 cm. Worldwide in warm-temperate to tropical oceans.

References

Johnson, R.K. 1982. Fishes of the families Evermannellidae and Scopelarchidae: systematics, morphology, interrelationships, and zoogeography. *Fieldiana: Zoology, New Ser.*, 12:1-252.

Johnson, R.K. and G.S. Glodek. 1975. Two new species of *Evermannella* from the Pacific Ocean, with notes on other midwater species endemic to the Pacific Central or the Pacific equatorial water masses. *Copeia*, 1975:715-730.

McEachran, J.D. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico*, Vol. 1. Austin, University of Texas, pp. 584-587.

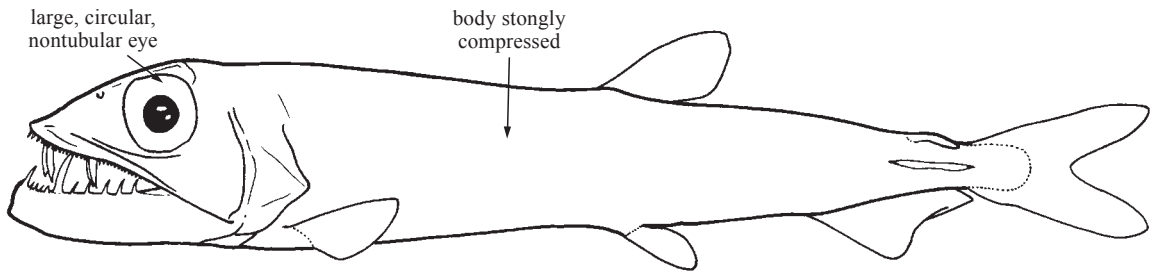
Rofen, R.R. 1966. Family Evermannellidae. In *Fishes of the Western North Atlantic*, edited by G.W. Mead, H.B. Bigelow, C.M. Breder, D.M. Cohen, D. Merriman, Y.H. Olsen, W.C. Schroeder, L.P. Schultz and J. Tee-Van. *Sears Found. Mar. Res. Mem.*, 1(5):511-565.

OMOSUDIDAE

Omosudid

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Small aulopiform fishes (to 25 cm); moderately elongate and **strongly compressed**. Head large; **large, circular, nontubular eye placed laterally on head**; mouth very large, extending posterior to back of eye; **massive lower jaw**, somewhat truncated; **greatly enlarged teeth** on both dentaries and palatines. Dorsal fin located just posterior to midbody with fewer soft rays than anal fin, dorsal-fin soft rays 9 to 11; small adipose fin located over middle of anal fin; anal-fin soft rays 13 or 14; caudal fin deeply forked; pectoral fin located low on body, pectoral-fin soft rays 11 to 13; pelvic fins located about midway between pectoral fins and anal fin; scales absent, pelvic-fin soft rays 8; **midlateral keel below adipose fin**; no spines present in any fins; swimbladder absent. **Colour:** iridescent silver body, darker dorsally, black peridoneum visible.



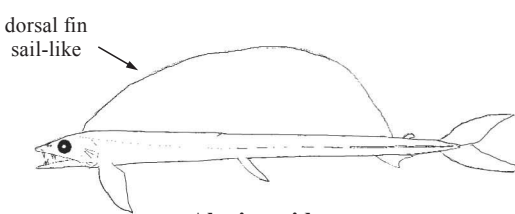
Habitat, biology, and fisheries: This monotypic family is worldwide in tropical and warm-temperate oceans, reported from 700 to 1 650 m. Predators on small fishes and squids, often consuming prey larger than themselves. They are reported to be synchronous hermaphrodites. No fishery.

Remarks: Included within family Alepisauridae by Baldwin and Johnson (1996).

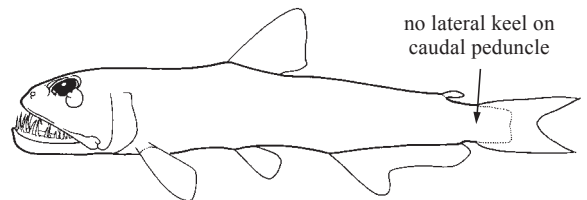
Similar families occurring in the area

Alepisauridae: dorsal fin large, sail-like.

Evermannellidae: no lateral keel on caudal peduncle; dorsal fin slightly anterior to middle of body; teeth present on tongue; anal fin long with 26 to 37 rays.



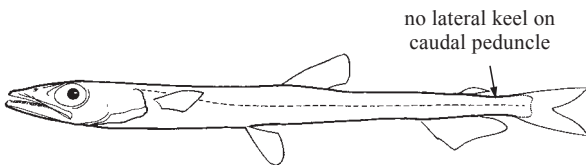
Alepisauridae



Evermannellidae

Notosudidae: no lateral keel on caudal peduncle; no fangs in jaws; scales present; lower jaw not deep.

Paralepididae: no lateral keel on caudal peduncle; adults with lateral line; jaws shorter, not extending past eye; anal fin long with 20 to 50 rays.



Notosudidae



Paralepididae

List of species occurring in the area

Omosudis lowei Günther 1887. To 25 cm. Worldwide in tropical and warm-temperate oceans.

References

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- McEachran, J.D. and J.D. Fechhelm. 1998. *Fishes of the Gulf of Mexico*, Vol. 1. Austin, University of Texas, pp. 588-589.
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ALEPISAUROIDAE

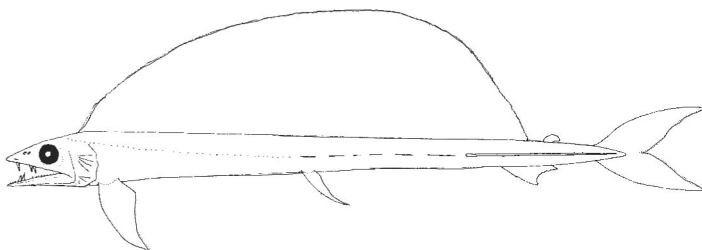
Lancetfishes

by B.A. Thompson, Louisiana State University, USA (after Gibbs and Wilimovsky, 1966 and Gibbs 1981)

Diagnostic characters: Large (to 2 m) aulopiform fishes, very elongate, slender and compressed body. Head also compressed; mouth large extending behind eye with large palatine teeth. **Dorsal fin nearly as long as body and sail-like**; small adipose fin above posterior part of anal fin; **pectoral fins set very low on body and longer than pelvic fins** which are located about midbody; dorsal-fin rays 32 to 48, anal-fin rays 13 to 18, pectoral-fin rays 12 to 15, pelvic-fin rays 8 to 10; no spines present in any fins. Scales absent; **caudal peduncle with midlateral adipose keel**. **Colour:** body iridescent blue-black above, grey-silver below; dorsal fin blue-black.

Habitat, biology, and fisheries:

Alepisaurids are found from surface to below 1 000 m in warm temperate to tropical waters of world oceans with few cold-water records. They are predators known to eat cephalopods, crustaceans, and fishes. They are hermaphroditic. Commonly caught on long-line gear but with no fishery interest probably due to their soft, flabby flesh.



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.

Key to the species of Alepisauridae occurring in the area

- 1a. Snout long, 1/3 to 1/2 head length; head long, greater than 17% standard length; dorsal fin high in front with free rays present; dorsal-fin rays 32 to 45; dorsal-fin origin over or slightly posterior to pectoral-fin origin *Alepisaurus ferox*
- 1b. Snout short, 1/4 to 1/3 head length; head short, less than 17% standard length; dorsal fin low in front; no free rays, dorsal-fin rays 40 to 48; dorsal-fin origin distinctly in front of pectoral-fin origin *Alepisaurus brevirostris*

List of species occurring in the area

- Alepisaurus brevirostris* Gibbs, 1960. To 1 m TL. Temperate and warm-temperate Atlantic, Pacific, and Indian oceans.
- Alepisaurus ferox* Lowe, 1833. To 2 m TL. Temperate and warm-temperate Atlantic, Pacific, and Indian oceans.

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*. *N.Z.J. Zool.*, 8:403-408.

Gibbs, R.H. 1960. *Alepisaurus brevirostris*, a new species of lancetfish from the Western North Atlantic. *Breviora*, 123:1-14.

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Gibbs, R.H. and N.J. Wilimovsky. 1966. Family Alepisauridae. In *Fishes of the Western North Atlantic. Sears Found. Mar. Res. Mem.*, 1, Pt. 5. New Haven, Connecticut, Yale University, pp. 482-497.

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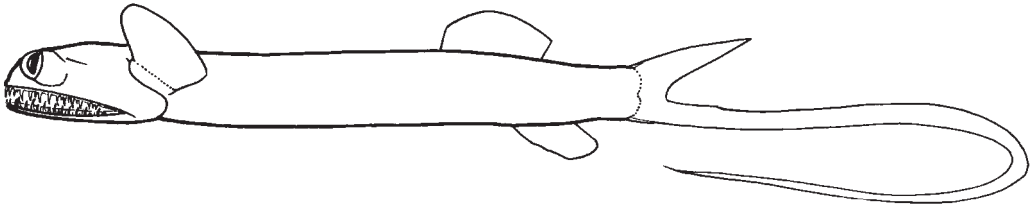
Heemstra, P.C. and M.M. Smith. 1986. Family Alepisauridae. In *Smiths' Sea Fishes*, edited by M.M. Smith and P.C. Heemstra. New York, Springer-Verlag, pp. 280-281.

GIGANTURIDAE

Telescope fishes

by B.A. Thompson, Louisiana State University, USA

Diagnostic characters: Small (18 to 23 cm) aulopiform fishes with elongate, slender bodies. Snout very short; **tubular eyes**, directed anteriorly, placed far forward on head; **very large mouth extending to middle of pectoral-fin base**; many long, recurved, and depressible teeth. All fin rays are unsegmented; dorsal fin with more rays than anal fin; caudal fin deeply forked, lower rays greatly elongated; **pectoral-fin base horizontal, high on body; adults lack many structures (adipose fin, pelvic girdle and fin, branchiostegal rays, gill rakers, and most gill arches) present in younger stages**; scaleless; swimbladder absent; dorsal fin with 16 to 19 rays, anal fin with 8 to 14 rays, pectoral fin with 30 to 42 rays. **Colour:** fresh specimens silver, fading to brown and black.



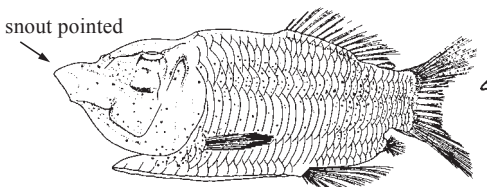
Habitat, biology, and fisheries: Worldwide in tropical oceans. Usually taken from mesopelagic and bathypelagic depths. They undergo a remarkable transformation from larvae to adults. Predators on pelagic fishes, often consuming prey larger than themselves. Family reported as synchronous hermaphrodites. No fishery.

Remarks: Johnson and Bertelsen (1991) recognized 2 species in a single genus. Young stages formerly considered genus *Rosaura*.

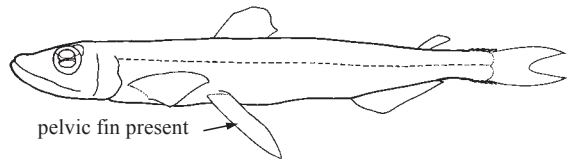
Similar families occurring in the area

Opisthoproctidae: also has tubular eyes, but body more robust; snout pointed; lower caudal lobe not elongate; pelvic fins present in adults; lateral line present; body with scales; adipose fin present.

Scopelarchidae: also has tubular eyes, but large teeth present on tongue; pelvic fins present in adults, lower caudal lobe not elongate; lateral line present; body with scales; adipose fin present.



Opisthoproctidae



Scopelarchidae

List of species occurring in the area

Gigantura chuni Brauer, 1901. To 20 cm. Widespread in tropical and subtropical waters worldwide.

Gigantura indica Brauer, 1901. To 25 cm. Widespread in tropical and subtropical waters worldwide.

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- Walters, V. 1964. Order Giganturoidei. In *Fishes of the Western North Atlantic*, edited by H.B. Bigelow, D.M. Cohen, M.M. Dick, R.H. Gibbs Jr., M. Grey, J.E.M. Morrow Jr., L.P. Schultz and V. Walters. *Sears Found. Mar. Res. Mem.*, 1(4):566-577.