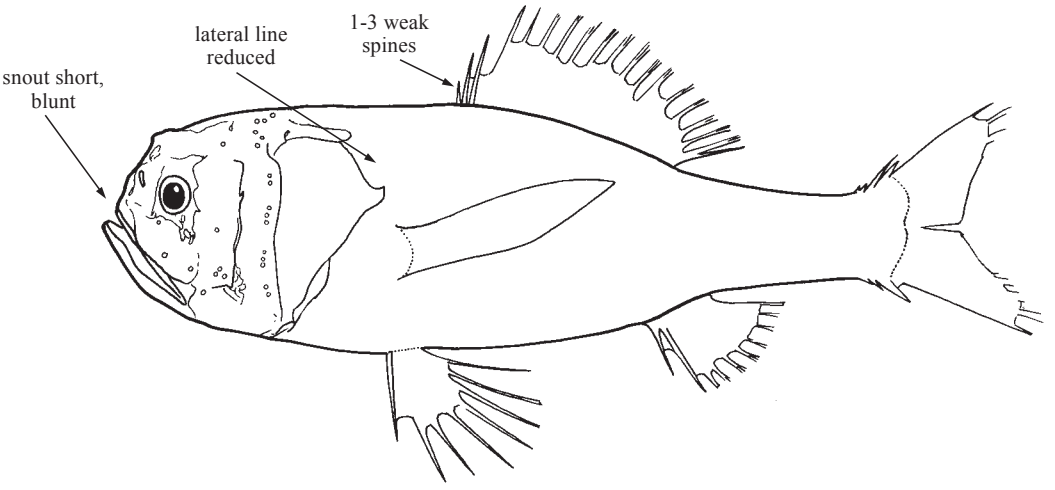
Order STEPHANOBERYCIFORMES

MELAMPHAIDAE

Bigscale fishes (ridgeheads)

by J.A. Moore, Florida Atlantic University, USA

Diagnostic characters: Small (to about 160 mm total length) stephanoberyciform fishes. **Body subcylindrical. Head large; large sensory canals separated by very thin bony ridges and covered with membranous skin**. Eye small in most species. **Snout short and blunt**. Mouth moderately large and oblique, one supramaxilla (absent in *Scopelogadus*). Teeth on jaws minute, in bands or uniserial row; vomer and palatine toothless. **One dorsal fin with 1 to 3 weak spines and 9 to 18 soft rays**; anal fin with 1 weak spine and 7 to 10 soft rays; caudal fin emarginate, with 3 or 4 procurrent spines in upper and lower lobes and 19 principal rays; pectoral fins with 13 to 16 soft rays; pelvic fins with 1 spine and 6 to 8 soft rays. Scales thin and cycloid, usually deciduous, moderate-sized to very large; **lateral line reduced to 1 or 2 pored scales behind upper edge of operculum**; 12 to 40 transverse rows of scales along body. No light organs. **Colour:** body and head dark brown or black.



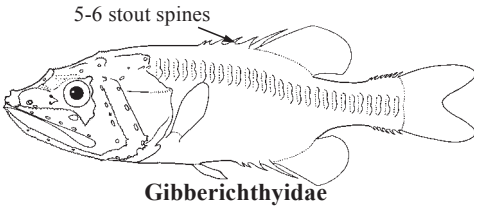
Habitat, biology, and fisheries: Meso- to bathypelagic, at depths of 200 to 2 000 m. Many species widely distributed in Atlantic and Indo-Pacific. Feed primarily on gelatinous organisms and small crustaceans. Frequently taken in deep-water trawls, but of no commercial importance.

Remarks: Family contains 33 species in 5 genera, found in midwaters of all oceans except Arctic Ocean and Mediterranean Sea.

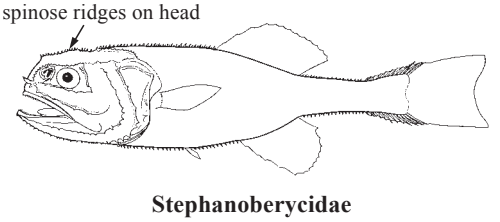
Similar families occurring in the area

Gibberichthyidae: dorsal fin preceded by 5 or 6 stout, wide-based spines; anal fin preceded by 3 to 5 stout, wide-based spines; 5 to 7 procurrent spines in upper and lower caudal lobes; pelvic fins with 1 spine and 5 or 6 soft rays.

Stephanoberycidae: ridges on head extremely spinose; 9 to 12 procurrent spines in upper and lower caudal lobes; pelvic fins with no spine and 5 soft rays; scales firmly adherent, with 1 to 6 outwardly pointing spines (*Stephanoberyx* and *Acanthochaenus*).



Gibberichthyidae



Stephanoberycidae

Key to the genera of Melamphaidae occurring in the area

1a. Very large scales, fewer than 15 transverse scale rows from nape to caudal base (scales almost always lost, leaving large, shaggy scale pockets); scales on cheek absent (no apparent scale pockets); supramaxilla absent . . . . . ***Scopelogadus***

1b. Smaller scales, more than 20 transverse scale rows from nape to caudal base (scales mostly lost, leaving discernable scale pockets); scales on cheek (leaving discernable scale pockets); supramaxilla present . . . . . → ***2***

2a. Ridges on top of head crest-like with serrate edges; conspicuous dorsally-directed spine present between nostrils; ventral edge, angle, and most of posterior edge of preopercle serrate; scales on cheek 3 or 4 (but often lost) . . . . . ***Poromitra***

2b. Ridges on top of head not crest-like with edges smooth; no conspicuous dorsally-directed spine between nostrils; ventral edge, angle, and posterior edge of preopercle smooth; scales on cheek 2 or 3 (but often lost) . . . . . → ***3***

3a. Total number of dorsal-fin elements (spines plus rays) less than 16 . . . . . ***Scopeloberyx***

3b. Total number of dorsal-fin elements (spines plus rays) more than 16 . . . . . ***Melamphaes***

List of species occurring in the area

Melamphaes ebelingi Keene, 1973. 126 mm SL. Subtropical Atlantic.
Melamphaes eulepis Ebeling, 1962. 48 mm SL. Tropical worldwide.
Melamphaes longivelis Parr, 1933. 127 mm SL. Tropical/temperate Atlantic.
Melamphaes polylepis Ebeling, 1962. 73 mm SL. Tropical worldwide.
Melamphaes pumilus Ebeling, 1962. 24 mm SL. Tropical/subtropical N Atlantic.
Melamphaes simus Ebeling, 1962. 29 mm SL. Tropical/temperate worldwide.
Melamphaes suborbitalis (Gill, 1883). 114 mm SL. Subtropical/temperate Atlantic.
Melamphaes typhlops (Lowe, 1843). 100 mm SL. Tropical/subtropical Atlantic.
Melamphaes sp. 76 mm SL. Tropical/subtropical Atlantic.

Poromitra capito Goode and Bean, 1883. 102 mm SL. Subtropical/temperate N Atlantic.
Poromitra crassiceps (Günther, 1878). 187 mm SL. Subtropical/temperate Atlantic.
Poromitra megalops (Lütken, 1877). 76 mm SL. Tropical/subtropical worldwide.
Poromitra sp. 138 mm SL. Tropical/subtropical Atlantic.

Scopeloberyx nigrescens (Brauer, 1906). 25 mm SL. Tropical Atlantic and temperate SE Atlantic.
Scopeloberyx opercularis Zugmayer, 1911. 96 mm SL. Tropical Atlantic.
Scopeloberyx opisthopterus (Parr, 1933). 40 mm SL. Tropical/subtropical N Atlantic.
Scopeloberyx robustus (Günther, 1887). 50 mm SL. Subtropical/tropical Atlantic.
Scopeloberyx sp. 28 mm SL. Tropcial/subtropical W Atlantic.

Scopelogadus beanii (Günther, 1887). 122 mm SL. Subtropical/temperate worldwide.
Scopelogadus mizolepis mizolepis (Günther, 1878). 94 mm SL. Tropical/subtropical worldwide.

References

Ebeling, A.W. and W.H. Weed, III. 1973. Order Xenoberyces (Stephanoberyciformes). In Fishes of the western North Atlantic. *Mem. Sears Found. Mar. Res*., 1(6):397-478.

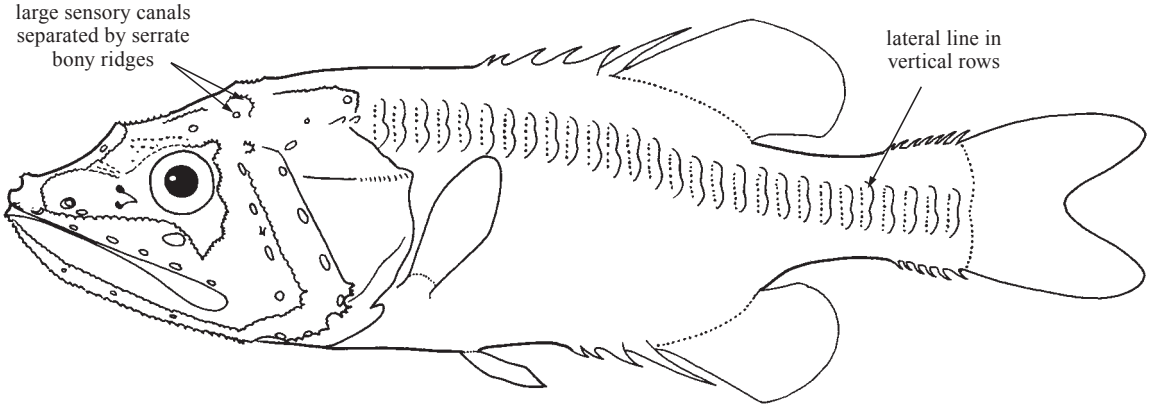
Keene, M.J., R.H. Gibbs, Jr. and W.H. Krueger. 1987. Family Melamphaidae, Bigscales. In Biology of midwater fishes of the Bermuda Ocean Acre, edited by R.H. Gibbs, Jr. and W.H. Krueger. *Smithson. Contrib. Zool*., (452):169-185.

GIBBERICHTHYIDAE

Gibberfish

by J.A. Moore, Florida Atlantic University, USA

Diagnostic characters: Small (to 91 mm standard length) stephanoberyciform fishes. Body elongate, slightly compressed. Head large; **large sensory canals separated by serrate bony ridges and covered with membranous skin**. Eye small in adults. Mouth large, slightly oblique; 1 supramaxilla. Teeth on jaws minute, in bands; vomer and palatine toothless. **Anterior spines in dorsal and anal fins fused to underlying pterygiophores, only last 1 or 2 spines depressible**; dorsal fin single with 5 or 6 spines and 8 or 9 soft rays; anal fin with 3 to 5 spines and 7 to 9 soft rays; caudal fin emarginate, with 5 to 7 procurrent spines in upper and lower lobes and 19 principal rays; pectoral fins with 13 to 15 soft rays; pelvic fins with 1 spine and 5 or 6 soft rays. Scales small and cycloid, deciduous. **Lateral line a series of vertical rows along body, each row with 6 to 8 epidermal papillae**, 28 to 34 scales underlying rows of papillae. **Pelagic larvae with filamentous extensions of pelvic-fin rays bearing fleshy leaf-like structures. Colour:** body and head dark brown or black.



Habitat, biology, and fisheries: Benthopelagic or meso- to bathypelagic as adults, taken at depths of 320 to 1 100 m. Most captures of adults have been near continental margins or islands. Pelagic larvae found in open ocean at depths of less than 50 m at night, likely deeper during day. Diet consists of small crustaceans, especially pelagic amphipods. Ripe gonads found in females larger than 80 mm standard length. Usually taken in bottom and midwater trawls. Of no commercial importance.

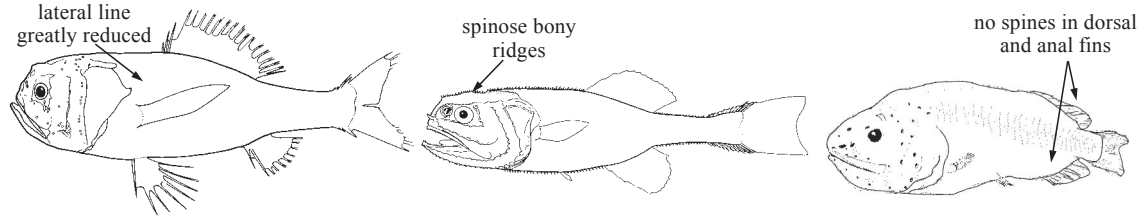
Remarks: Family contains 1 genus with 2 species.

Similar families occurring in the area

Melamphaidae: 1 to 3 weak spines in dorsal fin; 3 or 4 procurrent spines in upper and lower caudal lobes; pelvic fins with one spine and 6 to 8 soft rays; lateral line reduced to 1 or 2 pored scales above opercle.

Stephanoberycidae: bony ridges on head extremely spinose; 0 to 3 spines in dorsal fin; 9 to 12 procurrent spines in upper and lower caudal lobes; pelvic fin with no spine and 5 soft rays; scales firmly adherent, with 1 to 6 outwardly pointing spines.

Rondeletiidae: no dorsal- or anal-fin spines; no pelvic spines; no caudal procurrent spines; scales deeply embedded in skin and not visible.



List of species occurring in the area

Gibberichthys pumilus Parr, 1933. To 91 mm SL. Tropical W Atlantic.

References

de Sylva, D.P. and W.N. Eschmeyer. 1977. Systematics and biology of the deep-sea fish family Gibberichthyidae, a senior synonym of the family Kasidoroidae. *Proc. Calif. Acad. Sci*., 41(6):215-231.

Ebeling, A.W. and W.H. Weed, III. 1973. Order Xenoberyces (Stephanoberyciformes). In Fishes of the western North Atlantic. *Mem. Sears Found. Mar. Res*., 1(6):397-478.

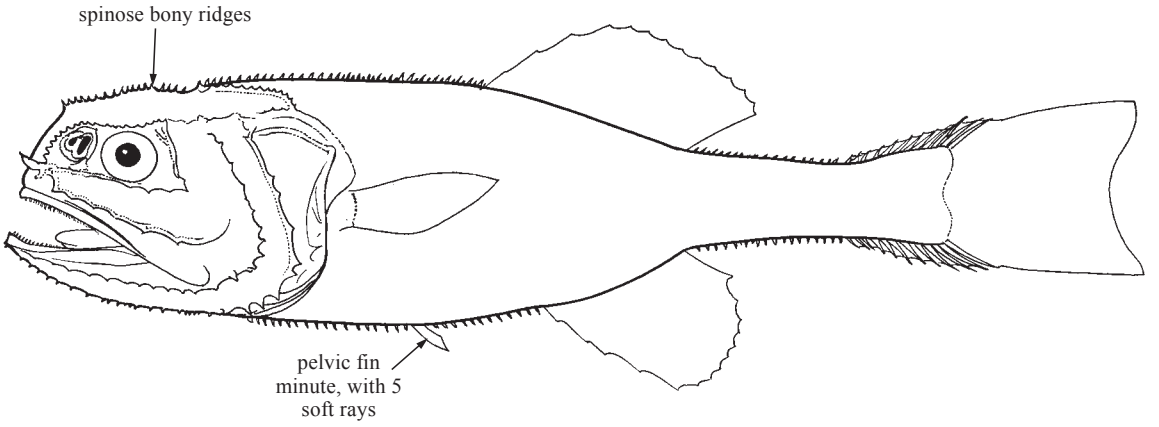
Kotlyar, A.N. 1996. *Beryciform fishes of the world ocean*. Moscow, VNIRO Publishing, 368 p. [in Russian]

STEPHANOBERYCIDAE

Pricklefishes

by J.A. Moore, Florida Atlantic University, USA

Diagnostic characters: Small (to about 141 mm standard length) stephanoberyciform fishes. **Body and head subcylindrical**. Head moderately large, about 1/3 standard length. Eye moderate to small. Snout blunt. Mouth moderate-sized and terminal; 1 supramaxilla. Teeth on jaws minute, in bands; vomer and palatine toothless. **Large sensory canals separated by extremely spinose bony ridges and covered with membranous skin. Single dorsal fin set far back and symmetrical with anal fin**, with 0 to 3 weak spines and 9 to 14 soft rays; anal fin with 0 to 3 weak spines and 9 to 14 soft rays; **caudal fin emarginate with 9 to 12 procurrent spines in upper and lower lobes** and 19 principal rays; pectoral fins with 11 to 14 soft rays; **pelvic fins minute, with no spine and 5 soft rays. Scales firmly adherent with 1 to 6 outwardly pointing spines in *Acanthochaenus* and *Stephanoberyx*. Lateral line obscure. Colour:** brownish overall or dark brown to black head and whitish body with brownish scales and fins.



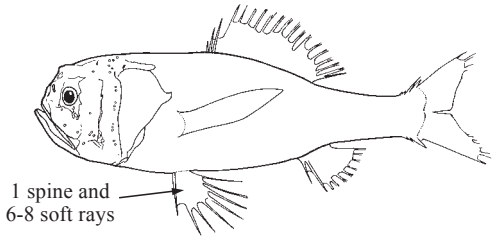
Habitat, biology, and fisheries: Benthopelagic or abyssal benthic, at depths of 945 to 5 308 m. *Acanthochaenus* in the southwestern Indian Ocean feeds on benthic crustaceans and has a maximum age calculated at 12+ years from otoliths. Both *Acanthochaenus* and *Stephanoberyx* are reproductively mature by 80 mm standard length. Occasionally taken in bottom trawls. Rare fishes of no commercial importance.

Remarks: Family contains 3 species in 3 monotypic genera, with an additional undescribed genus and species known from the eastern Atlantic and central Pacific.

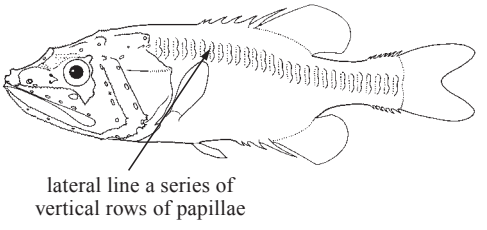
Similar families occurring in the area

Melamphaidae: 3 or 4 procurrent spines in upper and lower caudal lobes; pelvic fins with 1 spine and 6 to 8 soft rays; deciduous cycloid scales on body; lateral line reduced to 1 or 2 pored scales above opercle.

Gibberichthyidae: dorsal and anal fins with several stout, wide-based spines fused to underlying pterygiophores; 5 to 7 procurrent spines in upper and lower caudal lobes; pelvic fins with 1 spine and 5 or 6 soft rays; deciduous cycloid scales; lateral line series of vertical rows of papillae.



Melamphaidae



Gibberichthyidae

Key to the genera and species of Stephanoberycidae occurring in the area

1a. Pelvic fins inserted nearer to pectoral fins than to anal fin; anal fin with 12 or more total elements; gill rakers on first arch 12 to 15 on upper arm, one at angle, and 24 to 27 on lower arm (total 37 to 43) . . . . . ***Stephanoberyx monae***

1b. Pelvic fins inserted nearer to anal fin than to pectoral fins; anal fin with fewer than 12 total elements; gill rakers on first arch 8 to 10 on upper arm, one at angle, and 17 to 20 on lower arm (total 20 to 31) . . . . . ***Acanthochaenus luetkenii***

List of species occurring in the area

Acanthochaenus luetkenii Gill, 1884. 141 mm SL. Subtropical/temperate Atlantic, Indian, and Pacific.

Stephanoberyx monae Gill, 1883. 85 mm SL. Tropical/subtropical W Atlantic.

References

Ebeling, A.W. and W.H. Weed, III. 1973. Order Xenoberyces (Stephanoberyciformes). In Fishes of the western North Atlantic. *Mem. Sears Found. Mar. Res*., 1(6):397-478.

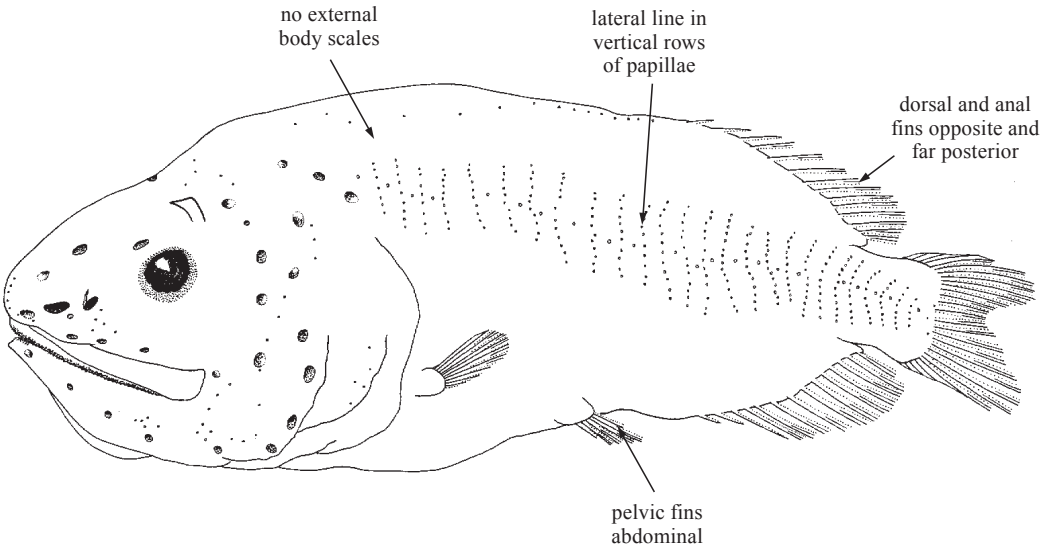
Kotlyar, A.N. 1996. *Beryciform fishes of the world ocean*. Moscow, VNIRO Publishing, 368 p. [in Russian].

RONDELETIIDAE

Redmouth whalefishes

by J.R. Paxton and T. Trnski, Australian Museum, Sydney, Australia

Diagnostic characters: Small (to 11 cm standard length) stephanoberyciform fishes; **body flabby, somewhat whale-shaped with median fins opposite and far posterior**. Head large; mucous cavities on top of head indistinct, covered by thick skin. Eyes small. Snout very long; nasal organ moderately developed; posterior nostril with large, triangular skin flap. Mouth large, **jaws not extending beyond posterior margin of eye**, horizontal. Teeth small and closely set on jaws, vomer, and pharyngobranchials; palatine, ectopterygoid, and basibranchials (copula / tongue) lacking teeth. Gill rakers well developed, lath-like. Fins without spines; 1 dorsal fin with 13 to 16 soft rays; anal fin with 13 to 16 soft rays; caudal fin with 19 principal rays; pectoral fins with 9 to 11 rays; **pelvic fins abdominal with 5 to 6 soft rays. Lateral line as vertical rows of papillae without supporting internal scales. External body scales absent**. Photophores and luminous tissue absent. Cavernous tissue absent. Ribs present. **Total vertebrae 24 to 27. Colour:** in life, orange-brown, inside mouth and gill cavities red-orange; in preservative, brown.

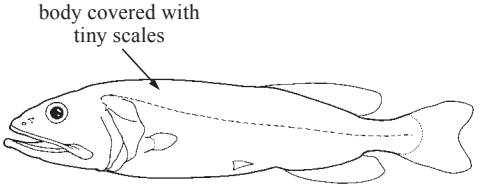


Habitat, biology, and fisheries: Meso- and bathypelagic. Feeds as predator on amphipods and crustaceans. Uncommon deep sea fishes of no commercial importance.

Remarks: One genus with 2 species throughout the world's oceans in tropical and temperate latitudes. A description of the larvae has been published (Paxton et al., 2001).

Similar families occurring in the area

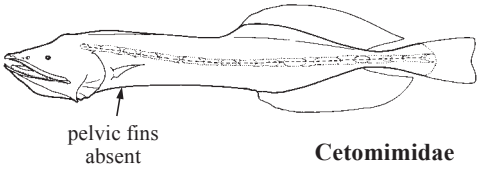
Barbourisiidae: mouth very large with jaws extending far behind eye; head and body covered with tiny scales with central spine giving velvet-like texture; lateral line as tube with moderate pores; live colour bright red-orange.



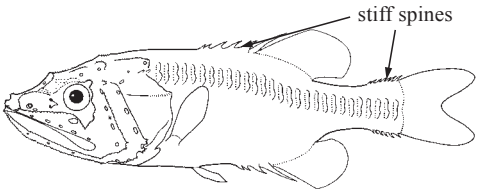
Barbourisiidae

Cetomimidae: pelvic fins absent; mouth extremely large with jaws extending far behind eye; most species with lateral line as broad tube with large pores, only 1 with vertical rows of papillae; ribs absent.

Gibberichthyidae: anterior stiff spines in dorsal, anal, and caudal fins; body covered with scales; colour black.



Cetomimidae



Gibberichthyidae

Key to the species of Rondeletiidae occurring in the area

1a. Vertical rows of lateral line papillae 24 to 26; bony hook over orbit present; large posterior bony extensions of supratemporal or cleithrum absent (Fig. 1) . . . . . ***Rondeletia bicolor***

1b. Vertical rows of lateral line papillae 15 to 19; bony hook over orbit absent; large posterior bony extensions on supratemporal and cleithrum present (Fig. 2) . . . . . ***Rondeletia loricata***

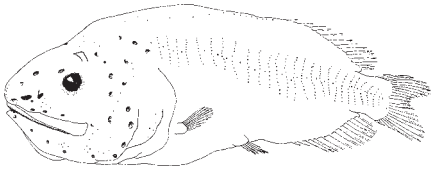


Fig. 1 ***Rondeletia bicolor***

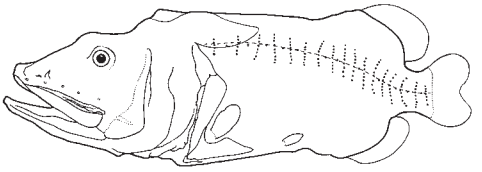


Fig. 2 ***Rondeletia loricata***

List of species occurring in the area

Rondeletia bicolor Goode and Bean, 1895. To 10 cm. Between 40° N and 30° S in 87, 71, W Atlantic 31, 21, 34, 41 and 2 specimens (1 adult, 1 juveniles) in Pacific between 15° and 26° S.

Rondeletia loricata Abe and Hotta, 1963. To 11 cm. Circumglobal 60° N to 50° S, excluding Gulf of Mexico, Caribbean and far NW Atlantic 21.

References

Kotlyar, A.N. 1996. The osteology, intraspecific structure, and distribution of *Rondeletia loricata* (Rondeletiidae). *Vopr. Ikhtiol.*, 36(2):154-168. (In Russian, English transl. *J. Ichthyol.*, 36(3)).

Paxton, J.R. and D.J. Bray. 1986. Family Rondeletiidae. In *Smiths' sea fishes,* edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, 434 p.

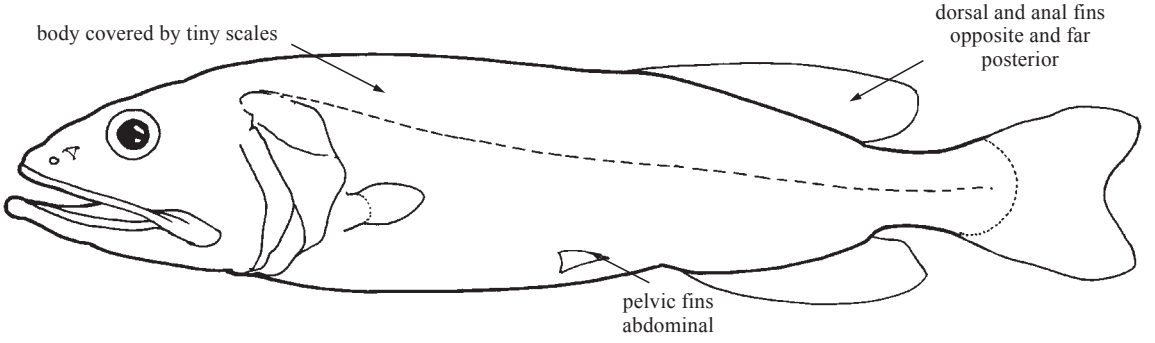
Paxton, J.R., G.D. Johnson, and T. Trnski. 2001. Larvae and juveniles of the deepsea "whalefishes" *Barbourisia* and *Rondeletia* (Stephanoberyciformes: Barbourisiidae, Rondeletiidae), with comments on family relationships. *Rec. Aus. Mus.*, 53:407-425.

BARBOURISIIDAE

Redvelvet whalefish

by J.R. Paxton, Australian Museum, Sydney, Australia

Diagnostic characters: Moderate-sized (to 38 cm standard length) stephanoberyciform fish; **body somewhat flabby**, moderately robust, **whale-shaped with median fins opposite and far posterior**. Head large; mucous cavities on top of head separated by thick ridges and covered by skin. Eye small. Snout very long; nasal organ moderately developed, no skin flap on posterior nostril. **Mouth very large, jaws extending far behind eye, horizontal**. Teeth small and closely set on jaws, vomer, ectopterygoid, and pharyngobranchials; palatine and basibranchials (copula/tongue) lacking teeth. Gill rakers well developed, lath-like. Fins without spines; 1 dorsal fin with 19 to 22 soft rays; anal fin with 15 to 18 soft rays; caudal fin with 19 principal rays; pectoral fins with 13 or 14 rays; **pelvic fins abdominal with 6 soft rays. Lateral line well developed as a broad tube pierced by small pores and supported by internal scales. Body and head covered by small, adherent, non-imbricate scales with a single, central spine giving a velvet-like texture**. Photophores and luminous tissue absent. Cavernous tissue absent. Ribs present. **Total vertebrae 40 to 43. Colour: in life, bright red-orange; in preservative, white.**



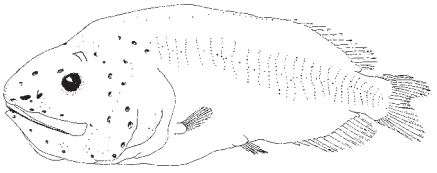
Habitat, biology, and fisheries: Mesopelagic as juveniles, benthopelagic as adults. Feeding mode unknown, presumably as predator on crustaceans. Rare deep sea fish of no commercial importance.

Remarks: One genus and species throughout the world's oceans in tropical and temperate latitudes . A description of the larvae has been published (Paxton et al., 2001).

Similar families occurring in the area

Rondeletiidae: external body scales absent; lateral line as vertical rows of papillae; mouth large, but jaws not extending beyond posterior margin of eye; colour orange-brown in life, brown in preservative.

Cetomimidae: external body scales absent; pelvic fins absent; ribs absent; colour brown or black.



Rondeletiidae

Cetomimidae

List of species occurring in the area

Barbourisia rufa Parr, 1945. To 38 cm SL. Tropical and temperate between 65° N and 40° S Atl, 50° N and S Pacific, 5° to 20° S Indian Ocean.

References

Kotlyar, A.N. 1995. Osteology and distribution of *Barbourisia rufa* (Barbourisiidae). *Vopr. Ikhtiol.,* 35(3):282-289. (In Russian, English transl. *J. Ichthyol.*, 35(6))

Paxton, J.R. and D.J. Bray. 1986. Family Barbourisiidae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, 434 p.

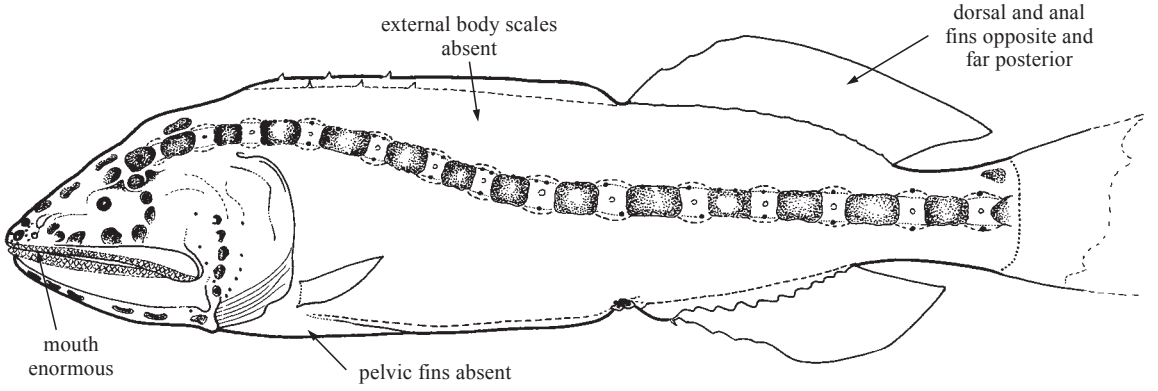
Paxton, J.R., G.D. Johnson, and T. Trnski. 2001. Larvae and juveniles of the deepsea "whalefishes" *Barbourisia* and *Rondeletia* (Stephanoberyciformes: Barbourisiidae, Rondeletiidae), with comments on family relationships. *Rec. Aus. Mus.*, 53:407-425.

CETOMIMIDAE

Whalefishes

by J.R. Paxton, Australian Museum, Sydney, Australia

Diagnostic characters: Small to moderate-sized (to 41 cm standard length) stephanoberyciform fishes; **body soft and flabby**, slender to robust, **whale-shaped with median fins opposite and far posterior. Head very large**; mucous cavities on top of head indistinct and covered by skin in undamaged specimens. Eye tiny and degenerate (small and developed in *Procetichthys*). Snout very long; nasal organ poorly developed (well developed in *Procetichthys*), no skin flap on posterior nostril. **Mouth enormous, jaws extending far behind eye**, horizontal. Teeth tiny and closely set, small and widely spaced, or elongate in well defined, closely set rows; jaws, pharyngobranchials, and **basibranchials (copula/tongue) always with teeth**; vomer, palatine, and ectopterygoid usually with teeth. **Gill rakers club-shaped, or as tooth patches, tooth plates or individual teeth, never lath-like**. Fins without spines; 1 dorsal fin with 13 to 37 soft rays; anal fin with 11 to 34 soft rays; pectoral fins with 15 to 24 rays; **pelvic fins absent; caudal fin with 10 to 19 principal rays. Lateral line very well developed, supported with internal scales; in most as a broad tube pierced by large pores** (*Procetichthys* with vertical rows of lateral-line papillae). **External body scales absent**. Photophores or apparent luminous tissue absent. **Unique cavernous tissue around anus in most species, over base of anal fin and other areas in many species. Ribs absent. Total vertebrae 38 to 59. Colour:** brown or black; in fresh specimens fin rays and inside mouth reddish orange.



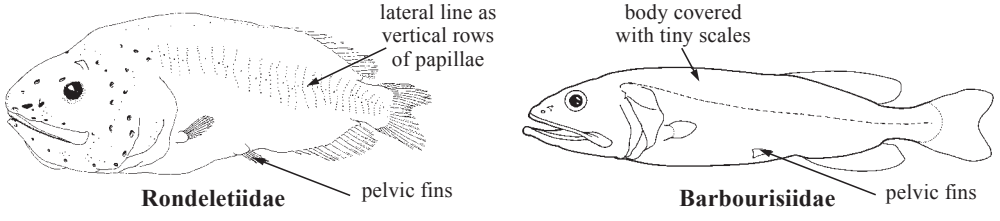
Habitat, biology, and fisheries: Bathypelagic as adults, some may be benthopelagic, some juveniles mesopelagic; larvae unknown. Feeds as predator on crustaceans. Rare deep-sea fishes of no commercial importance.

Remarks: Nine genera with about 35 species (including 15 undescribed) throughout the world's oceans from boreal latitudes to the Antarctic. A revision of *Gyrinomimus* (Paxton, ms) is nearing completion; a revision of *Cetomimus* is in early stages.

Similar families occurring in the area

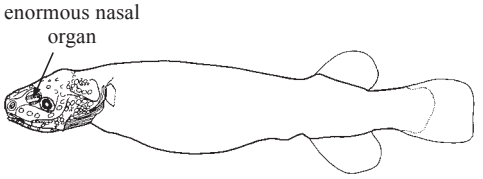
Rondeletiidae: pelvic fins present; lateral line as vertical rows of papillae; jaws not extending beyond posterior margin of eye; ribs present.

Barbourisiidae: pelvic fins present; head and body covered with tiny scales, central spine giving velvet-like texture; ribs present; live colour bright red-orange.

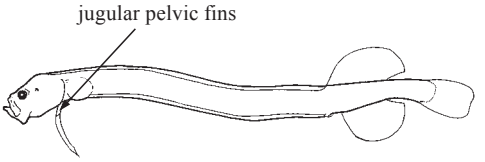


Megalomycteridae: nasal organ enormous; jaws not extending behind eye; pelvic fins present or absent; body scales present or absent; maximum size 7 cm standard length.

Mirapinnidae: jaws not extending behind eye; pelvic fins present; maximum size 5 cm standard length.



Megalomycteridae



Mirapinnidae

Key to the genera of Cetomimidae occurring in the area

1a. Dorsal-fin rays 29 to 37; anal-fin rays 24 to 26; dorsal and anal fins abruptly elevated on bases higher than body; slit of fourth gill arch tiny and tubular, at angle of arch; 3 separate copular tooth plates (Fig. 1) . . . . . ***Cetostoma regani***

1b. Dorsal- and anal-fin rays 12 to 21; dorsal- and anal-fin bases not abruptly elevated above body; slit behind ventral arm of fourth gill arch elongate or absent; 1 copular tooth plate . . . . . → ***2***

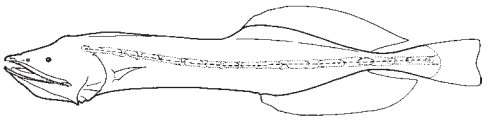


Fig. 1 ***Cetostoma regani***

2a. Free gill arches 4, with elongate slit behind ventral arm of fourth arch present; gill rakers/tooth plates separate and raised, domed to club-shaped; lateral-line scales round to rectangular and flat, without dorsal and ventral projections; vertebrae 38 to 46 . . . . . → ***3***

2b. Free gill arches 3, with slit behind ventral arm of fourth arch absent; gill tooth plates contiguous, fusing with age, and flat; lateral line scales elongate and curved with dorsal and ventral projections supporting lateral-line canal; vertebrae 44 to 59 . . . . . → ***4***

Fig. 2 ***Ditropichthys storeri***

3a. Dorsal-fin rays 19 to 22; vertebrae 38 to 42; lateral-line scales (= pores - 1) 10 to 13; jaw teeth tiny in irregular diagonal rows; gill rakers club-shaped; ventral pharyngeal tooth plate absent (Fig. 2) . . . ***Ditropichthys storeri***

3b. Dorsal-fin rays 14 to 16; vertebrae 43 to 46; lateral line scales 16 to 18; jaw teeth elongate in well-defined longitudinal rows; gill tooth plates round to ellipsoidal, slightly raised; ventral pharyngeal tooth plate present on fifth gill arch . . . . . ***Danacetichthys galathenus***

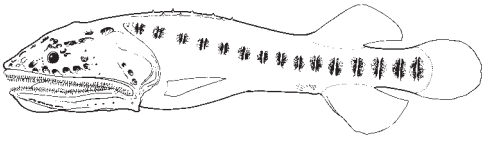


Fig. 3 ***Danacetichthys galathenus***

4a. Jaw teeth in distinct longitudinal rows, all but newest teeth elongate with length more than 3 times basal width; vomerine tooth plate flat and rectangular or oval (Fig. 4) . . . . . ***Gyrinomimus***

4b. Jaw teeth in indistinct diagonal rows, all teeth short with length less than 2 times basal width; vomerine tooth plate domed and round or rarely oval (Fig. 5). . . . . ***Cetomimus***

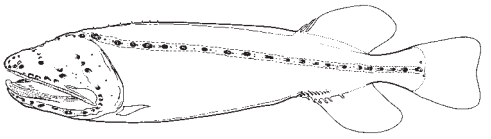


Fig. 4 ***Gyrinomimus***

Fig. 5 ***Cetomimus***

List of species occurring in the area

(all sizes are maximum in centimetres standard length; sizes and ranges incomplete for species of *Cetomimus*)

Cetomimus craneae Harry, 1952. To 8 cm. Recorded only from WC Atlantic 31.

Cetomimus gillii Goode and Bean, 1895. To 11 cm, possibly to 14 cm. Recorded from WC Atlantic 31, ES Pacific 87, and possibly Indian 51.

Cetomimus hempeli Maul, 1969. To 15 cm. Recorded from WC Atlantic 31, EC Atlantic 34.

Cetomimus kerdops Parr, 1934. To 8 cm. Recorded only from WC Atlantic 31.

Cetomimus teevani Harry, 1952. To 10 cm. Recorded only from WC Atlantic 31. Possibly a synonym of *C. craneae*.

Cetostoma regani Zugmayer, 1914. To 25 cm. Circumglobal between 50 N and 40 S.

Danacetichthys galathenus Paxton, 1989. To 5 cm. Presumed circumglobal (except E Pacific) between 30 N and 25 S.

Ditropichthys storeri (Goode and Bean, 1895). To 13 cm. Circumglobal between 45 N and S.

Gyrinomimus bruuni Rofen, 1959. To 22 cm. Circumglobal between 30 N and 10 S.

Gyrinomimus myersi Parr, 1934. To 30 cm. Circumglobal 40 N to 20 S Atlantic, tropics Indian, 40 to 20 N Pacific; *Gyrinomimus simplex* Parr, 1945 (synonym).

Gyrinomimus parri Bigelow, 1961. To 39 cm. WC Atlantic 31, NWPacific 61, SW Pacific 81.

Gyrinomimus sp. nov. R (Paxton, ms). To 41 cm. WC Atlantic 31, 45 to 10 N Pacific.

References

Paxton, J.R. 1989. Synopsis of the whalefishes (family Cetomimidae) with descriptions of four new genera. *Rec. Aust. Mus.*, 41(2):135-206.

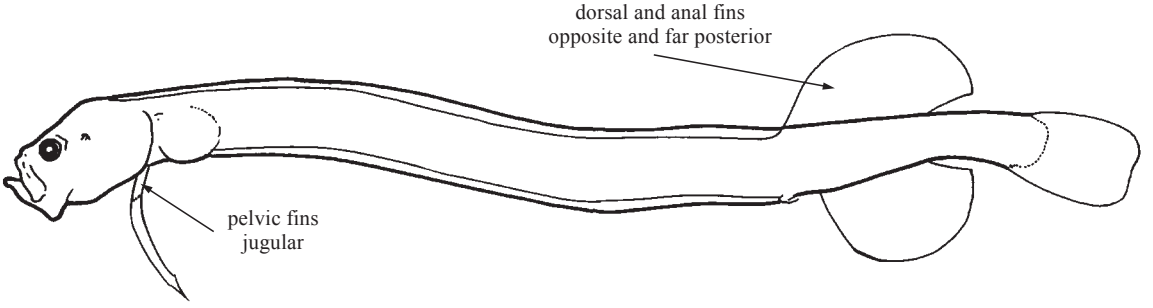
Tolley, S.G., J.V. Gartner, and T.M. Lancraft. 1989. Whalefishes (Beryciformes: Cetomimoidei) of the Gulf of Mexico. *Bull. Mar. Sci.*, 45(3):671-677.

MIRAPINNIDAE

Tapetails (hairyfish)

by J.R. Paxton, Australian Museum, Sydney, Australia

Diagnostic characters: Small (to 5 cm standard length) stephanoberyciform fishes, **body slender to very elongate, with median fins opposite and far posterior**. Head moderate. Eye small to moderate, well developed. Snout moderate; **nasal organ poorly developed**, no skin flap on posterior nostril. **Mouth moderate, jaws not extending behind eye, oblique to subvertical**. Teeth small and closely set in 1 row on premaxillary and several rows on dentary; no teeth on vomer, palatine, ectopterygoid, basihyals (copula/tongue), or pharyngobranchials (all species). Gill rakers lath-like. Fins without spines. One dorsal fin with 16 to 33 soft rays; anal fin with 14 to 29 soft rays; caudal fin with 19 principal rays; pectoral fins with 13 to 24 rays; **pelvic fins jugular with 4 to 10 soft rays; caudal streamer longer than body in larvae. Lateral line absent or a line of organs on projections of the skin. Scales absent. Body of one covered with dense, hair-like papillae about 1 to 1.5 mm long (*Mirapinna*)**; others with minute papillae about 0.05 mm long. Photophores and luminous tissue absent. Cavernous tissue absent. Ribs absent. Total vertebrae 42 to 55. **Colour:** brown, black, or transparent.



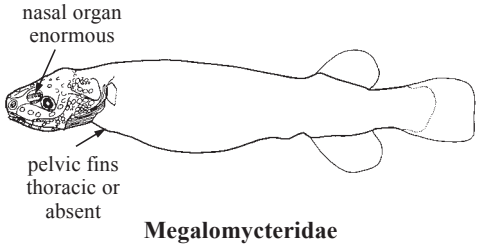
Habitat, biology, and fisheries: Larvae and juveniles epipelagic; mature adults unknown, perhaps mesopelagic. Feed as zooplankton pickers on copepods. Rare oceanic fishes of no commercial importance.

Remarks: Three genera with 6 species (1 undescribed) throughout the world's oceans in tropical and subtropical latitudes. A revision is needed, but no mature adults, or even specimens with gonads in good condition, are available.

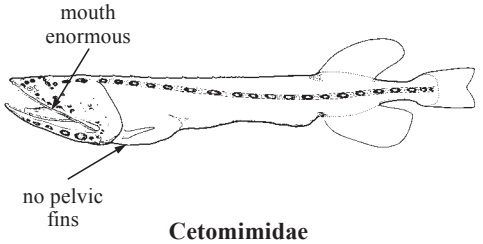
Similar families occurring in the area

Megalomycteridae: nasal organ enormous; pelvic fins thoracic with 1 to 3 rays, or absent; scales present in some; no skin papillae or caudal streamer.

Cetomimidae: pelvic fins absent; mouth enormous, jaws extending far behind eye.



Megalomycteridae



Cetomimidae

Key to the species of Mirapinnidae occurring in the area

1a. Pelvic-fin rays 4 or 5; dorsal-fin rays 16 to 20; anal-fin rays 15 to 18 (Fig. 1) . ***Eutaeniophorus festivus***

1b. Pelvic-fin rays 9 or 10; dorsal-fin rays 28 to 33; anal-fin rays 23 to 29 (Fig. 2) . . . . . ***Parataeniophorus gulosus***

Fig. 1 ***Eutaeniophorus festivus***

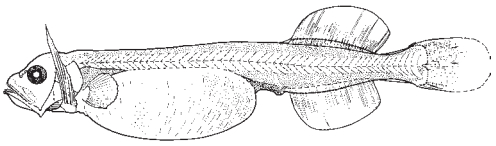


Fig. 2 ***Parataeniophorus gulosus***

List of species occurring in the area

Eutaeniophorus festivus (Bertelsen and Marshall, 1956). To 5 cm. All oceans between 35°N and 25°S excluding E Pacific.

Parataeniophorus gulosus Bertelsen and Marshall, 1956. To 3.5 cm. Between 45° and 20°N in N Atlantic 31, 34, 27 and between 0° and 25°SW Indian 51.

References

Bertelsen, E. 1986. Family Mirapinnidae. In *Smiths' sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, pp. 406-407.

Bertelsen, E. and N.B. Marshall, 1984. Mirapinnatoidei: development and relationships. In Ontogeny and systematics of fishes, edited by H.G. Moser, W.J. Richards, D.M. Cohen, M.P. Fahay, A.W. Kendall, Jr., and S.L. Richardson. *Amer. Soc. Ichth. Herp. Spec. Publ.*, (1):380-383.

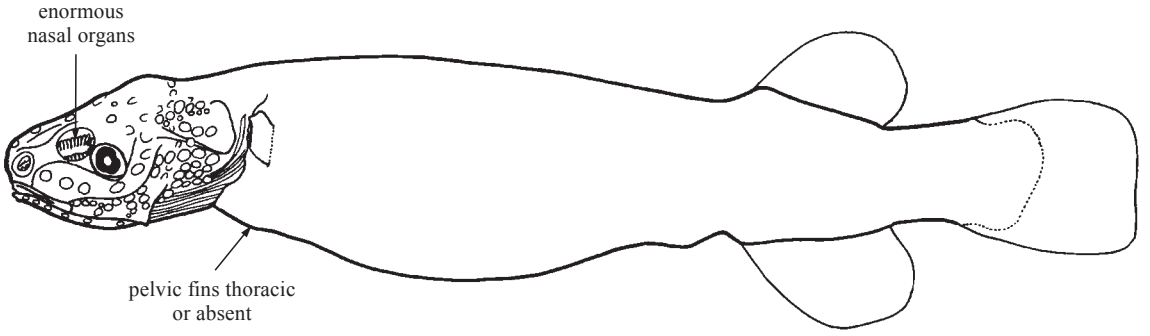
Herrera, G.A. and R.J. Lavenberg. 1995. Record of a larval *Parataeniophorus brevis* from Hawaii. *J. Fish. Biol.*, 46:908-911.

MEGALOMYCTERIDAE

Bignose fishes

by J.R. Paxton and T. Trnski, Australian Museum, Sydney, Australia

Diagnostic characters: Small (to 7 cm standard length) stephanoberyciform fishes, **body elongate, with median fins opposite and far posterior**. Head moderate. Eye small to moderate, often degenerate. Snout elongate to very large; **nasal organ enormous, covering much of snout**; posterior nostril without skin flap. **Mouth moderate, jaws not extending behind eye**, horizontal to somewhat oblique. Teeth small and closely set in 1 to several rows on premaxillary and dentary; teeth present or absent on vomer, absent on palatine, ectopterygoid, basihyals (copula/tongue), and pharynogbranchials (all species). Gill rakers poorly developed, few in number. Fins without spines. One dorsal fin with 15 to 31 soft rays; anal fin with 13 to 29 soft rays; caudal fin with 16 principal rays; pectoral fins with 18 to 23 rays; **pelvic fins thoracic with 1 to 3 soft rays, or absent. Lateral line poorly developed or condition unknown. Body scales small to moderate**, imbricate or **non-imbricate, cycloid, or absent**. Photophores and luminous tissue absent. Cavernous tissue absent. **Ribs absent. Total vertebrae 41 to 55. Colour:** brown, black, or unknown.



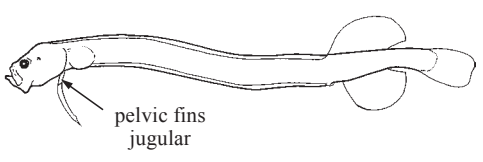
Habitat, biology, and fisheries: Meso- and bathypelagic. Feeds as zooplankton picker on copepods. All specimens histologically examined (more than 20) are males. Very rare deep-sea fishes of no commercial importance.

Remarks: Three or 4 genera (*Ataxolepis* may be synonymous with *Vitiaziella*) with 7 or 8 species (3 undescribed) throughout the world's oceans in tropical and subtropical latitudes. A needed revision has begun, but no females are known, nor is fresh or alcohol-only preserved tissue available to determine DNA relations.

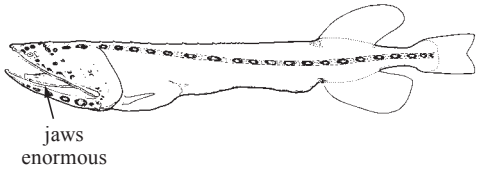
Similar families occurring in the area

Mirapinnidae: nasal organ poorly developed; pelvic fins jugular with 4 to 10 rays.

Cetomimidae: jaws extending far behind eye; lateral line well developed; all but one species with poorly developed nasal organs.



Mirapinnidae



Cetomimidae

Key to the species of Megalomycteridae occurring in the area

1a. Pelvic fins with 3 long rays; scales present only on body between dorsal and anal fins and caudal peduncle; eyes small to moderate, but well developed; lateral line of head weakly developed; mouth strongly oblique (Fig. 1). . . . . ***Megalomycter teevani***

1b. Pelvic fin with 0 or 1 ray; scales (usually lost) on head and body; eyes small and degenerate; lateral line of head well developed; mouth nearly horizontal. . . . . → ***2***

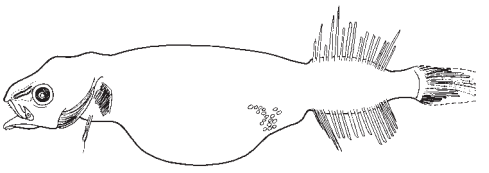


Fig. 1 ***Megalomycter teevani***

2a. Dorsal-fin rays 29 to 31; anal-fin rays 25 to 29 (rarely 20); anal-fin origin under dorsal-fin ray 4 to 6 (Fig. 2) . . . . . ***Cetomimoides parri***

2b. Dorsal fin rays 15 to 18; anal-fin rays 13 to 19; anal-fin origin under dorsal-fin ray 1 to 4 (Fig. 3) . . . . . ***Ataxolepis apus***

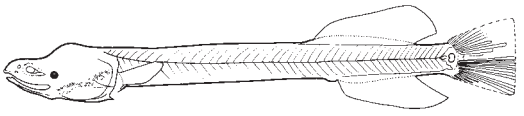


Fig. 2 ***Cetomimoides parri***

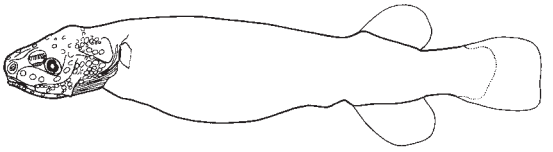


Fig. 3 ***Ataxolepis apus***

List of species occurring in the area

Ataxolepis apus Myers and Freihofer, 1966. To 6 cm. Recorded from WC Atlantic 31, EC Atlantic 34, possibly WC Pacific 71, unpublished records from NW Atlantic 21, SW Atlantic 41, SE Pacific 87, EC Pacific 77, and NW Pacific 61.

Cetomimoides parri Koefoed, 1955. To 4 cm. Recorded from EC Atlantic 34, unpublished records from WC Atlantic 31, WS Atlantic 41, and WC Pacific 71 (4 specimens examined, Paxton and Trnski, ms).

Megalomycter teevani Myers and Freihofer, 1966. To 3 cm. Known only from the holotype from WC Atlantic 31.

References

Becker, V.E. 1981. On the first record of a rare bathypelagic fish from the genus *Ataxolepis* (Megalomycteridae) in the Southern Hemisphere. *Vopr. Ikhtiol.*, 21(3):558-561. (in Russian, English transl. *J. Ichthyol.*, 21(3)).

Myers, G.S. and W. Freihofer. 1966. Megalomycteridae, a previously unrecognized family of deep-sea cetomimiform fishes based on two new genera from the North Atlantic. *Stan. Ichthy. Bull.*, 8(3):193-206.

Swinney, G.N. 1991. The first record of the rare deep-sea family Megalomycteridae (Lampriformes) from the north-eastern Atlantic. *J. Fish Biol.*, 38:839-843.