

Cynomacrurus Dollo, 1909**MACROUR Cyno**

Genus with Reference : *Cynomacrurus piriei* Dollo, 1909, Proc.Roy.Soc.Edinburg, 29(4):316-26 (type species *Cynomacrurus piriei* Doll, 1909, by monotypy).

Synonyms : None

Diagnostic Features : Mouth terminal; lower jaw with one row of 4 to 11 canine teeth; upper jaw teeth small, in a narrow band, a pair of fanglike teeth at anterolateral corners; branchiostegal rays 6; no barbel. Lateral line canal in two sections; anus at origin of anal fin; no light organ. Bathypelagic.

Remarks : Only a single species known.

Cynomacrurus piriei Dollo, 1909

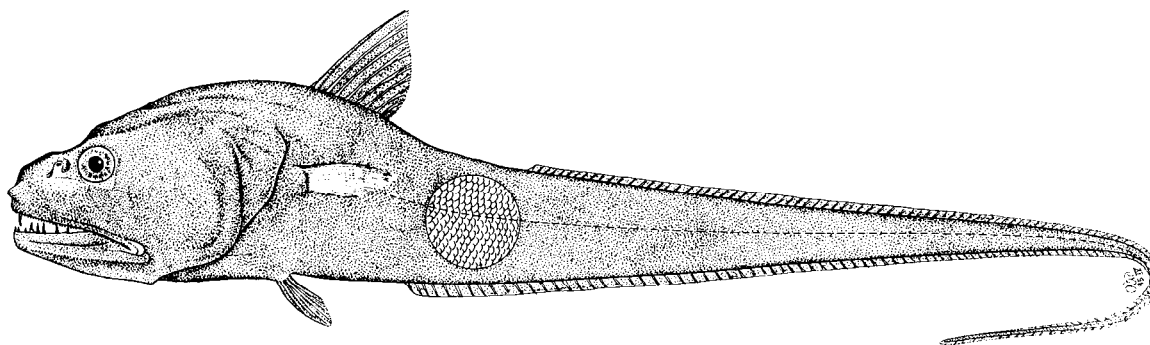
Fig. 506

MACROUR Cyno 1

Scientific Name with Reference : *Cynomacrurus piriei* Dollo, 1909, Proc.Roy.Soc.Edinburg, 29(4):316-26 (off Coat's Land, Antarctica; 71°50'S, 23°30'W; 0 to 1 829 m).

Synonyms : None

FAO Names : **En** - Dogtooth grenadier; **Fr** - Grenadier dente; **Sp** - Granadero dentón.



(after Regan, 1913)

Fig. 506

Diagnostic Features : Head profile rounded, without a protruding snout; orbits small, less than 15 % of head length. First dorsal fin with a rudimentary ray followed by a long smooth spinous ray and 8 or 9 segmented rays; pectoral fin with a splintlike uppermost ray and 14 to 16 normal rays; pelvic fin small, with 7 or 8 rays. Small, rather deciduous scales bearing 1 to 3 divergent rows of small, needlelike spinules uniformly covering almost all of body; scales absent over most of snout and in wide patches on head surrounding large pores of sensory lateralis system; a few small patches of scales between and anterior to first and second branchiostegal rays. Pyloric caeca rather long and slender, about 9 or 10. **Colour**: overall dark brown to brownish black.

Geographical Distribution : Circumpolar in Southern Ocean, extending north of Convergence in some areas (Fig. 507).

Habitat and Biology : Bathypelagic in midwaters of about 500 to 3 800 m, but most common in about 1 000 to 2 000 m depth.

Size : To 50 cm total length.

Interest to Fisheries : A common species in deep Antarctic midwaters, but so far not of commercial interest.

Literature : Dollo (1909); Regan (1913); Marshall (1964).

Remarks : The enlarged teeth and bathypelagic lifestyle are shared amongst grenadiers only with *Odontomacrus murrayi* Norman, 1939, but that species has a small fossa of the light organ between the pelvic fin bases and anus well removed from anal fin origin, usually closer to pelvic bases.

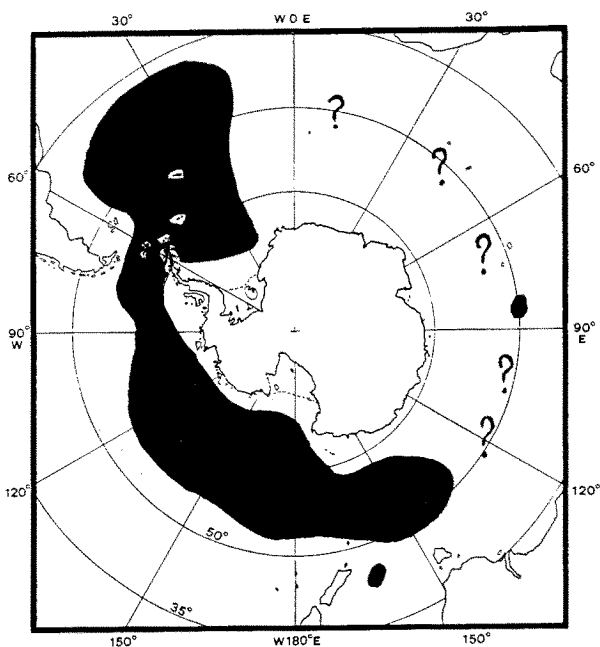


Fig. 507

Hymenocephalus Giglioli, 1882

MACROUR Hym

Genus with Reference : *Hymenocephalus* Giglioli, 1882, Nature (Lond.), 199 (type species *Hymenocephalus italicus* Giglioli, 1884, by monotypy).

Synonyms : *Mystaconurus* Günther, 1887, Rep.Sci.Results CHALLENGER Exped., 22 (Zool.): 124 (as subgenus of *Macrurus*) (type species *Hymenocephalus italicus* Giglioli, 1884, by subsequent designation of Jordan & Evermann, 1898:2580).

Diagnostic Features : Macrourines with 7 branchiostegal rays. Head large, cavernous; head covering thin or membranous; mouth large, subterminal to almost terminal; gill openings and outer gill slit rather wide; rakers numerous, usually more than 18 total on inner series of first arch. First dorsal fin with a smooth spinous ray. Anus usually immediately before anal fin origin. Striae, consisting of fine parallel black lines over silvery ground on isthmus, shoulder girdle, and chest. Light organ tubular; 2 lenslike windows, one before pelvic fin bases, the other before anus. Scales large, deciduous; scales with short fine spinules, these obsolescent in some species. Retia mirabilia and gas glands 2.

Habitat, Distribution and Biology : Worldwide in tropical seas except continental margin of eastern Pacific, where only a single individual has been reported from midwaters off Peru. Benthopelagic (occasionally bathypelagic) in about 300 to 900 m depth

Size : To about 25 cm total length, but most species less than 20 cm

Interest to Fisheries : Commonly taken by trawls in upper continental slope and shelf of most tropical seas, but the small adult size makes the species of little fisheries interest.

Literature : Gilbert & Hubbs (1920); Okamura (1970a, b); Marshall (1973); Iwamoto (1979)

Remarks : The genus constitutes a well-defined monophyletic unit whose origins may lie along the basal levels of the Macrourinae. Gilbert & Hubbs (1916) have noted its similarities to the bathygadines, and this relationship has been supported by Okamura's (1970b) studies of different structures and organ systems. The reasons for treating *Hymenogadus* and *Spicomacrus* as subgenera are given in Iwamoto (1979). The three taxa are readily distinguished by characters given in the key, which is modified from that of Gilbert & Hubbs (1920:520).

Key to Species of the genus *Hymenocephalus*
(modified from Gilbert & Hubbs, 1920):

1a. Second dorsal spine weakly denticulate (Fig. 508) Subgenus ***Hymenogadus***

2a. Striations on sides of isthmus well developed (Fig. 508); barbel more than 2/3 of orbit diameter; inner gill rakers on first arch 0 to 4 + 11 to 15 (fig. 509) (Atlantic, Western Indian Ocean, Japan, the Philippines) ***H. gracilis***
(Fig. 508)

2b. Striations on sides of isthmus obsolete; barbel about half orbit diameter; inner gill rakers on first arch about 10 on lower limb (Hawaiian Islands)..... ***H. tenoio***

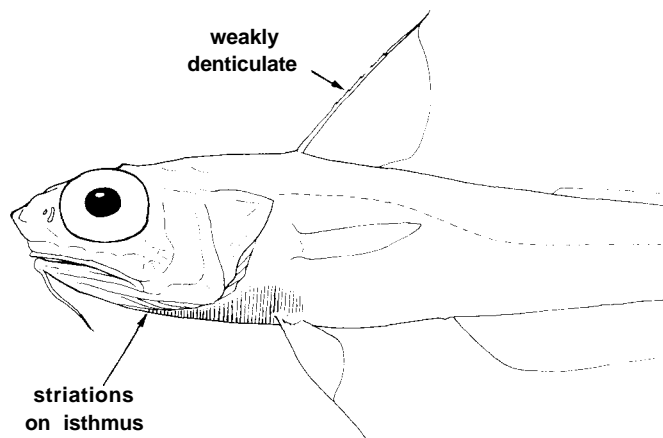
1b. Second dorsal spine wholly smooth

3a. Snout with 3 horizontal platelike processes; outer pelvic ray distally expanded (Fig. 510); 9 to 12 inner gill rakers on lower limb of first arch (Japan) Subgenus ***Spicomacrurus***
H. kuronumai
(Fig. 510)

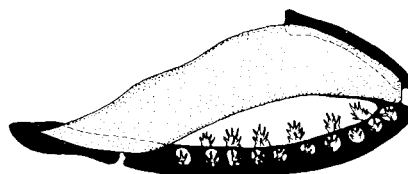
3b. Snout more normal, without platelike processes; outer pelvic ray with filamentous tip; 14 or more inner gill rakers on lower limb of first arch

4a. Orbit very small, 4 to 5 times in head (Fig. 511) Subgenus ***Papyrocephalus***

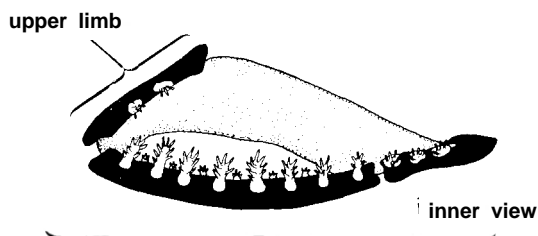
5a. Barbel small but present; pelvic fin with 7 or 11 rays



H. gracilis
(after Gilbert & Hubbs, 1920) **Fig. 508**



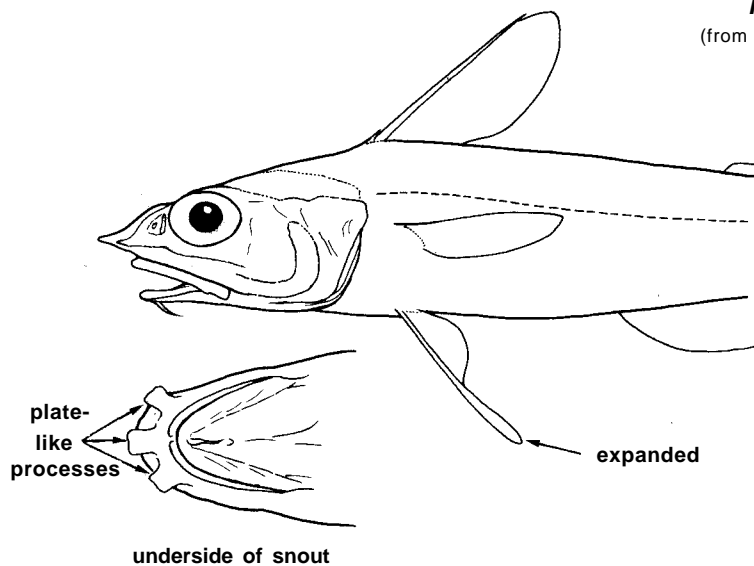
outer view



lower limb

first gill arch
H. gracilis
(from Okamura, 1970b)

Fig. 509



H. kuronumai **Fig. 510**

6a. Pelvic fins with 7 rays (the Philippines).....*H. barbatulus*
(Fig. 511)

6b. Pelvic fin with 11 rays (Japan).....*H. papyraceus*
(Fig. 512)

5b. Barbel absent; pelvic fin with 13 to 14 rays (Hawaiian Islands, W Atlantic) *H. aterrimus*
(Fig. 513)

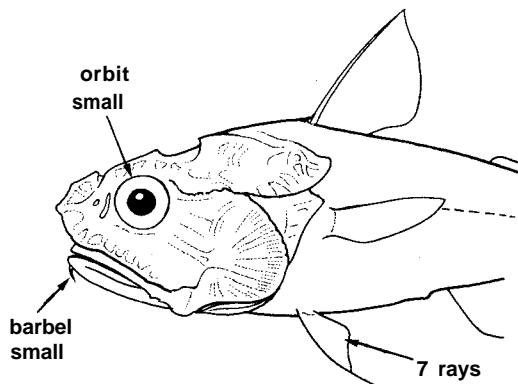
4b. Orbit large, 2.5 to 3.5 times in head (Fig. 514) Subgenus *Hymenocephalus*

7a. Barbel longer than orbit diameter (Fig. 514); pelvic fins with 8 rays)

8a. Barbel about 2/3 head (Australia, Indonesia).. *H. longibarbis**

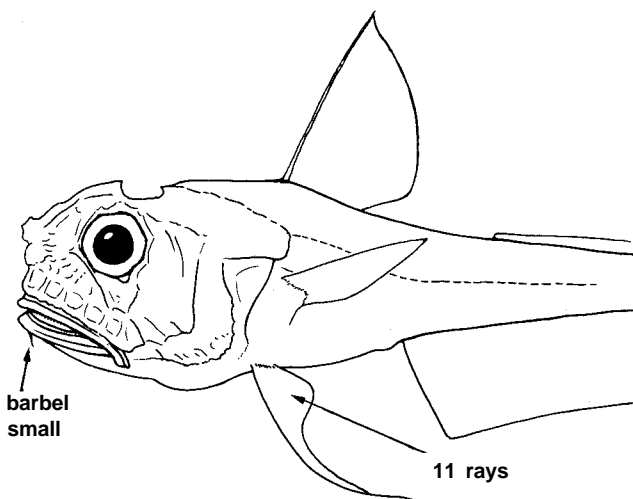
8b. Barbel less than 2/3 (Fig. 514) (Japan, the Philippines, South China Sea, Indonesia) *H. longiceps**
(Fig. 514)

7b. Barbel much shorter than orbit diameter or absent; pelvic fins with 8 to 14 rays



H. barbatulus

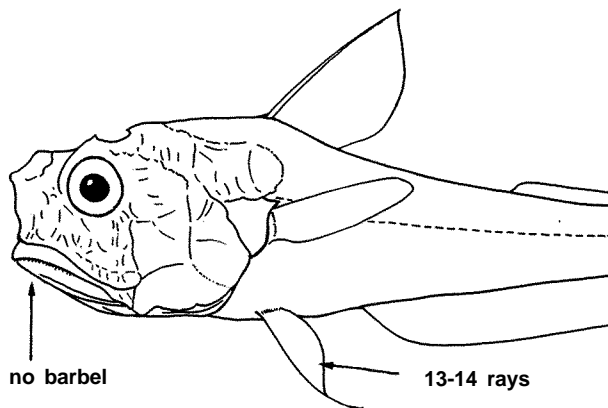
Fig. 511



H. papyraceus

(after Jordan & Gilbert, 1904)

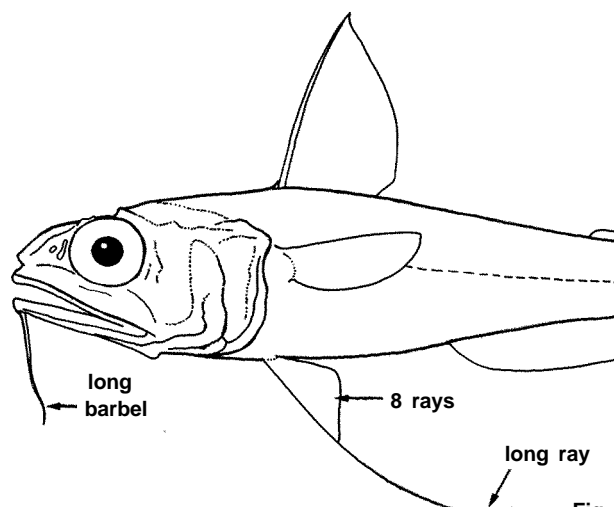
Fig. 512



H. aterrimus

(after Marshall & Iwamoto, in Marshall, 1973)

Fig. 513



H. longiceps

(after Radcliffe, 1912)

Fig. 514

*

H. longibarbis and *H. longiceps* are poorly differentiated. They may very well represent a single species

9a. Pelvic fins with 8 rays; rays greatly produced beyond anus, distal portion prominently black; no barbel (Fig. 515) (the Philippines) *H. longipes* (Fig. 515)

9b. Pelvic fins with 7 to 15 rays; rays little or not at all produced beyond anus, not black distally; barbel present or absent

10a. Pelvic fins with 7 or 8 rays (rarely 6 or 9)

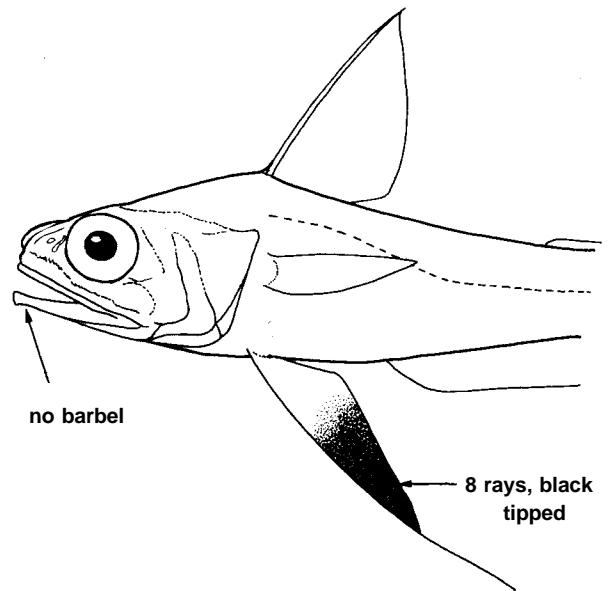
11a. Barbel absent or rudimentary (Indonesia) *H. grimaldii* (Fig. 516)

11b. Barbel present (Japan to Indonesia) *H. striatissimus* (Fig. 517)

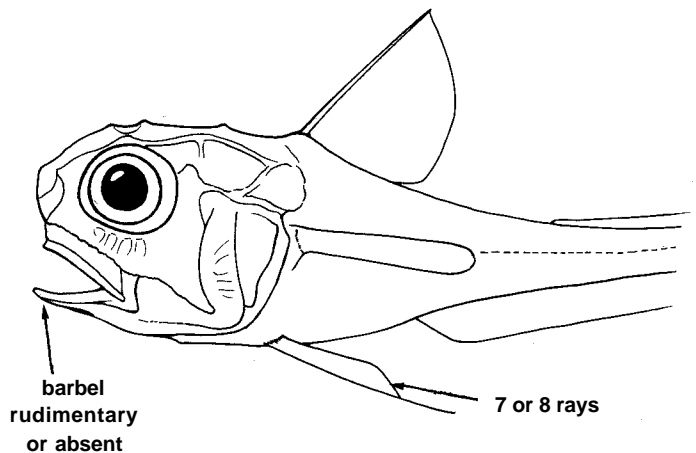
10b Pelvic fins with 10 to 15 rays

12a. Barbel minute or absent

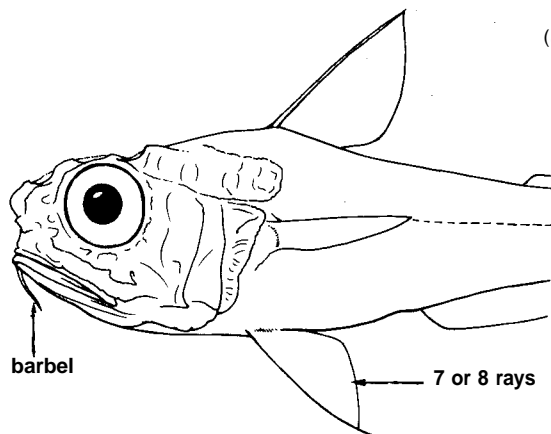
13a. Snout short to moderate, slightly to notably protruding beyond mouth, about 2.2 to 2.5 times into postrostral length; orbits moderate to large, longest diameter usually oblique, about equal to or much shorter than length orbit to preopercle angle (Fig. 519)



H. longipes (after Radcliffe, 1912) **Fig. 515**



H. grimaldii (after Weber, 1913) **Fig. 516**



H. striatissimus (after Gilbert & Hubbs, 1920) **Fig. 517**

14a. Greatest orbit diameter usually 1.4 to 1.6 times into distance orbit to preopercle angle; pelvic fins usually with 11 or 12 rays (sometimes 13)

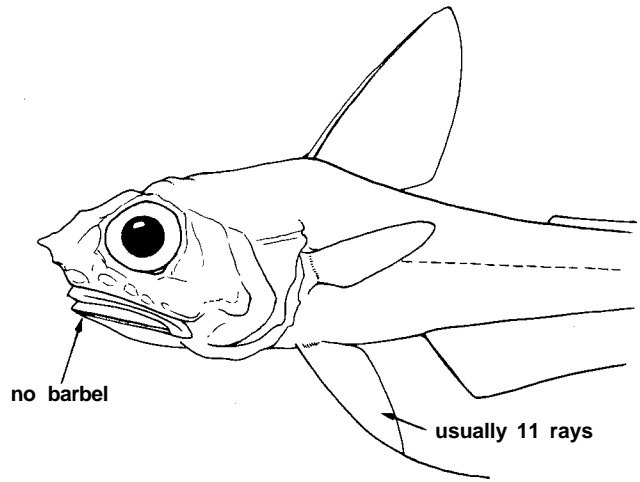
15a. Pelvic fins with 11 (sometimes 12) rays (Japan to South China Sea) *H. lethonemus**
(Fig. 518)

15b. Pelvic fins with 12 (sometimes 11 or 13) rays (the Philippines, Indonesia) *H. nascens**
(Fig. 519)

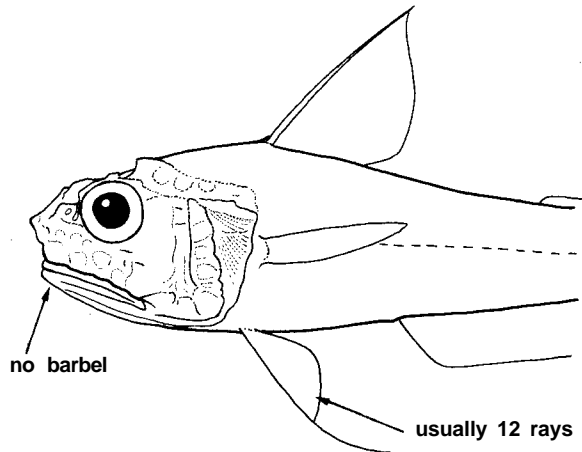
14b. Greatest orbit diameter usually 0.9 to 1.4 times into distance orbit to preopercle angle; pelvic fins usually with 13 to 15 (sometimes 12) rays

16a. Interorbital space 0.92 to 1.16 times into orbit (Western Atlantic) *H. billsamorom*
(Fig. 520)

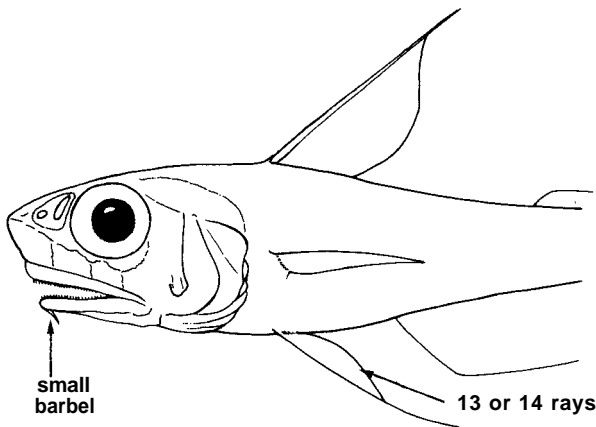
16b. Interorbital space 1.18 to 1.40 times into orbit (Hawaiian Islands) *H. striatulus*
(Fig. 521)



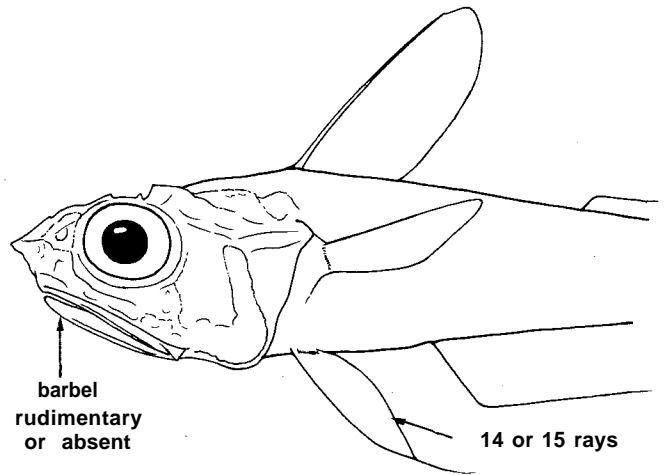
H. lethonemus Fig. 518
(after Jordan & Gilbert, 1904)



H. nascens Fig. 519
(after Gilbert & Hubbs, 1920)



H. billsamorom Fig. 520
(after Marshall & Iwamoto in Marshall, 1973)



H. striatulus Fig. 521
(after Gilbert, 1905)

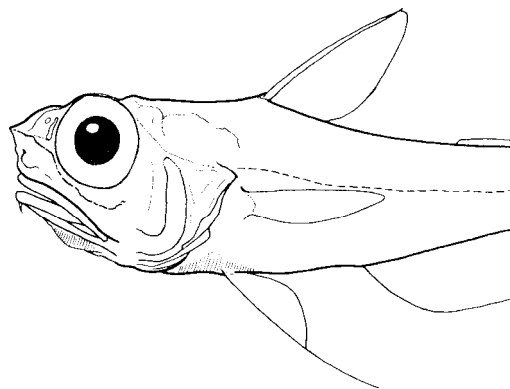
* Weber & de Beaufort (1929) synonymized *H. nascens* with *H. lethonemus*, but Okamura (1970a) and Marshall & Iwamoto (1973:602) continued recognition of the former

13b. Snout very short, scarcely protruding beyond mouth, about 2.8 to 3.4 times into postrostral length of head; orbits large, circular or ellipsoidal in outline, their vertical diameter usually greatest (Fig. 522), about equal to length orbit to preopercle (Hawaiian Islands) ***H. antraeus*** (Fig. 522)

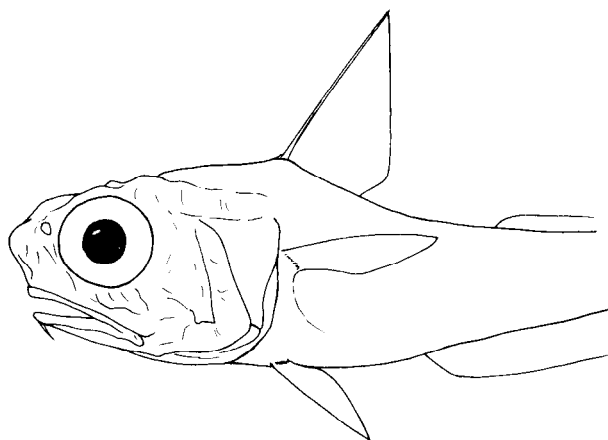
12b. Barbel small but distinctly developed, more than 7% of head length

17a. Orbit 2.5 to 3.3 times in head length; its length about equal to or greater than interorbital width (Atlantic) ...***H. italicus**** (Fig. 523)

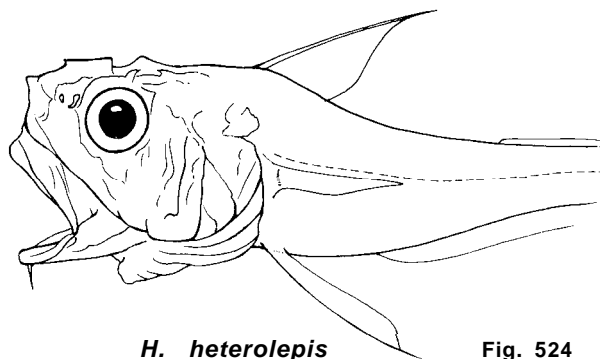
17b. Orbit diameter about 3.5 times in head length, about 5/6 of interorbital width (Indian Ocean) ***H. heterolepis**** (Fig. 524)



H. antraeus Fig. 522



H. italicus (after Parr, 1946) Fig. 523



H. heterolepis (after Alcock, 1899) Fig. 524

* ***H. italicus*** and ***H. heterolepis*** may also be synonyms

List of Species :

Subgenus *Hymenocephalus*

- Hymenocephalus (H.) antraeus* Gilbert & Cramer, 1897
Hymenocephalus (H.) billsamorom Marshall & Iwamoto, 1973
Hymenocephalus (H.) grimaldii Weber, 1913
Hymenocephalus (H.) heterolepis Alcock, 1889
Hymenocephalus (H.) italicus Giglioli, 1884
Hymenocephalus (H.) lethonemus Jordan & Gilbert, 1904
Hymenocephalus (H.) longibarbis Günther, 1887
Hymenocephalus (H.) longiceps Smith & Radcliffe, 1912
Hymenocephalus (H.) longipes Smith & Radcliffe, 1912
Hymenocephalus (H.) nascens Gilbert & Hubbs, 1920
Hymenocephalus (H.) striatissimus Jordan & Gilbert, 1904
Hymenocephalus (H.) striatissimus aeger Gilbert & Hubbs, 1920
Hymenocephalus (H.) striatissimus hachijoensis Okamura, 1970
Hymenocephalus (H.) striatissimus torvus Smith & Radcliffe, 1912
Hymenocephalus (H.) striatulus Gilbert, 1905

Subgenus *Hymenogadus* Gilbert & Hubbs, 1920

- Hymenocephalus (H.) gracilis* Gilbert & Hubbs, 1920
Hymenocephalus (H.) tenuis Gilbert & Hubbs, 1917

Subgenus *Papyrocephalus* Gilbert & Hubbs, 1920

- Hymenocephalus (P.) aterrimus* Gilbert, 1905
Hymenocephalus (P.) barbatulus Gilbert & Hubbs, 1920
Hymenocephalus (P.) papyraceus Jordan & Gilbert, 1904

Subgenus *Spicomacrurus* Okamura, 1970

- Hymenocephalus (S.) kuronumai* Kamohara, 1938

***Hymenocephalus italicus* Giglioli, 1884**

Fig. 525

MACROUR Hym 1

Scientific Name with Reference : *Hymenocephalus italicus* Giglioli, in Giglioli & Issel, 1884, *Pelagos, saggi sulla vita et sui prodotti del mare Genova*, 228, fig. (off Sicily and Sardinia, 508 and 823 m).

Synonyms : *Malacocephalus laevis* -- Giglioli, 1882 (name only; non Lowe, 1874); *Macrurus (Mystaconurus) italicus* - Günther, 1887; *Macrurus italicus* -- Collett, 1896.

FAO Names : En - Glasshead grenadier

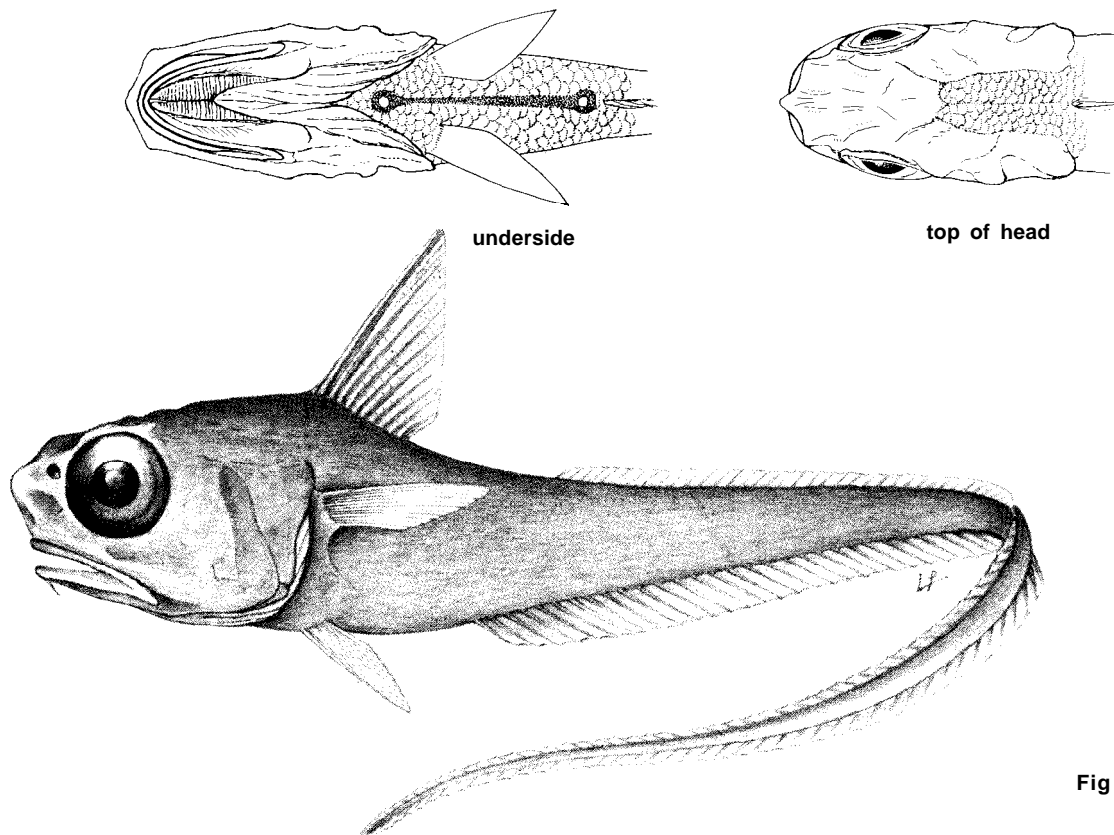


Fig 525

Diagnostic Features : Orbits large, about equal to or greater than interorbital width, about 3 times into head length; barbel small but distinctly developed, its length about equal to pupil diameter, 10 to 15% of head length; outer gill rakers on first arch 4 or 5 + 19 to 21 (21 to 25 total); on second arch 4 or 5 + 18 to 22. Spinous second ray of first dorsal fin smooth, followed by 9 to 12 (usually 10 or 11) segmented rays; pectoral fin rays i13 to i16; pelvic fin rays 10 to 12, usually 11. Lenslike swellings of anterior and posterior dermal windows of light organ small but distinct. Pyloric caeca short, thick, 13 to 15 total.

Geographical Distribution : Throughout most of the warm-water Atlantic, from Portugal to Angola and in the Mediterranean in the east, and the Florida Straits through the Gulf of Mexico and Caribbean Sea to northern Brazil in the west (Fig. 526).

Habitat and Biology : Benthopelagic in about 100 to 800 m, but most common at depths less than 500 m. Feeds predominantly on pelagic copepods, to a lesser extent on euphausiids and gammarian amphipods, and to a minor extent on shrimps, ostracods, cumaceans, other small crustaceans, and small fish.

Size : To about 20 cm total length.

Interest to Fisheries : A common species often trawled in large numbers, but due to its small size it is not of significant interest to fisheries.

Local Names : JAPAN: Itaria-sujidara.

Literature : Parr (1946); Iwamoto (1970); Marshall & Iwamoto (in Marshall, 1973).

Remarks : *Hymenocephalus heterolepis* from the Indian Ocean has been placed in the synonymy of *H. italicus* by Marshall & Iwamoto (1973), but the author's examination of specimens from the Andaman Sea suggests that the former species should be recognized based on differences in the relative dimensions of the orbit and interorbital space (see key).

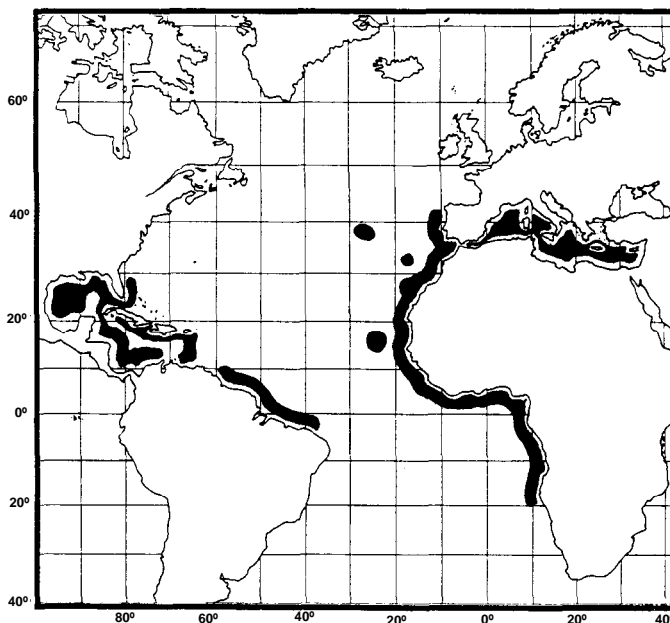


Fig. 526

Lepidorhynchus Richardson, 1846

MACROUR Lep

Genus with Reference : *Macrourus* vel *Lepidorhynchus*, 1846, *Zool.Voy.H.M.S.'Erebus'and 'Terror'*, 2:537 (type species *Macrourus* vel *Lepidorhynchus denticulatus* Richardson, 1846, by monotypy).

Synonyms : *Optonurus* Günther, 1887

This genus includes a single species.

***Lepidorhynchus denticulatus* Richardson, 1846**

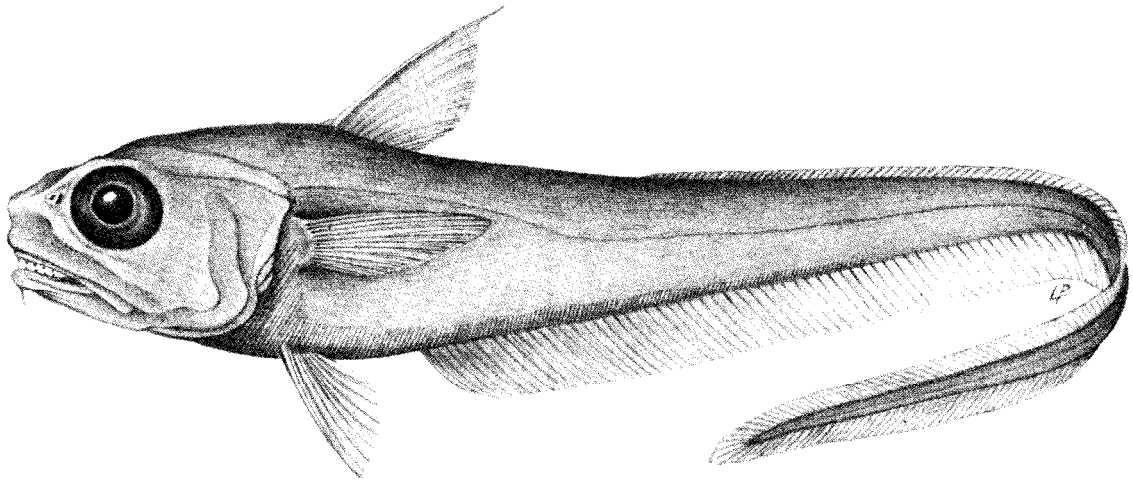
Fig. 527

MACROUR Lep 1

Scientific Name with Reference : *Macrourus* vel *Lepidorhynchus denticulatus*, 1846, Zool.Voy.H.M.S. 'Erebus' and 'Terror', 2:53, pl. 32, figs 1-3 (South Australia).

Synonyms : *Coryphaenoides denticulatus* - Günther, 1862; *Macrurus (Optonurus) denticulatus* - Günther, 1887; *Optonurus denticulatus* - Gilbert & Hubbs, 1916; *Lepidorhynchus denticulatus* - Phillipps, 1927.

FAO Names : En - Thorntooth grenadier.



(after McCulloch, 1926)

Fig. 527

Diagnostic Features : A macrourine with 6 branchiostegal rays. Head ridges scarcely developed; no stout modified scales; premaxillary teeth in broad bands with outer row enlarged; mandibular teeth enlarged, in 1 row, slightly smaller and closer set than in premaxillary teeth; jaws essentially terminal, long, reaching to below posterior 1/3 of orbit diameter. Small tubercular gill rakers present on outer series of first arch; about 16 in inner series. First dorsal fin spine smooth. Pelvic fin rays 8 or 9. Anus at anal fin origin. Ventral striae consisting of alternate black and silvery lines along ventral aspects of body and tail (shoulders, isthmus, ventrally on abdomen, ventrally immediately above anterior half of anal fin). A small naked fossa of light organ adjacent to anus. Scales densely covered with lanceolate spinules arranged in quincunx or convergent rows. Retia mirabilia 9.

Geographical Distribution : Southern Australia and New Zealand (Fig. 528).

Habitat and Biology : Benthopelagic, in 180 to 1 000 m, but most frequent at 270 to 450 m.

Size : To 55 cm total length.

Interest to Fisheries : According to Last et al. (1983:245), the species is the most abundant whiptail found off Tasmania "where it is frequently caught by the tonne as a large part of the bycatch of trawlers. Appears to be an important prey item for the more economically important blue grenadier".

Literature : Marshall (1973); McCann & McKnight (1980); Last et al. (1983).

Local Names : AUSTRALIA: Javelin fish, Toothed whiptail.

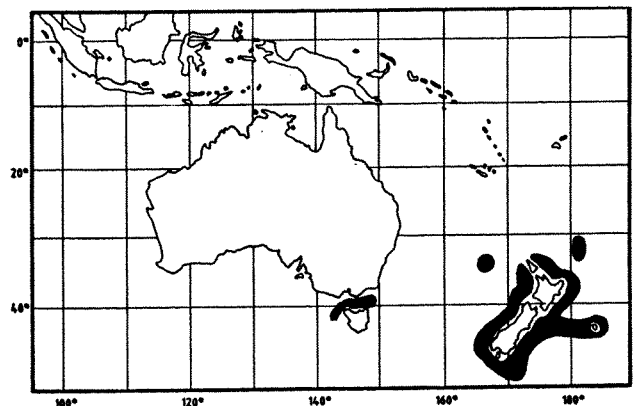


Fig. 528