

Diagnostic Features : A medium-sized species. Snout short, pointed, tipped with a large conical tubercular scale at tip and smaller tubercles at lateral angles; suborbital ridge prominent; mouth small, its rictus restricted posteriorly by lip folds, extending only to below nostrils; the maxillary extends posteriorly to below anterior 1/3 of orbit; teeth small, in broad bands in both jaws, outer series slightly enlarged in upper jaw; barbel very small, 2.1 to 3.6 times into orbit diameter; preopercle margin broadly rounded, not lobelike; preopercular ridge produced at angle; interopercle narrowly exposed beyond preopercle; gill membranes broadly attached to isthmus, no free fold posteriorly; opercular opening extends to below preopercle ridge angle; inner gill rakers on first arch 1 or 2 + 7 to 9. Measurements in percentage of head: snout 24 to 35; orbit diameter 22 to 35; interorbital space 20 to 27; upper jaw 25 to 33; barbel 5 to 8; orbit to angle of preopercle 39 to 43; body depth 68 to 79; height of first dorsal fin 82 to 110; outer pelvic fin ray 48 to 66; interspace between first and second dorsal fins 77 to 93. First dorsal fin with 2 spines and 9 to 11 rays; pectoral fin rays i18 to i23; pelvic fin rays 9 or 10; second spinous ray of first dorsal fin about 0.8 to 1.3 in head length, weakly produced, denticulations widely spaced; outer pelvic fin ray slightly produced, scarcely extends to anal fin origin. Scales coarse and tightly adherent. Most of head except underside of snout scaled; scales on body with long, appressed spinules in convergent rows, except those on nape and chest, which are in divergent rows; scale rows below midbase of first dorsal fin 5 to 6.5. Pyloric caeca 8 to 12, shorter than orbit diameter. **Colour**: ground colour somewhat tawny; oral cavity greyish, branchial cavity blackish; orbital rims blackish; fins dusky, darker distally.

Geographical Distribution : Northern Japan to East China Sea (Fig. 497).

Habitat and Biology : Benthopelagic in sandy and muddy bottoms at depth of 625 to 1 180 m and temperatures of 1.5 to 5°C.

Size : To at least 47 cm total length.

Interest to Fisheries : Taken in bycatch of trawlers off northern Japan where it is sometimes used in fish paste.

Local Names : JAPAN: Hana-sokodara.

Literature : Günther (1877, 1887); Gilbert & Hubbs (1916); Okamura (1970a).

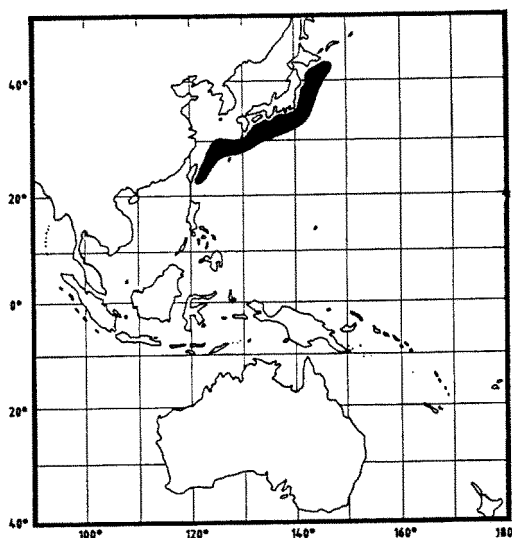


Fig. 497

Coryphaenoides rupestris Gunnerus, 1765

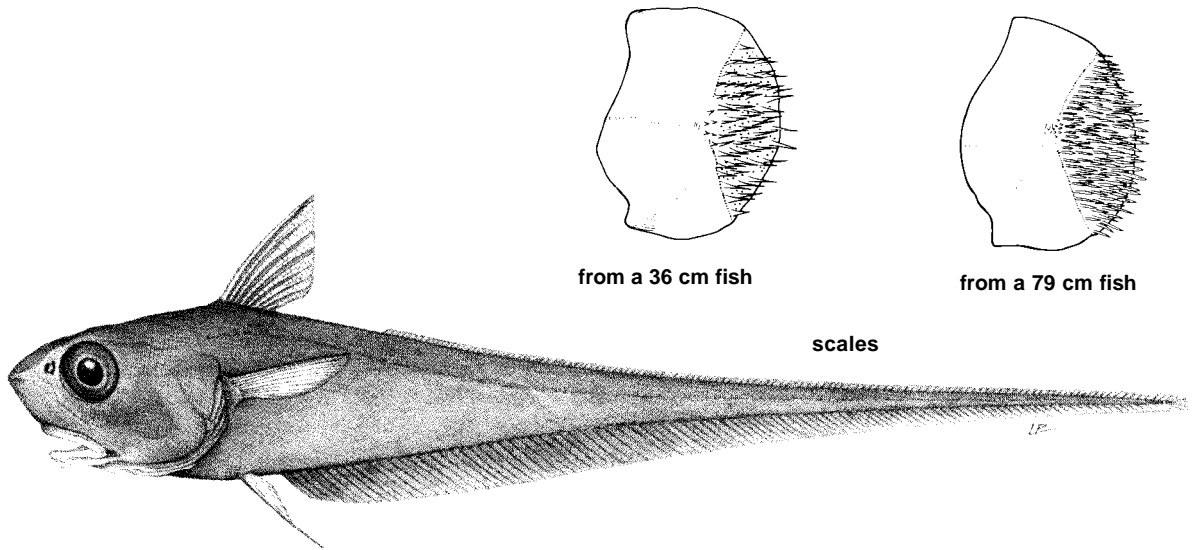
Fig. 498

MACROUR Cory 14

Scientific Name with Reference: *Coryphaenoides rupestris* Gunnerus, 1765, Selsk.Skrift.Trondhj., 3(4):50, pl.3, figs 1-2 (near Trondhjem).

Synonyms : *Coryphaena rupestris* --Müller, 1776; *Macrourus stroemii* Reinhardt, 1832; *Lepidoleprus norvegicus* Nilsson, 1832; *Macrurus norvegicus* --Nilsson, 1885; *Coryphaenoides norvegicus* Günther, 1862; *Macrurus (Coryphaenoides) rupestris* --Günther, 1887; *Macrurus rupestris* --Smitt, 1895.

FAO Names : En · Roundnose grenadier.



(after Parr, 1946)

Fig. 498

Diagnostic Features : A large species. Abdominal region short. Snout broad, rounded, tipped with a large blunt tubercular scute; head broad, rather soft, deep; chin barbel minute; teeth small, conical, in long narrow band in premaxillary, about 3 rows wide, narrowing to 1 row posteriorly, outer series slightly enlarged; in 1 or 2 irregular rows in mandible; interopercle a thin, naked flap; inner gill rakers on first arch 3 + 15 to 17; outer gill rakers on second arch 3 + 15 to 17. Measurements in percentages of head length: snout length 27 to 31; preoral 22 to 28; orbit diameter 29 to 32; interorbital space 29 to 38; upper jaw 35 to 39; suborbital shelf 15 to 17; barbel length 2.5 to 5; isthmus to anal fin origin 51 to 61; interspace between first and second dorsal fin 37 to 54. First dorsal fin with 2 spines and 8 to 11 rays; pelvic fin rays 7 or 8; outer pelvic fin ray elongated, almost equal to head length. Scales relatively adherent, completely and uniformly covering almost all of head and body; a small patch of scales on gular membrane; no modified scutelike scales except at tip of snout; spinules dense on body scales, long, slender, recurved, narrowly lanceolate, with longitudinal anterior concavity; scales below midbase of first dorsal fin 6.5. Pyloric caeca 29 to 31 (long, slender). **Colour**: medium brown to greyish; orbits, mouth, gill cavity, and fins blackish to brownish grey.

Geographical Distribution : Temperate North Atlantic from about 37° N to Baffin Island and Greenland in the western Atlantic, and off Iceland and Norway (66° N) south to North Africa (20° N) in the eastern Atlantic. Middleton & Musick (1986) reported the isolated capture of 2 specimens from the tongue of the Ocean east of Andros Island (about 24° N, 77° W) in the Bahama Islands (Fig. 499).

Habitat and Biology : Benthopelagic to bathypelagic in about 400 to 1 200 m depth, but ranges from 180 to 2 200 m. The species apparently undergoes spawning migrations as well as diurnal vertical feeding migrations that may carry them more than 1 000 m off bottom. During the summer months, it moves to deeper waters, returning to shallower waters in the winter. Spawning is believed to take place in summer and autumn, primarily in Icelandic waters. Females mature at around 60 cm, males at about 40 cm. Fecundity estimates range from 12 000 to 35 500 eggs per female. Feeds on a variety of fish and invertebrates, but primarily on pelagic crustaceans such as shrimps, amphipods and cumaceans; cephalopods and lantern fishes constitute a lesser part of the diet.

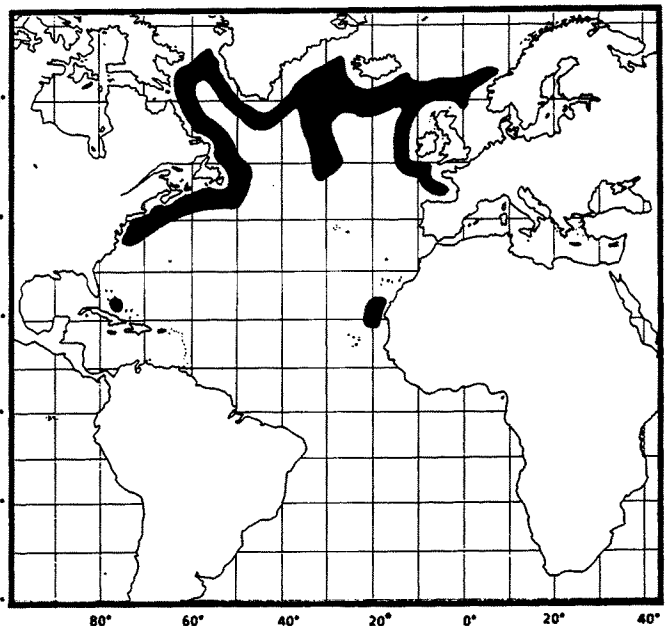


Fig. 499

Size : To more than 100 cm total length.

Interest to Fisheries : Catch statistics in the FAO Yearbook of Fishery Statistics reported 20 846 metric tons of which 12 604 t were taken in the northeastern Atlantic (USSR, ca. 10 900 t, Denmark, ca. 1 600 t), and 8 242 t in the northwestern Atlantic (German Democratic Republic, ca. 4 500 t, USSR, ca. 2 700 t, Portugal, ca. 1 000 t, and others). A valuable commercial fish in the North Atlantic currently facing overexploitation. The flesh is of excellent texture and taste, and is consumed directly. The fisheries for the species, begun in the mid-sixties, is by factory stern trawlers, which may fish as deep as 1300 m. The Soviet Union, German Democratic Republic and Poland are the primary countries engaged in this fishery. Maximum catch per unit effort is achieved in the late summer and fall when the species form dense concentrations in 600 to 900 m depth.

Local Names : USA: Black grenadier, Rock grenadier, Roundnose grenadier.

Literature : Parr (1946); Pechenik & Troyanovskii (1969); Nodzynski & Zukowski (1971); Marshall & Iwamoto (in Marshall, 1973); Haedrich (1974); Gushchin & Podrazhanskaya (1984); Middleton & Musick (1986).

***Coryphaenoides serrulatus* Günther, 1878**

Fig. 500

MACROUR Cory 15

Scientific Name with Reference : *Coryphaenoides serrulatus* Günther, 1878, *Ann.Mag.Nat.Hist.*, ser.5, 7:26 (northeast of New Zealand, 1280 m).

Synonyms : *Macurus (Coryphaenoides) serrulatus*--Günther, 1887; *Cotyphaenoides (Coryphaenoides) serrulatus*--McCann & McKnight, 1980.

FAO Names : En - Serrulate whiptail

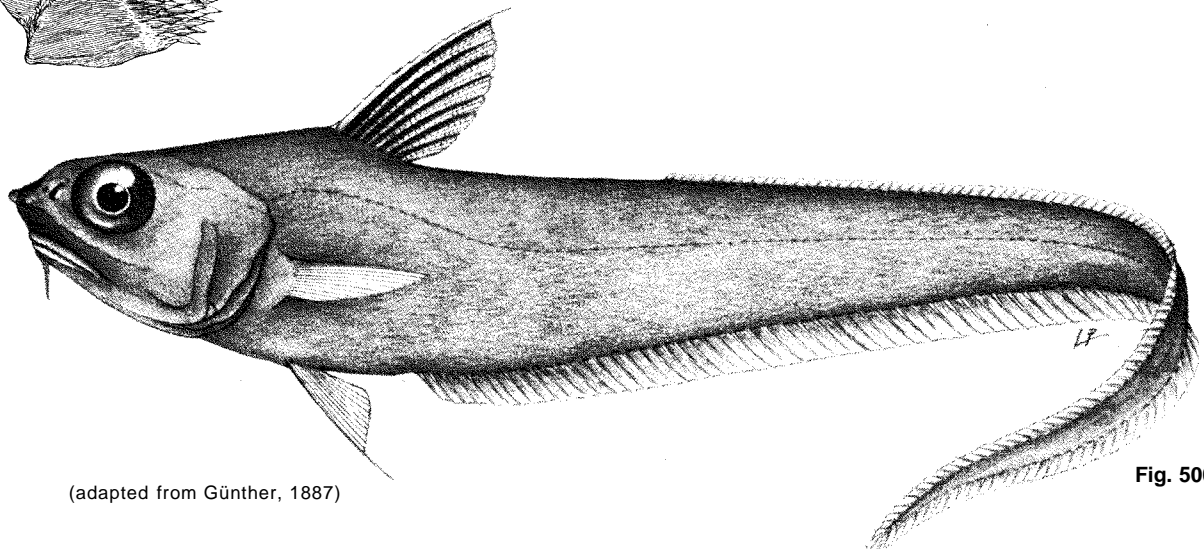
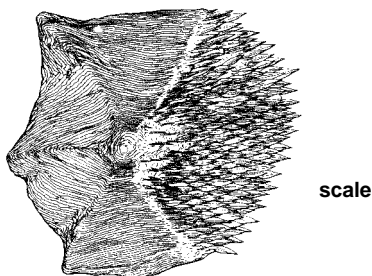


Fig. 500

Diagnostic Features : A medium-sized species of the subgenus *Chalinura*. Snout blunt, scarcely protruding beyond the large mouth; terminal and lateral angles with large, stout tubercular scutes; the maxillary extends to below posterior margin of orbits; barbel stout, 1.2 to 1.3 times into orbit diameter; teeth small, in a band in upper jaw, outer series enlarged; mandibular teeth small, in a single row except at symphysis; outer series of gill rakers papilla-like, their length about twice the width in the longest rakers; gill membranes narrowly united below posterior edge of orbits; inner gill rakers on first arch 1 or 2 + 11 or 12. Measurements in percentages of head length: snout 25 to 28; orbit diameter 30 to 36; interorbital space 18 to 22; suborbital width 11 to 13; upper jaws 39 to 41; barbel 20 to 26; outer gill slit 15 to 20; isthmus to anal fin origin 92 to 119; interspace between first and second dorsal fins 56 to 107.

First dorsal fin with 2 spines and 9 to 11 rays; pectoral fin rays 18 to 22; pelvic fin rays 7; fin rays not especially prolonged. Scales adherent, densely covered with distinctly shield-shaped imbricate spinules; underside of head scaled; interopercle naked; a double row of enlarged scales on suborbital shelf; sensory pores of head prominent, especially ventrally; scales below midbase of first dorsal fin 5.5 to 6.5. Pyloric caeca short, directed anteriorly, about 17. **Colour:** dark grey overall; fins, gill membranes, and orbital rim black; mouth and gill cavities blackish.

Geographical Distribution : New Zealand, Tasman Sea, south of Tasmania, southeast Australia (Victoria), and possibly also across the Indian Ocean (Fig. 501).

Habitat and Biology : Benthopelagic in 750 to 2 070 m depth.

Size : To at least 45 cm total length.

Interest to Fisheries : Trawled commonly in depths exceeding 900 m off Tasmania.

Local Names : TASMANIA: Serrulate rattail.

Literature : Günther (1887); McCann & McKnight (1980); Last *et al.* (1983).

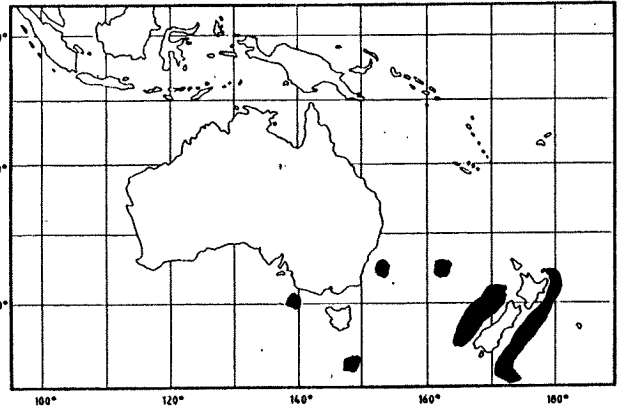


Fig. 501

Remarks : This species is closely related to *C. suberrulatus* Makushok, but it lacks the prolonged pectoral and pelvic rays of that species, has a longer barbel, fewer gill rakers, more pectoral fin rays, broader scale spinules, and more complete scale covering on the snout. Soviet collections in Moscow contain numerous representatives of what are possibly a subspecies of *C. serrulatus* from the Indian Ocean. These specimens come from the Great Australian Bight, Broken Ridge (West Australian Ridge), and Madagascar Ridge.

***Coryphaenoides suberrulatus* Makushok, 1976**

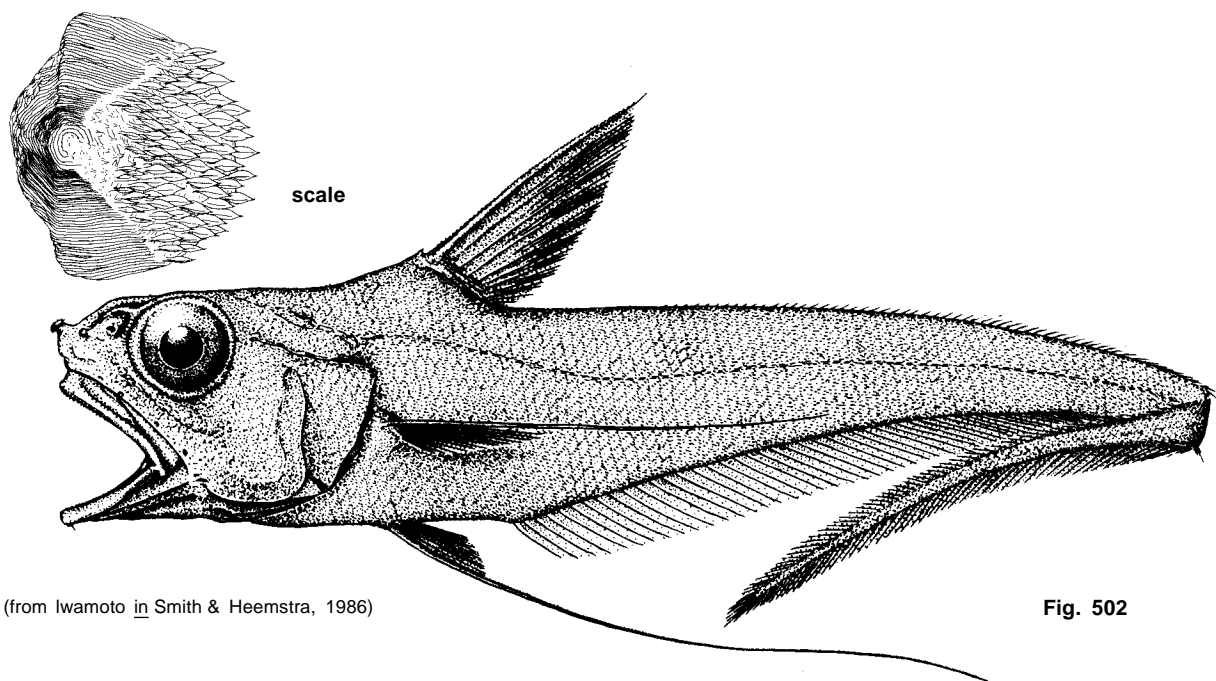
Fig. 502

MACROUR Cory 16

Scientific Name with Reference : *Coryphaenoides suberrulatus* Makushok, 1976, *Tr.Shirshov Inst. Oceanol. Akad.Nauk SSSR*, 104: 144 (east of Campbell island; 52°20'S, 166°13'E; 1148 to 1180 m).

Synonyms : *Coryphaenoides (Coryphaenoides) quadripennatus* McCann & McKnight, 1980.

FAO Names : En - Longrayed whiptail.



(from Iwamoto *in* Smith & Heemstra, 1986)

Fig. 502

Diagnostic Features : A rather small species of the subgenus *Chalinura*. Snout bluntly pointed, scarcely protruding beyond large mouth; terminal and lateral angles with large, stout tubercular scutes; the maxillary extends to below posterior margin of orbits; barbel rudimentary, more than 6 times into orbit diameter; teeth small, in a narrow band in upper jaw, outer series slightly enlarged, with arrowhead-shaped tips; mandibular teeth small, in 1 or 2 irregular rows laterally but clustered at symphysis; outer series of gill rakers papilla-like, their length about twice the width (in the longest rakers); gill membranes narrowly united under posterior edges of orbits; inner gill rakers on first arch 2 + 15 to 17. Measurements in percentages of head length: snout 27 to 29; orbit diameter 30 to 32; interorbital space 21 to 25; suborbital width 8 or 9; upper jaw 45 to 46; barbel 2 to 5; outer gill slit 21 to 27; isthmus to anal fin origin 92 to 102; interspace between first and second dorsal fins 46 to 54. First dorsal fin with 2 spines and 10 or 11 rays; pectoral fin rays i13 to i16; pelvic fin rays 7; second pectoral and first (outer) pelvic fin rays greatly elongated. Scales adherent, densely covered with distinctly lanceolate, much reclined, imbricate spinules arranged in V-shaped rows; underside of snout and anteriorly on lower jaws naked; narrow suborbital shelf with a single row of coarsely modified scales (a second row of small scales anteriorly). Sensory pores of head prominent; scales below first dorsal fin origin 8 or 9, below midbase of first dorsal fin 5 or 6. Pyloric caeca short, directed anteriorly, 10 to 12; retia mirabilia 6. **Colour**: brownish grey overall, entire circumference of trunk broadly darker; fins dusky; gill and mouth cavities blackish.

Geographical Distribution : New Zealand, south of Tasmania, off Campbell Island, off Chatham Island, South Africa, southwestern Atlantic off Falkland/Malvinas Islands and Argentina (Fig.503)

Habitat and Biology : Benthopelagic in 915 to 1180 m depth.

Size : To at least 37 cm total length.

Interest to Fisheries : Trawled commonly in depths of 900 to 1050 m off Tasmania.

Local Names : TASMANIA: Long-rayed whiptail.

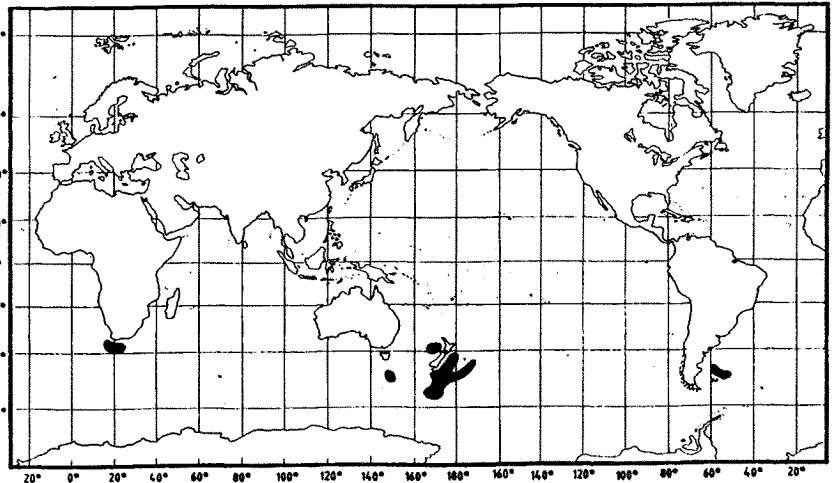


Fig. 503

Literature : Makushok (1976); McCann & McKnight (1980); Last *et al.* (1983); Trunov & Konstantinov (1985)

Coryphaenoides zaniophorus (Vaillant, 1888)

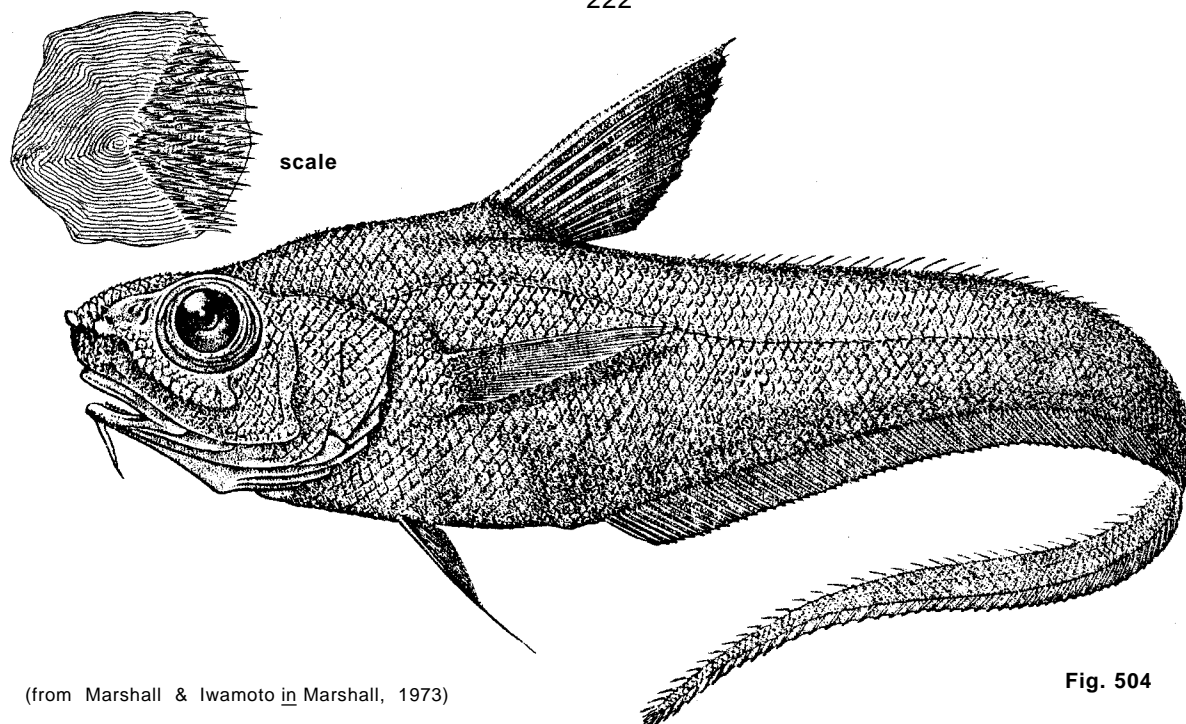
Fig. 504

MACROUR Cory 17

Scientific Name with Reference : *Macrurus zaniophorus* Vaillant, 1888, *Exped.Sci.TRAVAILLEUR et TALISMAN, Poissons*, Paris:245, pl.22, figs 4, 4a (off Spanish Sahara; 23°00'N, 17°30'W; 932 m).

Synonyms : *Coryphaenoides (Coryphaenoides) zaniophorus*--Gilbert & Hubbs, 1916; *Cariburus zaniophorus*--Parr, 1946; *Coryphaenoides colon* Marshall & Iwamoto, *in* Marshall, 1973.

FAO Names : En - Thickbeard grenadier



(from Marshall & Iwamoto in Marshall, 1973)

Fig. 504

Diagnostic Features : Snout short, narrow, tipped with stout terminal and lateral scutes; mouth small, restricted laterally, its opening extends posteriorly only to below anterior margin of orbit; upper jaw falls short of mid-orbit; barbel short, stout, less than 20% of head length; orbits large, their diameter much smaller than snout, almost twice the interorbital space; teeth in broad villiform bands in both jaws; inner gill rakers on first arch 1 + 10 or 11; outer gill rakers on second arch 1 + 9; scales below midbase of first dorsal fin 6 or 7, below second dorsal fin 7. Measurements in percentages of head length: snout length 25 to 30; preoral length 14 to 15; orbit diameter 30 to 35; suborbital width 14 to 15; interorbital space 15 to 21; upper jaw 33 to 36; barbel 14 to 19. First dorsal fin with 2 spines and 9 to 11 rays; pectoral fin rays usually i22 to i24; pelvic fin rays 9 or 10; pelvic fins rather far forward, in advance of pectoral origin, both of which are far in advance of first dorsal fin. Scales with numerous (over 100 in large specimens) short, stout spinules in V-shaped rows; head fully scaled, including ventral surfaces of snout; exposed ventral and posterior margin of interopercle scaled. Pyloric caeca short, 10 to 15 total. **Colour**: medium to dark brown; fins generally blackish.

Geographical Distribution : Warm waters of North Atlantic, from Caribbean, Gulf of Mexico, to off Chesapeake Bay in the west, and from Mauritania to Ivory Coast in the east (Fig. 505).

Habitat and Biology : Benthopelagic in 400 to 2 165 m depth. Feeds primarily on benthic organisms, especially gammarian amphipods and, to a lesser extent, lamellibranchs, copepods, polychaetes, ostracods, isopods, mysids, Natantia, and echinoderms.

Size : To at least 40 cm total length.

Interest to Fisheries : A fairly common species in 700 to 1 000 m depth in the Gulf of Mexico, but currently of no commercial interest.

Literature : Parr (1946); Iwamoto (1970); Marshall & Iwamoto, in Marshall (1973); Geistdoerfer (1978); Merrett & Marshall (1981).

Remarks : Merrett & Marshall (1981) synonymized *C. colon* with *C. zaniophorus*, attributing differences in proportional measurements used to distinguish *C. colon* to allometric growth.

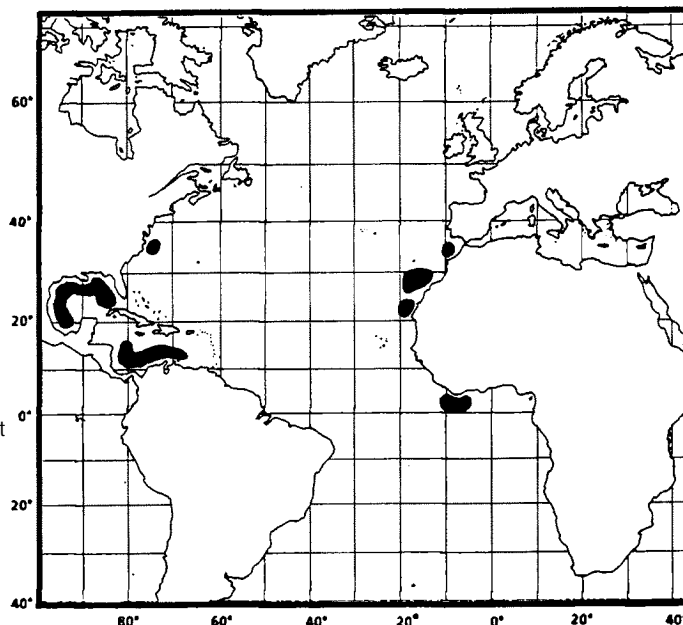


Fig. 505